Ingestion of Breastmilk

$$Intake\ Factor = \frac{IR \times FM \times Ab \times EF \times ED}{BW \times AT}$$

$$Daily\ Intake\ = Cmilk_{fat} \times Intake\ Factor$$

Parameter	Description and Units	Adopted Value (Child)	Notes
Intake Factor	Intake factor (kg/kg/day)	See model below	-
IR	Ingestion rate (kg/day)	0.85	enHealth (2012b). Suggested intake of breastmilk 850 mL/day for an infant less than 6-months of age. High end range of average intake.
FM	Fraction of Fat/Lipids in Milk (unitess)	0.037	DEH (2005)
Ab	Absorption Following Ingestion (unitless)	0.9	DEH (2005)
EF	Exposure frequency (days/year)	365	ASC NEPM (2013) - low to medium density residential
ED	Exposure duration (years)	0.5	Exposure time as an infant
BW	Body weight (kg)	6	Average weight of a 6-month old infant
AT	Averaging time - Non-threshold (days)	25550	ASC NEPM (2013) - low to medium density residential
	Averaging time -Threshold (days)	365	ASC NEPM (2013) - low to medium density residential

		Child Intake Factor (kg/kg/day)		Child Daily Intake (mg/kg/day)	
CoPC	Concentration of CoPC in milk fat (Cmilk fat) (mg/kg)	Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)	Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)
antimony	6.22E-05	3.37E-05	2.36E-03	-	1.47E-07
arsenic	1.57E-04			-	3.70E-07
cadmium	6.92E-02			-	1.63E-04
chromium (total)	8.03E-04			-	1.89E-06
cobalt	5.96E-07			-	1.41E-09
copper	4.76E-05			-	1.12E-07
lead	1.95E-01			-	4.59E-04
mercury	5.51E-02			-	1.30E-04
nickel	4.14E-05			-	9.77E-08
selenium	9.25E-06			-	2.18E-08
thallium	2.68E-06			-	6.31E-09
vanadium	7.53E-07			-	1.78E-09
zinc	8.45E-04			-	1.99E-06
dioxins and furans as PCDD and PCDF	6.86E-08			-	1.62E-10
PAHs as benzo(a)pyrene	1.01E-07			3.41E-12	-
polychlorinated biphenyls (PCBs)	1.49E-08			-	3.52E-11
hexachlorobenzene	2.68E-07			-	6.31E-10

			Child Non-Threshold Compounds (Carcinogens)	Child Threshold Compounds (Non-carcinogens)
CoPC	Oral Cancer Slope Factor (CSF) $(mg/kg/day)^{-1}$	Background Adjusted Oral Reference Dose (RfD) mg/kg/day	Incremental Lifetime Cancer Risk (ILCR) (unitless)	Hazard Quotient (HQ)
antimony	-	6.00E-03	-	2.44E-05
arsenic	-	1.00E-03	-	3.70E-04
cadmium	-	3.20E-04	-	5.10E-01
chromium (total)	-	9.00E-04	-	2.11E-03
cobalt	-	1.40E-03	-	1.00E-06
copper	-	1.40E-01	-	8.01E-07
lead	-	3.50E-03	-	1.31E-01
mercury	-	3.60E-04	-	3.61E-01
nickel	-	1.20E-02	-	8.14E-06
selenium	-	2.40E-03	-	9.09E-06
thallium	-	1.00E-05	-	6.31E-04
vanadium	-	1.00E-02	-	1.78E-07
zinc	-	5.00E-02	-	3.99E-05
dioxins and furans as PCDD and PCDF	-	9.89E-10	-	1.64E-01
PAHs as benzo(a)pyrene	0.5	-	1.70E-12	-
polychlorinated biphenyls (PCBs)	-	2.00E-05	-	1.76173E-06
hexachlorobenzene	-	1.60E-04	-	3.94364E-06
		Total	**1.70E-12**	**1.17E+00**

Health Risk Calculations - Cumulative Risk (Pathways Combined)
Site Energy from Waste Facility
Address Honeycomb Drive, Eastern Creek
Client Dial-A-Dump Industries
Scenario: Cumulative Risk to Residents

Exposure Pathway	Threshold Compounds (Non-carcinogens) - Hazard Index (HI)		Non-Threshold Compounds (Carcinogens) - Incremental Lifetime Cancer Risk (ILCR) (unitless)
	Adult	Child	
Inhalation of Air	2.82E-01	2.82E-01	8.57E-07
Incidental Ingestion of Soil	1.14E-04	1.07E-03	2.45E-12
Dermal Contact with Soil	3.42E-05	6.83E-05	4.47E-12
Ingestion of Home-grown Produce	2.76E-02	2.76E-02	3.24E-09
Ingestion of Eggs	2.40E-03	2.40E-03	7.59E-13
Ingestion of Beef	4.40E-03	4.40E-03	5.52E-11
Total	**3.16E-01**	**3.17E-01**	**8.60E-07**

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General Information:	
Site:	Energy from Waste Facility
Address:	Honeycomb Drive, Eastern Creek
Client:	Dial-A-Dump Industries
Scenario:	Scenario 2 Annual Average Maximum - Direct Contact with Soil by Off-site Residents (Adult and Child)

Receptor:
Residential (High Density/Minimal Soil Access)

Exposure Pathways to Include:	
	Enter "x" in box by clicking the select buttons.
Soil Pathways	
x	Incidental Ingestion of Soil
x	Dermal Contact with Soil
	Inhalation of Surface Soil-Derived Dust in Indoor Air
	Inhalation of Surface Soil-Derived Dust in Outdoor Air
	Inhalation of Surface Soil-Derived Vapours in Outdoor Air
	Inhalation of Soil-Derived Vapours From Excavation (USEPA 2002 method)
	Inhalation of Subsurface Soil-Derived Vapours in Indoor Air
	Inhalation of Subsurface Soil-Derived Vapours in Outdoor Air
	Incidental Ingestion of Lead in Soil (Adult Lead Model)
	Inhalation of Lead in Soil/Dust Indoors (Adult Lead Model)
	Inhalation of Lead in Dust Outdoors (Adult Lead Model)

Chemicals for Quantitative Assessment:	Chemical Concentrations
	Soil (mg/kg)
Antimony	2.19E-03
Arsenic, Inorganic	3.67E-03
Cadmium	1.78E-02
Chromium(VI)	1.36E-02
Cobalt	8.38E-04
Copper	2.02E-03
Lead	2.51E-02
Mercury (elemental)	1.78E-02
Nickel	3.24E-02
Selenium	3.14E-04
Thallium	1.24E-04
Vanadium	8.91E-04
Zinc (Metallic)	4.59E-03
Dioxins and Furans as PCDD and PCDF	8.12E-09
Benzo(a)pyrene	5.65E-06
Polychlorinated biphenyls	3.20E-10
Hexachlorobenzene (HCB)	3.47E-07

Exposure Parameters:		Exposure Parameters (Adjust for site-specific conditions if required)		Reference (Refer to Exposure Parameter Table in the Report for Justification)	
		Adult	Child	Adult	Child
General receptor parameters:	**Units**				
Body weight	kg	70	15	NEPC (2013)	NEPC (2013)
Exposure duration	yr	29	6	NEPC (2013)	NEPC (2013)
Averaging time (carcinogens)	yr	70	70	NEPC (2013)	NEPC (2013)
Averaging time (non-carcinogens)	yr	29	6	NEPC (2013)	NEPC (2013)
Incidental Soil Ingestion					
Daily soil ingestion rate	mg/day	50	100	NEPC (2013)	NEPC (2013)
Exposure frequency for soil ingestion	days/yr	365	365	NEPC (2013)	NEPC (2013)
Dermal Contact With Soil					
Exposed skin surface area for soil contact	cm2	6300	2700	NEPC (2013). Assumes 31.5% of total body surface area (20,000 cm2)	NEPC (2013). Assumes 44.3% of total body surface area (6,100 cm2)
Soil to skin adherence factor	mg/cm2	0.5	0.5	NEPC (2013)	NEPC (2013)
Exposure frequency for dermal contact with soil	days/yr	365	365	NEPC (2013)	NEPC (2013)
Indoor Inhalation					
Exposure time (indoor air)	hrs/day				
Exposure frequency (indoor air)	days/yr				
Particulate emission factor (indoor air)	m3/kg				
Lung Retention Factor (dust inhalation)	unitless				
Outdoor Inhalation					
Exposure time (outdoor air)	hrs/day				
Exposure frequency (outdoor air)	days/yr				
Particulate emission factor (outdoor air)	m3/kg				
Lung Retention Factor (dust inhalation)	unitless				
Potable Water Ingestion					
Potable water intake rate	L/day				
Exposure frequency for potable water intake	days/yr				

Health Risk Calculations - Incidental Soil Ingestion

Energy from Waste Facility

Honeycomb Drive, Eastern Creek

Scenario 2 Annual Average Maximum - Direct Contact with Soil by Off-site Residents (Adult and Child) Scenario

			Threshold Intake and Risk Calculations									Non-Threshold Intake and Risk Calculations					
Chemical	Soil Concentration	Oral Soil Bioavailability Factor	Oral RfD (Background Corrected)	Adult Intake Factor (threshold)	Adult Intake (threshold)	Hazard Index (Adult)	Child Intake Factor (threshold)	Child Intake (threshold)	Hazard Index (Child)	Oral CSF	Adult Intake Factor (non-threshold)	Child Intake Factor (non-threshold)	Lifetime Intake Factor (non-threshold)	Lifetime Intake (non-threshold)	Lifetime Excess Cancer Risk
	(mg/kg)	(unitless)	(mg/kg/day)	(kg/kg/day)	(mg/kg/day)	(unitless)	(kg/kg/day)	(mg/kg/day)	(unitless)	(mg/kg/day)-1	(kg/kg/day)	(kg/kg/day)	(kg/kg/day)	(mg/kg/day)	(unitless)
Antimony	2.19E-03	2.00E+00	6.00E-03	1.43E-06	3.14E-09	5.23E-07	1.33E-05	2.93E-08	4.88E-06	-	-	-	-	-	-
Arsenic, Inorganic	3.67E-03	1.00E+00	1.00E-03	7.14E-07	2.62E-09	2.62E-06	6.67E-06	2.45E-08	2.45E-05	-	-	-	-	-	-
Cadmium	1.78E-02	1.00E+00	3.20E-04	7.14E-07	1.27E-08	3.97E-05	6.67E-06	1.19E-07	3.71E-04	-	-	-	-	-	-
Chromium(VI)	1.36E-02	1.00E+00	9.00E-04	7.14E-07	9.73E-09	1.08E-05	6.67E-06	9.09E-08	1.01E-04	-	-	-	-	-	-
Cobalt	8.38E-04	1.00E+00	1.12E-03	7.14E-07	5.98E-10	5.34E-07	6.67E-06	5.59E-09	4.99E-06	-	-	-	-	-	-
Copper	2.02E-03	1.00E+00	4.20E-02	7.14E-07	1.44E-09	3.44E-08	6.67E-06	1.35E-08	3.21E-07	-	-	-	-	-	-
Lead	2.51E-02	1.00E+00	3.50E-03	7.14E-07	1.79E-08	5.12E-06	6.67E-06	1.67E-07	4.78E-05	-	-	-	-	-	-
Mercury (elemental)	1.78E-02	1.00E+00	3.60E-04	7.14E-07	1.27E-08	3.53E-05	6.67E-06	1.19E-07	3.29E-04	-	-	-	-	-	-
Nickel	3.24E-02	1.00E+00	4.80E-03	7.14E-07	2.32E-08	4.82E-06	6.67E-06	2.16E-07	4.50E-05	-	-	-	-	-	-
Selenium	3.14E-04	1.00E+00	2.40E-03	7.14E-07	2.24E-10	9.35E-08	6.67E-06	2.09E-09	8.73E-07	-	-	-	-	-	-
Thallium	1.24E-04	1.00E+00	1.00E-05	7.14E-07	8.85E-11	8.85E-06	6.67E-06	8.26E-10	8.26E-05	-	-	-	-	-	-
Vanadium	8.91E-04	1.00E+00	1.00E-02	7.14E-07	6.36E-10	6.36E-08	6.67E-06	5.94E-09	5.94E-07	-	-	-	-	-	-
Zinc (Metallic)	4.59E-03	1.00E+00	5.00E-02	7.14E-07	3.28E-09	6.56E-08	6.67E-06	3.06E-08	6.12E-07	-	-	-	-	-	-
Dioxins and Furans as PCDD and PCDF	8.12E-09	1.00E+00	9.89E-10	7.14E-07	5.80E-15	5.86E-06	6.67E-06	5.41E-14	5.47E-05	-	-	-	-	-	-
Benzo(a)pyrene	5.65E-06	1.00E+00	-	-	-	-	-	-	-	5.00E-01	2.96E-07	5.71E-07	8.67E-07	4.90E-12	2.45E-12
Polychlorinated biphenyls	3.20E-10	1.00E+00	2.00E-05	7.14E-07	2.29E-16	1.14E-11	6.67E-06	2.13E-15	1.07E-10	-	-	-	-	-	-
Hexachlorobenzene (HCB)	3.47E-07	1.00E+00	1.60E-04	7.14E-07	2.48E-13	1.55E-09	6.67E-06	2.31E-12	1.45E-08	-	-	-	-	-	-
TOTAL						**1.14E-04**			**1.07E-03**						**2.45E-12**

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Health Risk Calculations - Dermal Contact with Soil
Energy from Waste Facility
Honeycomb Drive, Eastern Creek
Scenario 2 Annual Average Maximum - Direct Contact with Soil by Off-site Residents (Adult and Child) Scenario

			Threshold Intake and Risk Calculations							Non-Threshold Intake and Risk Calculations					
Chemical	Soil Concentration	Dermal Absorption Factor (DAF)	Dermal RfD (Background Corrected)	Adult Intake Factor (threshold)	Adult Intake (threshold)	Hazard Index (Adult)	Child Intake Factor (threshold)	Child Intake (threshold)	Hazard Index (Child)	Dermal CSF	Adult Intake Factor (non-threshold)	Child Intake Factor (non-threshold)	Lifetime Intake Factor (non-threshold)	Lifetime Intake (non-threshold)	Lifetime Excess Cancer Risk
	(mg/kg)	(unitless)	(mg/kg/day)	(kg/kg/day)	(mg/kg/day)	(unitless)	(kg/kg/day)	(mg/kg/day)	(unitless)	(mg/kg/day)-1	(kg/kg/day)	(kg/kg/day)	(kg/kg/day)	(mg/kg/day)	(unitless)
Antimony	0.002194957	-	6.00E-03	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic, Inorganic	0.003672607	0.005	1.00E-03	2.25E-07	8.26E-10	8.26E-07	4.50E-07	1.65E-09	1.65E-06	-	-	-	-	-	-
Cadmium	0.017789191	-	3.20E-04	-	-	-	-	-	-	-	-	-	-	-	-
Chromium(VI)	0.013628816	-	2.25E-05	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt	0.000837814	0.001	1.12E-03	4.50E-08	3.77E-11	3.37E-08	9.00E-08	7.54E-11	6.73E-08	-	-	-	-	-	-
Copper	0.002022803	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead	0.025105714	-	3.50E-03	-	-	-	-	-	-	-	-	-	-	-	-
Mercury (elemental)	0.017789191	0.001	2.52E-05	4.50E-08	8.01E-10	3.18E-05	9.00E-08	1.60E-09	6.35E-05	-	-	-	-	-	-
Nickel	0.032422236	0.005	4.80E-03	2.25E-07	7.30E-09	1.52E-06	4.50E-07	1.46E-08	3.04E-06	-	-	-	-	-	-
Selenium	0.00031418	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium	0.00012395	-	1.00E-05	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium	0.000890894	-	2.60E-04	-	-	-	-	-	-	-	-	-	-	-	-
Zinc (Metallic)	0.004590759	0.001	5.00E-02	4.50E-08	2.07E-10	4.13E-09	9.00E-08	4.13E-10	8.26E-09	-	-	-	-	-	-
Dioxins and Furans as PCDD and PCDF	8.1162E-09	-	2.30E-09	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	5.64811E-06	0.06	-	-	-	-	-	-	-	5.00E-01	1.12E-06	4.63E-07	1.58E-06	8.93E-12	4.47E-12
Polychlorinated biphenyls	3.20073E-10	0.14	2.00E-05	6.30E-06	2.02E-15	1.01E-10	1.26E-05	4.03E-15	2.02E-10	-	-	-	-	-	-
Hexachlorobenzene (HCB)	3.46969E-07	0.1	1.60E-04	4.50E-06	1.56E-12	9.76E-09	9.00E-06	3.12E-12	1.95E-08	-	-	-	-	-	-
TOTAL						**3.42E-05**			**6.83E-05**						**4.47E-12**

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Summary of Estimated Health Risks
Energy from Waste Facility
Honeycomb Drive, Eastern Creek
Scenario 2 Annual Average Maximum - Direct Contact with Soil by Off-site Residents (Adult and Child) Scenario

Exposure Pathway	Threshold Risk Estimates		Non-Threshold Risk Estimates (Lifetime Exposure)
	Adult Exposure	Childhood Exposure	
SOIL EXPOSURE PATHWAYS			
Incidental Ingestion of Soil	1.14E-04	1.07E-03	2.45E-12
Dermal Contact with Soil	3.42E-05	6.83E-05	4.47E-12
Inhalation of Surface Soil-Derived Dust in Indoor Air	-	-	-
Inhalation of Surface Soil-Derived Dust in Outdoor Air	-	-	-
Inhalation of Surface Soil-Derived Vapours in Outdoor Air	-	-	-
Inhalation of Surface Soil-Derived Vapours from Excavation	-	-	-
Inhalation of Subsurface Soil-Derived Vapours in Indoor Air	-	-	-
Inhalation of Subsurface Soil-Derived Vapours in Outdoor Air	-	-	-
TOTAL	**1.49E-04**	**1.14E-03**	**6.92E-12**

Scenario 2 (POEO Limits) – Grid Maximum Concentrations

Risk Estimate for Resident - Inhalation Pathway (Scenario 2 - Grid Maximum)

Health Risk Calculations - Inhalation of Vapour
Site Energy from Waste Facility
Address Honeycomb Drive, Eastern Creek
Client Dial-A-Dump Industries
Scenario: Inhalation of Vapour by Off-site Residents (Adult and Child)

$$Exposure\ Adjusted\ Air\ Concentration\left(\frac{\mu g}{m^3}\right) = \frac{Cair\ \left(\frac{\mu g}{m^3}\right) \times ET\ \left(\frac{h}{d}\right) \times EF\ \left(\frac{d}{y}\right) \times ED(y)}{AT(h)}$$

Parameter	Description and Units	Adopted Value		Notes
		Adult	Child	
Cair	Chemical concentration in air (µg/m^3)	See model below		Grid maximum ground level concentration (GLC)
ET	Exposure time (hours/day)	24	24	ASC NEPM (2013) - low to medium density residential
EF	Exposure frequency (days/year)	365	365	ASC NEPM (2013) - low to medium density residential
ED	Exposure duration (years)	29	6	ASC NEPM (2013) - low to medium density residential
AT	Averaging time - Non-threshold (hours)	613200	613200	ASC NEPM (2013) - low to medium density residential
	Averaging time -Threshold (hours)	254040	52560	ASC NEPM (2013) - low to medium density residential

CoPC	Grid Maximum GLC (µg/m^3)	Reference Concentration (RfC) (µg/m^3)	Background Concentration (%)	Background Adjusted Reference Concentration (µg/m^3)	Inhalation Unit Risk (µg/m^3)$^{-1}$	Adult: Non-Threshold Compounds (Carcinogens)		Adult: Threshold Compounds (Non-carcinogens)	
						Exposure Adjusted Air Concentration (µg/m^3)	Incremental Lifetime Cancer Risk (ILCR) (unitless)	Exposure Adjusted Air Concentration (µg/m^3)	Hazard Quotient (HQ)
antimony	1.10E-04	21	0%	21	-	-	-	1.10E-04	5.24E-06
arsenic	1.90E-04	1	0%	1	-	-	-	1.90E-04	1.90E-04
beryllium	5.40E-08	0.02	0%	0.02	2.40E-03	2.24E-08	5.37E-11	5.40E-08	2.70E-06
cadmium	9.30E-04	0.005	20%	0.004	-	-	-	9.30E-04	2.33E-01
cobalt	4.30E-05	0.1	0%	0.1	-	-	-	4.30E-05	4.30E-04
copper	1.06E-04	490	70%	147	-	-	-	1.06E-04	7.21E-07
chromium VI	7.11E-04	0.1	0%	0.1	-	-	-	7.11E-04	7.11E-03
lead	1.30E-03	0.5	0%	0.5	-	-	-	1.30E-03	2.60E-03
molybdenum	1.43E-07	12	0%	12	-	-	-	1.43E-07	1.19E-08
manganese	4.60E-04	0.15	20%	0.12	-	-	-	4.60E-04	3.83E-03
mercury	9.30E-04	0.2	10%	0.18	-	-	-	9.30E-04	5.17E-03
nickel	1.70E-03	0.02	20%	0.016	-	-	-	1.70E-03	1.06E-01
selenium	1.60E-05	21	60%	8.4	-	-	-	1.60E-05	1.90E-06
silver	2.21E-06	17.5	0%	17.5	-	-	-	2.21E-06	1.26E-07
tin	2.60E-05	700	0%	700	-	-	-	2.60E-05	3.71E-08
thallium	6.49E-06	0.035	0%	0.035	-	-	-	6.49E-06	1.85E-04
vanadium	4.60E-05	1	0%	1	-	-	-	4.60E-05	4.60E-05
zinc	2.40E-04	1750	90%	175	-	-	-	2.40E-04	1.37E-06
dioxins and furans as PCDD and PCDF	6.50E-10	0.00000805	57%	3.4615E-06	-	-	-	6.50E-10	1.88E-04
PAHs as benzo(a)pyrene	3.25E-06	-	-	-	8.70E-02	1.35E-06	1.17E-07	-	-
PCBs	1.04E-10	0.5	0%	0.5	-	-	-	1.04E-10	2.08E-10
hexachlorobenzene	5.33E-08	0.16	0%	0.16	-	-	-	5.33E-08	3.33E-07
benzene	3.30E-01	30	20%	24	6.00E-06	1.37E-01	8.20E-07	3.30E-01	1.38E-02
						Total ILCR (Adult)	**9.37E-07**	**Hazard Index (∑HQ) (Adultl)**	**3.72E-01**

Notes:
Where ground level concentrations were not available for Scenario 2, AECOM has adopted ground level concentrations from Scenario 1 to determine representative risk estimates i.e. Cu, Mo, Ag, Tl, Zn, PAHs, PCBs and HCB.

Risk Estimate for Resident - Inhalation Pathway (Scenario 2 - Grid Maximum)

Child			
Non-Threshold Compounds (Carcinogens)		Threshold Compounds (Non-carcinogens)	
Exposure Adjusted Air Concentration (µg/m^3)	Incremental Lifetime Cancer Risk (ILCR) (unitless)	Exposure Adjusted Air Concentration (µg/m^3)	Hazard Quotient (HQ)
-	-	1.10E-04	5.24E-06
-	-	1.90E-04	1.90E-04
4.63E-09	1.11E-11	5.40E-08	2.70E-06
-	-	9.30E-04	2.33E-01
-	-	4.30E-05	4.30E-04
-	-	1.06E-04	7.21E-07
-	-	7.11E-04	7.11E-03
-	-	1.30E-03	2.60E-03
-	-	1.43E-07	1.19E-08
-	-	4.60E-04	3.83E-03
-	-	9.30E-04	5.17E-03
-	-	1.70E-03	1.06E-01
-	-	1.60E-05	1.90E-06
-	-	2.21E-06	1.26E-07
-	-	2.60E-05	3.71E-08
-	-	6.49E-06	1.85E-04
-	-	4.60E-05	4.60E-05
-	-	2.40E-04	1.37E-06
-	-	6.50E-10	1.88E-04
2.79E-07	2.42E-08	-	-
-	-	1.04E-10	2.08E-10
-	-	5.33E-08	3.33E-07
2.83E-02	1.70E-07	3.30E-01	1.38E-02
Total ILCR (Child)	**1.94E-07**	**Hazard Index (∑HQ) (Child)**	**3.72E-01**

Risk Estimate for Commercial Worker - Inhalation Pathway (Scenario 2 - Grid Maximum)

Health Risk Calculations - Inhalation of Vapour
Site Energy from Waste Facility
Address Honeycomb Drive, Eastern Creek
Client Dial-A-Dump Industries
Scenario: Inhalation of Vapour by Off-site Commercial Workers (Adult)

$$Exposure\ Adjusted\ Air\ Concentration\left(\frac{\mu g}{m^3}\right) = \frac{Cair\left(\frac{\mu g}{m^3}\right) \times ET\left(\frac{h}{d}\right) \times EF\left(\frac{d}{y}\right) \times ED(y)}{averaging\ time\ (h)}$$

Parameter	Description and Units	Adopted Value	Notes
Cair	Chemical concentration in air (µg/m^3)	See model below	Grid maximum ground level concentration (GLC)
ET	Exposure time (hours/day)	9	ASC NEPM (2013) - commercial/industrial.
EF	Exposure frequency (days/year)	240	ASC NEPM (2013) - commercial/industrial.
ED	Exposure duration (years)	30	ASC NEPM (2013) - commercial/industrial.
AT	Averaging time - Non-threshold (hours)	613200	ASC NEPM (2013) - commercial/industrial.
	Averaging time -Threshold (hours)	262800	ASC NEPM (2013) - commercial/industrial.

CoPC	Grid Maximum GLC (µg/m^3)	Reference Concentration (RfC) (µg/m^3)	Background Concentration (%)	Background Adjusted Reference Concentration (µg/m^3)	Inhalation Unit Risk (µg/m^3)$^{-1}$	Non-Threshold Compounds (Carcinogens)		Threshold Compounds (non-carcinogens)	
						Exposure Adjusted Air Concentration (µg/m^3)	Incremental Lifetime Cancer Risk (ILCR) (unitless)	Exposure Adjusted Air Concentration (µg/m^3)	Hazard Quotient (HQ)
antimony	1.10E-04	21	0%	21	-	-	-	2.71E-05	1.29E-06
arsenic	1.90E-04	1	0%	1	-	-	-	4.68E-05	4.68E-05
beryllium	5.40E-08	0.02	0%	0.02	2.40E-03	5.71E-09	1.37E-11	1.33E-08	6.66E-07
cadmium	9.30E-04	0.005	20%	0.004	-	-	-	2.29E-04	5.73E-02
cobalt	4.30E-05	0.1	0%	0.1	-	-	-	1.06E-05	1.06E-04
copper	1.06E-04	490	70%	147	-	-	-	2.61E-05	1.78E-07
chromium VI	7.11E-04	0.1	0%	0.1	-	-	-	1.75E-04	1.75E-03
lead	1.30E-03	0.5	0%	0.5	-	-	-	3.21E-04	6.41E-04
molybdenum	1.43E-07	12	0%	12	-	-	-	3.53E-08	2.94E-09
manganese	4.60E-04	0.15	20%	0.12	-	-	-	1.13E-04	9.45E-04
mercury	9.30E-04	0.2	10%	0.18	-	-	-	2.29E-04	1.27E-03
nickel	1.70E-03	0.02	20%	0.016	-	-	-	4.19E-04	2.62E-02
selenium	1.60E-05	21	60%	8.4	-	-	-	3.95E-06	4.70E-07
silver	2.21E-06	17.5	0%	17.5	-	-	-	5.45E-07	3.11E-08
tin	2.60E-05	700	0%	700	-	-	-	6.41E-06	9.16E-09
thallium	6.49E-06	0.035	0%	0.035	-	-	-	1.60E-06	4.57E-05
vanadium	4.60E-05	1	0%	1	-	-	-	1.13E-05	1.13E-05
zinc	2.40E-04	1750	90%	175	-	-	-	5.92E-05	3.38E-07
dioxins and furans as PCDD and PCD	6.50E-10	0.00000805	57%	3.4615E-06	-	-	-	1.60E-10	4.63E-05
PAHs as benzo(a)pyrene	3.25E-06	-	-	-	8.70E-02	3.43E-07	2.99E-08	-	-
PCBs	1.04E-10	0.5	0%	0.5	-	-	-	2.56E-11	5.13E-11
hexachlorobenzene	5.33E-08	0.16	0%	0.16	-	-	-	1.31E-08	8.21E-08
benzene	3.30E-01	30	20%	24	6.00E-06	3.49E-02	2.09E-07	8.14E-02	3.39E-03
						Total ILCR (Adult)	**2.39E-07**	**Hazard Index (∑HQ) (Adultl)**	**9.18E-02**

Notes:
Where ground level concentrations were not available for Scenario 2, AECOM has adopted ground level concentrations from Scenario 1 to determine representative risk estimates i.e. Cu, Mo, Ag, Tl, Zn, PAHs, PCBs and HCB.

Potential Concentration in Soils Following Dust Deposition

Site Energy from Waste Facility
Address Honeycomb Drive, Eastern Creek
Client Dial-A-Dump Industries

Concentration in Soils

$$C_s = \frac{DR \times (1 - e^{-k \times t})}{d \times \rho \times k} \times 1000$$

Parameter	Description and Units	Adopted Value		Notes
C_s	Concentration of CoPC in soil (mg/kg)	See below		Calculated using above equation (Stevens, 1991).
DR	Particle deposition rate for accidental release (mg/m^2/year)	See below		Provided by Pacific Environment. Maximum modelled deposition rate for receptors combined.
k	Chemical-specific soil-loss constant (1/year) = ln(2)/$T^{0.5}$	See below		Calculated using equation ln(2)/$T^{0.5}$.
$T^{0.5}$	Chemical half-life in soil (years)	See below		NHMRC (2002) for dioxins and furans (surface soil). Conservative value adopted for heavy metals in the absense of published data.
t	Accumulation time (years)	25		Emissions may occur for the assumed lifetime of the EFW Facility.
d	Soil mixing depth (m)	0.01	0.15	It is assumed that the soil where deposition occurs is not well mixed (as would be the case in a garden or cultivated bed), and hence the mixing depth for depositied soils and dusts has been taken to be 1cm. For the assessment of potential plant uptake, a soil mixing zone of 15cm has been assumed within the root zone of plants.
ρ	Soil bulk-density (g/m^3)	1.60E+06		Sandy soils (representative of surface soils) typically have bulk densities between 1.3 g/cm^3 to 1.7 g/cm^3 (McKenzie et al., 2004). In general, bulk densities greater than 1.6 g/cm^3 tend to restrict root growth.
1000	Conversion from g to kg	-		

CoPC	Deposition Rate (total) (mg/m^2/year)	k (1/year)	$T^{0.5}$ (years)	C_s (mg/kg) - Surface Soil	C_s (mg/kg) - Soil-Plant Root Zone
antimony	2.96E-03	0.01	100	4.25E-03	2.83E-04
arsenic	5.11E-03	0.01	100	7.33E-03	4.89E-04
beryllium	0.00E+00	Not bioaccumulative (ATSDR, 2002)			
cadmium	2.41E-02	0.01	100	3.46E-02	2.30E-03
chromium (total)	1.86E-02	0.01	100	2.67E-02	1.78E-03
cobalt	1.13E-03	0.01	100	1.62E-03	1.08E-04
copper	2.75E-03	0.01	100	3.95E-03	2.63E-04
lead	3.47E-02	0.01	100	4.98E-02	3.32E-03
molybdenum	0.00E+00	Not bioaccumulative (NHMRC, 2015)			
manganese	0.00E+00	Not bioaccumulative (ATSDR, 2012)			
mercury	2.41E-02	0.01	100	3.46E-02	2.30E-03
nickel	4.38E-02	0.01	100	6.28E-02	4.19E-03
selenium	4.38E-04	0.01	100	6.28E-04	4.19E-05
silver	0.00E+00	Not bioaccumulative (ATSDR, 1990)			
tin	0.00E+00	Not bioaccumulative (NHMRC, 2015)			
thallium	1.69E-04	0.01	100	2.42E-04	1.62E-05
vanadium	1.20E-03	0.01	100	1.72E-03	1.15E-04
zinc	6.25E-03	0.01	100	8.97E-03	5.98E-04
dioxins and furans as PCDD and PCDF	1.68E-08	0.05	15	1.56E-08	1.04E-09
PAHs as benzo(a)pyrene	8.45E-05	0.48	1.45	1.10E-05	7.37E-07
polychlorinated biphenyls (PCBs)	2.70E-09	0.27	2.58	6.26E-10	4.17E-11
hexachlorobenzene	1.39E-06	0.12	5.70	6.80E-07	4.53E-08

Notes:

Where dust deposition rates were not available for Scenario 2, AECOM has adopted dust deposition rates from Scenario 1 to determine representative risk estimates i.e. Cu, Tl, Zn, PAHs, PCBs and HCB.

For metals that were considered to be bioaccumulative and/or persistent, a conservative half-life value of 100 years was adopted in the absence of published data to account for the slow (or no) breakdown in the environment.

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Health Risk Calculations - Ingestion of Home-grown Produce

Site	Energy from Waste Facility
Address	Honeycomb Drive, Eastern Creek
Client	Dial-A-Dump Industries
Scenario:	Ingestion of Homegrown Produce by Off-site Residents (Adult and Child)

Concentration in Home-grown Produce

Deposited Material on Aboveground Plants

$$C_p = \frac{DR \times F \times (1 - e^{-k \times t})}{Y \times k}$$

Parameter	Description and Units	Adopted Value	Notes
C_p	Concentration of CoPC in plant (mg/kg plant - wet weight)	See below	Calculated using above equation from HHRAP (Stevens, 1991).
DR	Particle deposition rate for accidental release (mg/m^2/day)	See below	Provided by Pacific Environment. Maximum modelled deposition rate for receptors combined.
F	Fraction for the surface area of plant (unitless)	0.051	For leafy aboveground crops, the surface area fraction (or plant interception fraction - how much of the depositing material remains on the plant) is estimated to be 0.051 (Stevens, 1991).
k	Chemical-specific loss constant for particles on plants (1/days) = ln(2)/$T^{0.5}$	See below	Calculated using equation ln(2)/$T^{0.5}$.
$T^{0.5}$	Chemical half-life on plant (days)	14	Weathering of particulates on plant surfaces does occur and in the absence of measured data, it is generally assumed that organics deposited onto the outer portion of plant surfaces have a weathering half-life of 14 days (Stevens, 1991). Conservative value adopted for heavy metals in the absense of published data.
t	Deposition time or length of growing season (days)	70	The growing season for typical aboveground plants varies, however it may be up to 70 days (i.e. tomatoes), which has been used in the calculation on concentrations during normal operations.
Y	Crop yield (kg/m^2)	2	Given that the residential areas surrounding the Site are typically urban low-density residential properties, the types of edible plant expected to be grown on the properties include tomatoes and beans. Corn, hay and wheat are not expected to be grown for human consumption in significant quantities in the area. For typical crops grown aboveground an average crop yield of 2 kg/m^2 has been adopted.

CoPC	DR (mg/m^2/day)	k (1/days)	C_p (mg/kg plant - wet weight)
antimony	2.96E-03	4.95E-02	1.48E-03
arsenic	5.11E-03	4.95E-02	2.55E-03
cadmium	2.41E-02	4.95E-02	1.20E-02
chromium (total)	1.86E-02	4.95E-02	9.28E-03
cobalt	1.13E-03	4.95E-02	5.64E-04
copper	2.75E-03	4.95E-02	1.37E-03
lead	3.47E-02	4.95E-02	1.73E-02
mercury	2.41E-02	4.95E-02	1.20E-02
nickel	4.38E-02	4.95E-02	2.19E-02
selenium	4.38E-04	4.95E-02	2.19E-04
thallium	1.69E-04	4.95E-02	8.43E-05
vanadium	1.20E-03	4.95E-02	5.99E-04
zinc	6.25E-03	4.95E-02	3.12E-03
dioxins and furans as PCDD and PCDF	1.68E-08	4.95E-02	8.38E-09
PAHs as benzo(a)pyrene	8.45E-05	4.95E-02	4.22E-05
polychlorinated biphenyls (PCBs)	2.70E-09	4.95E-02	1.35E-09
hexachlorobenzene	1.39E-06	4.95E-02	6.94E-07

Uptake of Chemicals via Roots

$$C_{rp} = C_s \times RUF$$

Parameter	Description and Units	Adopted Value	Notes
C_{rp}	Concentration of persistent CoPC in root of plant (mg/kg plant - wet weight)	See below	Calculated using above equation (US EPA, 2005).
C_s	Concentration of persistent CoPC in soil assuming 15 cm mixing depth within gardens (mg/kg)	See below	Refer to Dust Deposition Model.
RUF	Root uptake factor (unitless)	See below	RAIS (Accessed 2017). Soil to wet plant uptake factor adopted. Value for 2,3,7,8-TCDD conservatively selected for dioxins and furans.

CoPC	Cs (mg/kg) - Soil-Plant Root Zone	RUF (unitless)	C_{rp} (mg/kg plant - wet weight)
antimony	2.83E-04	1.00E-02	2.83E-06
arsenic	4.89E-04	1.00E-02	4.89E-06
cadmium	2.30E-03	1.38E-01	3.18E-04
chromium (total)	1.78E-03	1.87E-03	3.33E-06
cobalt	1.08E-04	5.00E-03	5.40E-07
copper	2.63E-04	1.00E-01	2.63E-05
lead	3.32E-03	1.12E-02	3.72E-05
mercury	2.30E-03	2.25E-01	5.19E-04
nickel	4.19E-03	1.50E-02	6.28E-05
selenium	4.19E-05	6.25E-03	2.62E-07
thallium	1.62E-05	1.00E-03	1.62E-08
vanadium	1.15E-04	1.37E-03	1.57E-07
zinc	5.98E-04	2.64E-01	1.58E-04
dioxins and furans as PCDD and PCDF	1.04E-09	8.76E-04	9.09E-13
PAHs as benzo(a)pyrene	7.37E-07	2.14E-03	1.58E-09
polychlorinated biphenyls (PCBs)	4.17E-11	5.87E-04	2.45E-14
hexachlorobenzene	4.53E-08	3.66E-03	1.66E-10

Ingestion of Home-grown Produce

Percentage of Fruit and Vegatable per produce group (Table 7, Schedule B7, ASC NEPM (2013)).

Produce Group	Adults (%)	Adult Consumption Rate (g/day)	Portion of Aboveground Plants (Green Vegetables and Tree Fruit)	Portion of Root Plants (Root Vegetables and Tuber Vegetables)	Children (%)	Child Consumption Rate (g/day)	Portion of Aboveground Plants (Green Vegetables and Tree Fruit)	Portion of Root Plants (Root Vegetables and Tuber Vegetables)
Green Vegetables	59	153.4			55	55		
Root Vegetables	18	46.8	0.73	0.27	17	17	0.84	0.16
Tuber Vegetables	23	59.8			28	28		
Tree Fruit	100	140			100	180		
Total Consumption		**400**				**280**		

$$Intake\ Factor = \frac{IR \times FI \times ME \times EF \times ED}{BW \times AT}$$

$$Daily\ Intake = Concentration\ in\ Produce \times Intake\ Factor$$

Parameter	Description and Units	Adopted Value		Notes
		Adult	Child	
Intake Factor	Intake factor (kg/kg/day)	See model below		-
IR	Ingestion rate (kg/day)	0.469	0.202	
FI	Fraction ingested from a home-grown source (FI)	0.1		10% from home-grown source, as per ASC NEPM (2013) - low to medium density residential
ME	Matrix Effect (unitless)	1		Assumed to be 100% bioavailable
EF	Exposure frequency (days/year)	365	365	ASC NEPM (2013) - low to medium density residential
ED	Exposure duration (years)	29	6	ASC NEPM (2013) - low to medium density residential
BW	Body weight (kg)	70	15	ASC NEPM (2013) - low to medium density residential
AT	Averaging time - Non-threshold (days)	25550	25550	ASC NEPM (2013) - low to medium density residential. Based on a lifetime exposure of 70 years.
	Averaging time -Threshold (days)	10585	2190	ASC NEPM (2013) - low to medium density residential. Equal to exposure duration.

			Adult Intake Factor (kg/kg/day)		Child Intake Factor (kg/kg/day)		Adult Daily Intake from Produce (mg/kg/day)		Child Daily Intake from Produce (mg/kg/day)	
CoPC	Adult Concentration in Produce (wet weight, mg/kg) (a)	Child Concentration in Produce (wet weight, mg/kg) (a)	Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)	Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)	Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)	Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)
antimony	1.08E-03	1.24E-03					-	7.26E-07	-	1.67E-06
arsenic	1.87E-03	2.14E-03					-	1.25E-06	-	2.88E-06
cadmium	8.90E-03	1.01E-02					-	5.97E-06	-	1.37E-05
chromium (total)	6.81E-03	7.79E-03					-	4.56E-06	-	1.05E-05
cobalt	4.14E-04	4.73E-04					-	2.77E-07	-	6.37E-07
copper	1.01E-03	1.16E-03					-	6.79E-07	-	1.56E-06
lead	1.27E-02	1.45E-02					-	8.52E-06	-	1.96E-05
mercury	8.96E-03	1.02E-02					-	6.00E-06	-	1.37E-05
nickel	1.60E-02	1.84E-02	2.78E-04	6.70E-04	1.15E-04	1.35E-03	-	1.08E-05	-	2.47E-05
selenium	1.60E-04	1.83E-04					-	1.07E-07	-	2.47E-07
thallium	6.19E-05	7.08E-05					-	4.14E-08	-	9.53E-08
vanadium	4.39E-04	5.03E-04					-	2.94E-07	-	6.77E-07
zinc	2.33E-03	2.64E-03					-	1.56E-06	-	3.56E-06
dioxins and furans as PCDD and PCDF	6.15E-09	7.04E-09					-	4.12E-12	-	9.47E-12
PAHs as benzo(a)pyrene	3.09E-05	3.54E-05					8.58E-09	-	4.08E-09	-
polychlorinated biphenyls (PCBs)	9.88E-10	1.13E-09					-	6.62E-13	-	1.52E-12
hexachlorobenzene	5.09E-07	5.82E-07					-	3.41E-10	-	7.84E-10

(a) Calculated based on portions of aboveground and root plants as presented above.

			Adult Non-Threshold Compounds (Carcinogens)	Adult Threshold Compounds (Non-carcinogens)	Child Non-Threshold Compounds (Carcinogens)	Child Threshold Compounds (Non-carcinogens)
CoPC	Oral Cancer Slope Factor (CSF) (mg/kg/day)⁻¹	Background Adjusted Oral Reference Dose (RfD) mg/kg/day	Incremental Lifetime Cancer Risk (ILCR) (unitless)	Hazard Quotient (HQ)	Incremental Lifetime Cancer Risk (ILCR) (unitless)	Hazard Quotient (HQ)
antimony	-	6.00E-03	-	1.21E-04	-	2.78E-04
arsenic	-	1.00E-03	-	1.25E-03	-	2.88E-03
cadmium	-	3.20E-04	-	1.86E-02	-	4.27E-02
chromium (total)	-	9.00E-04	-	5.07E-03	-	1.17E-02
cobalt	-	0.0014	-	1.98E-04	-	4.55E-04
copper	-	0.14	-	4.85E-06	-	1.11E-05
lead	-	3.50E-03	-	2.43E-03	-	5.59E-03
mercury	-	3.60E-04	-	1.67E-02	-	3.81E-02
nickel	-	0.012	-	8.96E-04	-	2.06E-03
selenium	-	2.40E-03	-	4.48E-05	-	1.03E-04
thallium	-	0.00001	-	4.14E-03	-	9.53E-03
vanadium	-	0.01	-	2.94E-05	-	6.77E-05
zinc	-	5.00E-02	-	3.12E-05	-	7.12E-05
dioxins and furans as PCDD and PCDF	-	9.89E-10	-	4.17E-03	-	9.58E-03
PAHs as benzo(a)pyrene	0.5	-	4.29E-09	-	2.04E-09	-
polychlorinated biphenyls (PCBs)	-	0.00002	-	3.31E-08	-	7.61E-08
hexachlorobenzene	-	0.00016	-	2.13E-06	-	4.90E-06
		Total	**4.29E-09**	**5.37E-02**	**2.04E-09**	**1.23E-01**

Health Risk Calculations - Ingestion of Poultry and Eggs
Site Energy from Waste Facility
Address Honeycomb Drive, Eastern Creek
Client Dial-A-Dump Industries
Scenario: Ingestion of Poultry and Eggs by Off-site Residents (Adult and Child)

Concentration in Eggs

$$A_{egg} = [\Sigma(F_i \times Qpi \times Pi) + Qs \times Cs \times Bs] \times (Ba_{egg})$$

Parameter	Description and Units	Adopted Value	Notes
A_{egg}	Concentration of COPC in eggs (mg COPC/kg FW tissue)	See model below	Calculated using above equation.
F_i	Fraction of plant type (i) (grain) grown on contaminated soil and ingested by the animal (chicken) (unitless)	1	Recommended by HHRAP (US EPA, 2005). Assumed 100% of the plant material eaten by chickens were grown on soil contaminated by emission sources.
Qp_i	Quantity of plant type (i) (grain) eaten by the animal (chicken) each day (kg DW plant/day)	0.2	Recommended by HHRAP (US EPA, 2005). Estimated for grain feed only.
P_i	Concentration of CoPC in plant type (i) (grain) eaten by the animal (chicken) (mg/kg DW)	See home-grown produce model	Refer to C_p and C_{rp} (mg/kg plant - wet weight). Although C_p and C_{rp} are presented as a wet weight, this is unlikely to affected the outcome of the assessment as dust deposition rates included both wet and dry deposition.
Qs	Quantity of soil eaten by the animal (chicken) (kg/day)	0.022	Recommended by HHRAP (US EPA, 2005).
Cs	Average soil concentration over exposure duration (mg CoPC/kg soil)	See dust-deposition model	Refer to C_s Soil-Plant Root Zone (mg/kg)
Bs	Soil bioavailability factor (unitless)	1	Default value recommended by HHRAP (US EPA, 2005).
Ba_{egg}	CoPC biotransfer factor for eggs (day/kg FW tissue)	See model below	The highest biotransfer factor for eggs recommended by the HHRAP Database (US EPA, 2005) or published by OEHHA (2015) was conservatively selected in the HHRA. OEHHA values were adopted for arsenic, cadmium, lead, mercury, nickel, selenium, HCB, PCBs and dioxins and furans (value for 2,3,7,8-TCDD adopted for dioxins and furans). HHRAP Database values were adopted for antimony, chromium and PAHs. For antimony, chromium and thallium, an egg biotransfer coefficient was not available and therefore fat transfer coefficients were estimated from the beef transfer coefficient. The egg biotransfer coefficient was then estimated by using the fat transfer coefficient and assumed that eggs contain a fat content of 8% consistent with US EPA (2005) and the following equations: $Ba_{beef} = 10^{logBafat} \times 0.19$ $Ba_{egg} = 10^{logBafat} \times 0.08$ No biotransfer factors were available in literature for cobalt, copper and vandadium, therefore no transfer factor has been applied.

CoPC	Concentration of CoPC in Plant (mg/kg DW) (P_i)	Cs (mg/kg) - Soil-Plant Root Zone	A_{egg}	
			CoPC biotransfer factor for eggs (Ba_{egg}) (day/kg FW tissue)	Concentration of COPC in eggs (A_{egg}) (mg COPC/kg FW tissue)
antimony	1.48E-03	2.83E-04	4.21E-04	1.27E-07
arsenic	2.55E-03	4.89E-04	7.00E-02	3.65E-05
cadmium	1.23E-02	2.30E-03	1.00E-02	2.52E-05
chromium (total)	9.28E-03	1.78E-03	2.32E-03	4.39E-06
cobalt	5.64E-04	1.08E-04	0.00E+00	0.00E+00
copper	1.40E-03	2.63E-04	0.00E+00	0.00E+00
lead	1.74E-02	3.32E-03	4.00E-02	1.42E-04
mercury	1.25E-02	2.30E-03	8.00E-01	2.05E-03
nickel	2.19E-02	4.19E-03	2.00E-02	8.95E-05
selenium	2.19E-04	4.19E-05	3.00E+00	1.34E-04
thallium	8.43E-05	1.62E-05	1.68E-02	2.89E-07
vanadium	5.99E-04	1.15E-04	0.00E+00	0.00E+00
zinc	3.28E-03	5.98E-04	4.21E-02	2.81E-05
dioxins and furans as PCDD and PCDF	8.38E-09	1.04E-09	1.00E+01	1.70E-08
PAHs as benzo(a)pyrene	4.22E-05	7.37E-07	3.00E-03	2.53E-08
polychlorinated biphenyls (PCBs)	1.35E-09	4.17E-11	1.00E+01	2.70E-09
hexachlorobenzene	6.94E-07	4.53E-08	2.00E+01	2.79E-06

Ingestion of Eggs

$$Intake\ Factor = \frac{IR \times FI \times ME \times EF \times ED}{BW \times AT}$$

$$Daily\ Intake\ = Aegg\ \times Intake\ Factor$$

Parameter	Description and Units	Adopted Value: Adult	Adopted Value: Child	Notes
Intake Factor	Intake factor (kg/kg/day)	See model below		-
IR	Ingestion rate (kg/day)	0.014	0.006	enHealth (2012b). Suggested (average) values for intake of total egg. Value for >19 years adopted for an adult (14 g/day) and 2-3 years adopted for a child (6 g/day).
FI	Fraction ingested from home-grown source (unitess)	1		100% home-sourced eggs as a conservative estimate
ME	Matrix effect (unitless)	1		Assumed 100% bioavailability
EF	Exposure frequency (days/year)	365	365	ASC NEPM (2013) - low to medium density residential
ED	Exposure duration (years)	29	6	ASC NEPM (2013) - low to medium density residential
BW	Body weight (kg)	70	15	ASC NEPM (2013) - low to medium density residential
AT	Averaging time - Non-threshold (days)	25550	25550	ASC NEPM (2013) - low to medium density residential. Based on a lifetime exposure of 70 years.
	Averaging time -Threshold (days)	10585	2190	ASC NEPM (2013) - low to medium density residential. Equal to exposure duration.

CoPC	Concentration of COPC in eggs (A_{egg}) (mg COPC/kg FW tissue)	Adult Intake Factor (kg/kg/day): Non-Threshold Compounds (Carcinogens)	Adult Intake Factor (kg/kg/day): Threshold Compounds (Non-carcinogens)	Child Intake Factor (kg/kg/day): Non-Threshold Compounds (Carcinogens)	Child Intake Factor (kg/kg/day): Threshold Compounds (Non-carcinogens)	Adult Daily Intake (mg/kg/day): Non-Threshold Compounds (Carcinogens)	Adult Daily Intake (mg/kg/day): Threshold Compounds (Non-carcinogens)	Child Daily Intake (mg/kg/day): Non-Threshold Compounds (Carcinogens)	Child Daily Intake (mg/kg/day): Threshold Compounds (Non-carcinogens)
antimony	1.27E-07	8.29E-05	2.00E-04	3.43E-05	4.00E-04	-	2.54E-11	-	5.09E-11
arsenic	3.65E-05					-	7.30E-09	-	1.46E-08
cadmium	2.52E-05					-	5.04E-09	-	1.01E-08
chromium (total)	4.39E-06					-	8.78E-10	-	1.76E-09
cobalt	0.00E+00					-	0.00E+00	-	0.00E+00
copper	0.00E+00					-	0.00E+00	-	0.00E+00
lead	1.42E-04					-	2.83E-08	-	5.67E-08
mercury	2.05E-03					-	4.09E-07	-	8.19E-07
nickel	8.95E-05					-	1.79E-08	-	3.58E-08
selenium	1.34E-04					-	2.68E-08	-	5.36E-08
thallium	2.89E-07					-	5.79E-11	-	1.16E-10
vanadium	0.00E+00					-	0.00E+00	-	0.00E+00
zinc	2.81E-05					-	5.63E-09	-	1.13E-08
dioxins and furans as PCDD and PCDF	1.70E-08					-	3.40E-12	-	6.80E-12
PAHs as benzo(a)pyrene	2.53E-08					2.10E-12	-	8.69E-13	-
polychlorinated biphenyls (PCBs)	2.70E-09					-	5.41E-13	-	1.08E-12
hexachlorobenzene	2.79E-06					-	5.59E-10	-	1.12E-09

CoPC	Oral Cancer Slope Factor (CSF) $(mg/kg/day)^{-1}$	Background Adjusted Oral Reference Dose (RfD) mg/kg/day	Adult Non-Threshold Compounds (Carcinogens): Incremental Lifetime Cancer Risk (ILCR) (unitless)	Adult Threshold Compounds (Non-carcinogens): Hazard Quotient (HQ)	Child Non-Threshold Compounds (Carcinogens): Incremental Lifetime Cancer Risk (ILCR) (unitless)	Child Threshold Compounds (Non-carcinogens): Hazard Quotient (HQ)
antimony	-	6.00E-03	-	4.24E-09	-	8.48E-09
arsenic	-	1.00E-03	-	7.30E-06	-	1.46E-05
cadmium	-	3.20E-04	-	1.57E-05	-	3.15E-05
chromium (total)	-	9.00E-04	-	9.76E-07	-	1.95E-06
cobalt	-	1.40E-03	-	0.00E+00	-	0.00E+00
copper	-	1.40E-01	-	0.00E+00	-	0.00E+00
lead	-	3.50E-03	-	8.10E-06	-	1.62E-05
mercury	-	3.60E-04	-	1.14E-03	-	2.27E-03
nickel	-	1.20E-02	-	1.49E-06	-	2.98E-06
selenium	-	2.40E-03	-	1.12E-05	-	2.23E-05
thallium	-	1.00E-05	-	5.79E-06	-	1.16E-05
vanadium	-	1.00E-02	-	0.00E+00	-	0.00E+00
zinc	-	5.00E-02	-	1.13E-07	-	2.25E-07
dioxins and furans as PCDD and PCDF	-	9.89E-10	-	3.44E-03	-	6.87E-03
PAHs as benzo(a)pyrene	0.5	-	1.05E-12	-	4.35E-13	-
polychlorinated biphenyls (PCBs)	-	2.00E-05	-	2.70E-08	-	5.41E-08
hexachlorobenzene	-	1.60E-04	-	3.49E-06	-	6.99E-06
		Total	**1.05E-12**	**4.63E-03**	**4.35E-13**	**9.26E-03**

Health Risk Calculations - Ingestion of Homegrown Beef

Site	Energy from Waste Facility
Address	Honeycomb Drive, Eastern Creek
Client	Dial-A-Dump Industries
Scenario:	Ingestion of Homegrown Beef by Off-site Residents (Adult and Child)

Concentration in Beef

$$A_{beef} = [\Sigma(F_i \times Qpi \times Pi) + Qs \times Cs \times Bs] \times Ba_{beef} \times MF$$

Parameter	Description and Units	Adopted Value	Notes
A_{beef}	Concentration of CoPC in beef through ingestion of contaminated feed items (plant) and soil (mg CoPC/kg FW tissue)	See model below	Calculated using above equation.
F_i	Fraction of plant type (i) grown on contaminated soil and ingested by the animal (cattle) (unitless)	1	Recommended by HHRAP (US EPA, 2005). Assumed 100% of the plant material eaten by cattle were grown on soil contaminated by emission sources.
Qp_i	Quantity of plant type (i) eaten by the animal (cattle) per day (kg DW plant/day)	11.8	Recommended by HHRAP (US EPA, 2005). Sum of beef ingestion rates for forage (8.8 kg DW/day), silage (2.5 kg DW/day) and grain (0.47 kg DW/day).
P_i	Concentration of CoPC in each plant type (i) eaten by the animal (cattle) (mg/kg DW)	See home-grown produce model	Refer to C_p and C_{rp} (mg/kg plant - wet weight). Although C_p and C_{rp} are presented as a wet weight, this is unlikely to affected the outcome of the
Qs	Quantity of soil eaten by the animal (cattle) each day (kg/day)	0.5	Recommended by HHRAP (US EPA, 2005).
Cs	Average soil concentration over exposure duration (mg CoPC/kg soil)	See dust-deposition model	Refer to C_s Soil-Plant Root Zone (mg/kg)
Bs	Soil bioavailability factor (unitless)	1	Default value recommended by HHRAP (US EPA, 2005).
Ba_{beef}	CoPC biotransfer factor for beef (day/kg FW tissue)	See model below	The highest biotransfer factor for beef recommended by the HHRAP Database (US EPA, 2005) or published in RAIS (2017) was conservatively selected in the HHRA. RAIS values were adopted for all metals. HHRAP Database values were adopted for dioxins and furans (value for 2,3,7,8-TCDD adopted for dioxins and furans).
MF	Metabolism factor (unitless)	1	Default value recommended by HHRAP (US EPA, 2005).

CoPC	Concentration of CoPC in Plant (mg/kg DW) (P_i)	Cs (mg/kg) - Soil-Plant Root Zone	CoPC biotransfer factor for beef Ba_{beef} (day/kg FW tissue)	Concentration of CoPC in beef through ingestion of contaminated feed items (plant) and soil A_{beef} (mg CoPC/kg FW tissue)
antimony	1.48E-03	2.83E-04	0.001	1.76E-05
arsenic	2.55E-03	4.89E-04	0.002	6.06E-05
cadmium	1.23E-02	2.30E-03	0.00055	8.05E-05
chromium (total)	9.28E-03	1.78E-03	0.0055	6.06E-04
cobalt	5.64E-04	1.08E-04	0.02	1.34E-04
copper	1.40E-03	2.63E-04	0.01	1.66E-04
lead	1.74E-02	3.32E-03	0.0004	8.24E-05
mercury	1.25E-02	2.30E-03	0.25	3.72E-02
nickel	2.19E-02	4.19E-03	0.006	1.56E-03
selenium	2.19E-04	4.19E-05	0.015	3.89E-05
thallium	8.43E-05	1.62E-05	0.04	4.00E-05
vanadium	5.99E-04	1.15E-04	0.0025	1.78E-05
zinc	3.28E-03	5.98E-04	0.1	3.89E-03
dioxins and furans as PCDD and PCDF	8.38E-09	1.04E-09	2.61	2.59E-07
PAHs as benzo(a)pyrene	4.22E-05	7.37E-07	0.0337	1.67E-05
polychlorinated biphenyls (PCBs)	1.35E-09	4.17E-11	0.315	5.00E-09
hexachlorobenzene	6.94E-07	4.53E-08	0.0134	1.10E-07

Ingestion of Beef

$$Intake\ Factor = \frac{IR \times FI \times ME \times EF \times ED}{BW \times AT}$$

$$Daily\ Intake\ = Abeef\ \times Intake\ Factor$$

Parameter	Description and Units	Adopted Value		Notes
		Adult	Child	
Intake Factor	Intake factor (kg/kg/day)	See model below		-
IR	Ingestion rate (kg/day)	0.16	0.06	enHealth (2012b). Suggested (average) values for intake of total meat. Value for >19 years adopted for an adult (160 g/day) and 2-3 years adopted for a child (60 g/day).
FI	Fraction ingested from home-grown source (unitess)	0.01		Assumed less than 1% of beef sourced from adjacent site ingested as a conservative estimate
ME	Matrix effect (unitless)	1		Assumed 100% bioavailability
EF	Exposure frequency (days/year)	365	365	ASC NEPM (2013) - low to medium density residential
ED	Exposure duration (years)	29	6	ASC NEPM (2013) - low to medium density residential
BW	Body weight (kg)	70	15	ASC NEPM (2013) - low to medium density residential
AT	Averaging time - Non-threshold (days)	25550	25550	ASC NEPM (2013) - low to medium density residential. Based on a lifetime exposure of 70 years.
	Averaging time -Threshold (days)	10585	2190	ASC NEPM (2013) - low to medium density residential. Equal to exposure duration.

		Adult Intake Factor (kg/kg/day)		Child Intake Factor (kg/kg/day)		Adult Daily Intake (mg/kg/day)		Child Daily Intake (mg/kg/day)	
CoPC	Concentration of CoPC in beef through ingestion of contaminated feed items (plant) and soil A_{beef} (mg CoPC/kg FW	Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)	Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)	Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)	Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)
antimony	1.76E-05					-	4.01E-10	-	7.02E-10
arsenic	6.06E-05					-	1.39E-09	-	2.42E-09
cadmium	8.05E-05					-	1.84E-09	-	3.22E-09
chromium (total)	6.06E-04					-	1.38E-08	-	2.42E-08
cobalt	1.34E-04					-	3.06E-09	-	5.36E-09
copper	1.66E-04					-	3.79E-09	-	6.64E-09
lead	8.24E-05					-	1.88E-09	-	3.29E-09
mercury	3.72E-02					-	8.50E-07	-	1.49E-06
nickel	1.56E-03	9.47E-06	2.29E-05	3.43E-06	4.00E-05	-	3.57E-08	-	6.24E-08
selenium	3.89E-05					-	8.90E-10	-	1.56E-09
thallium	4.00E-05					-	9.15E-10	-	1.60E-09
vanadium	1.78E-05					-	4.06E-10	-	7.11E-10
zinc	3.89E-03					-	8.88E-08	-	1.55E-07
dioxins and furans as PCDD and PCDF	2.59E-07					-	5.92E-12	-	1.04E-11
PAHs as benzo(a)pyrene	1.67E-05					1.58E-10	-	5.74E-11	-
polychlorinated biphenyls (PCBs)	5.00E-09					-	1.14E-13	-	2.00E-13
hexachlorobenzene	1.10E-07					-	2.51E-12	-	4.39E-12

			Adult Non-Threshold Compounds (Carcinogens)	Adult Threshold Compounds (Non-carcinogens)	Child Non-Threshold Compounds (Carcinogens)	Child Threshold Compounds (Non-carcinogens)
CoPC	Oral Cancer Slope Factor (CSF) $(mg/kg/day)^{-1}$	Background Adjusted Oral Reference Dose (RfD) mg/kg/day	Incremental Lifetime Cancer Risk (ILCR) (unitless)	Hazard Quotient (HQ)	Incremental Lifetime Cancer Risk (ILCR) (unitless)	Hazard Quotient (HQ)
antimony	-	6.00E-03	-	6.69E-08	-	1.17E-07
arsenic	-	1.00E-03	-	1.39E-06	-	2.42E-06
cadmium	-	3.20E-04	-	5.75E-06	-	1.01E-05
chromium (total)	-	9.00E-04	-	1.54E-05	-	2.69E-05
cobalt	-	1.40E-03	-	2.19E-06	-	3.83E-06
copper	-	1.40E-01	-	2.71E-08	-	4.74E-08
lead	-	3.50E-03	-	5.38E-07	-	9.41E-07
mercury	-	3.60E-04	-	2.36E-03	-	4.13E-03
nickel	-	1.20E-02	-	2.97E-06	-	5.20E-06
selenium	-	2.40E-03	-	3.71E-07	-	6.49E-07
thallium	-	1.00E-05	-	9.15E-05	-	1.60E-04
vanadium	-	1.00E-02	-	4.06E-08	-	7.11E-08
zinc	-	5.00E-02	-	1.78E-06	-	3.11E-06
dioxins and furans as PCDD and PCDF	-	9.89E-10	-	5.99E-03	-	1.05E-02
PAHs as benzo(a)pyrene	0.5	-	7.92E-11	-	2.87E-11	-
polychlorinated biphenyls (PCBs)	-	2.00E-05	-	5.72E-09	-	1.00E-08
hexachlorobenzene	-	1.60E-04	-	1.57E-08	-	2.74E-08
		Total	**7.92E-11**	**8.47E-03**	**2.87E-11**	**1.48E-02**

Health Risk Calculations - Ingestion of Breastmilk

Site Energy from Waste Facility
Address Honeycomb Drive, Eastern Creek
Client Dial-A-Dump Industries
Scenario: Ingestion of Breastmilk by Off-site Residents (Child)

Concentration in Breastmilk

$$C_{milk\ fat} = \frac{m \times h \times f_1}{0.693 \times f_2}$$

Parameter	Description and Units	Adopted Value	Notes
$C_{milk\ fat}$	Concentration of CoPC in milk fat (mg/kg)	See model below	-
m	Average maternal intake (mg/kg/day)	See model below	The potential maternal intake is a highly variable parameter in the above equation. It can be assumed that the calculations undertaken to calculate adult intake of each CoPC via inhalation and ingestion are relevant for a mother who may be breastfeeding an infant.
h	Half-life of chemical in body, adults (days)	See model below	Value from NHMRC (2002) for dioxins and furans. Value from HSDB online database for PAHs (current to 2010). Value from WHO (2011), NHMRC (2016) or the HSDB online database for most metals. For mercury, the biological half-life is stated to be 'many years', which was assumed to be 10 years. For copper a study by Johnson et al (1992) was used and for vanadium a study by Barceloux (1999) was used. For PCBs, a study by Ritter et al (2011) was used.
f_1	Fraction of ingested chemical stored in fat (unitless)	0.9	No data is available that is specific to the fraction of organic chemicals that may be stored as fat and hence available data for dioxins has been adopted. The fraction of ingested organic chemicals which is stored as fat is recommended to be 0.9 (US EPA, 1998).
f_2	Fraction of mothers weight that is fat (unitless)	0.35	The recommended fraction of mother's body weight which is fat is 0.35 (for females in south-eastern urban areas of Australia aged 31 to 45 years (DEH, 2005)).

CoPC	Adult intake from air, soil (ingestion and dermal contact), home-grown, produce, eggs and beef (m) (mg/kg/day)	Half-life of chemical in body, adults (h) (days)	Concentration of CoPC in milk fat ($C_{milk\ fat}$) (mg/kg)
antimony	7.83E-07	40	1.16E-04
arsenic	1.36E-06	60	3.02E-04
cadmium	6.43E-06	5475	1.31E-01
chromium (total)	4.92E-06	83.4	1.52E-03
cobalt	3.01E-07	1	1.12E-06
copper	7.34E-07	33	8.99E-05
lead	9.18E-06	10950	3.73E-01
mercury	7.72E-06	3650	1.04E-01
nickel	1.16E-05	1.8	7.78E-05
selenium	1.43E-07	34	1.80E-05
thallium	4.56E-08	30	5.07E-06
vanadium	3.17E-07	1.2	1.41E-06
zinc	1.77E-06	243.8	1.60E-03
dioxins and furans as PCDD and PCDF	1.38E-11	2555	1.30E-07
PAHs as benzo(a)pyrene	9.39E-09	5.5	1.92E-07
polychlorinated biphenyls (PCBs)	1.37E-12	5657.5	2.87E-08
hexachlorobenzene	9.30E-10	150	5.18E-07

Daily Intake from Air

$$Intake\ Factor = \frac{InhR \times ET \times FI \times EF \times ED}{BW \times AT}$$

Parameter	Description and Units	Adopted Value (Adult)	Notes
Intake Factor	Intake factor (m^3/kg/day)	See model below	-
InhR	Inhalation Rate (m^3/hour)	1.34	Inhalation rate assuming 20 hours indoors at 1.17 m^3/hour and 4 hours outdoors at 2.2 m^3/hour.
ET	Exposure time (hours/day)	24	ASC NEPM (2013) - low to medium density residential.
FI	Fraction inhaled from contamination source (unitless)	1	Assumed intake from contamination source for the whole ET.
EF	Exposure frequency (days/year)	365	ASC NEPM (2013) - low to medium density residential
ED	Exposure duration (years)	29	ASC NEPM (2013) - low to medium density residential
BW	Body weight (kg)	70	ASC NEPM (2013) - low to medium density residential
AT	Averaging time - Non-threshold (days)	25550	ASC NEPM (2013) - low to medium density residential. Based on a lifetime exposure of 70 years.
	Averaging time -Threshold (days)	10585	ASC NEPM (2013) - low to medium density residential. Equal to exposure duration.

CoPC	Grid Maximum GLC (mg/m^3)	Non-Threshold Slope Factor (mg/kg/day)$^{-1}$ (a)	Background Adjusted Oral Reference Dose (RfD) mg/kg/day (b)	Adult Intake Factor (m^3/kg/day)		Daily Intake from Air (mg/kg/day)
				Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)	
antimony	1.10E-07	-	6.00E-03	0.19	0.46	5.05E-08
arsenic	1.90E-07	-	1.00E-03			8.73E-08
cadmium	9.30E-07	-	3.20E-04			4.27E-07
chromium (total)	7.11E-07	-	9.00E-04			3.27E-07
cobalt	4.30E-08	-	1.40E-03			1.98E-08
copper	1.06E-07	-	1.40E-01			4.87E-08
lead	1.30E-06	-	3.50E-03			5.97E-07
mercury	9.30E-07	-	3.60E-04			4.27E-07
nickel	1.70E-06	-	1.20E-02			7.81E-07
selenium	1.60E-08	-	2.40E-03			7.35E-09
thallium	6.49E-09	-	1.00E-05			2.98E-09
vanadium	4.60E-08	-	1.00E-02			2.11E-08
zinc	2.40E-07	-	5.00E-02			1.10E-07
dioxins and furans as PCDD and PCDF	6.50E-13	-	9.89E-10			2.99E-13
PAHs as benzo(a)pyrene	3.25E-09	0.5	-			6.19E-10
polychlorinated biphenyls (PCBs)	1.04E-13	-	2.00E-05			4.78E-14
hexachlorobenzene	5.33E-11	-	1.60E-04			2.45E-11

(a) WHO (2011) Guidelines for Drinking Water Quality. Fourth Edition. World Health Organization, Switzerland.

(b) DEH (2005) National Dioxins Program, Technical Report No. 12, Human Health Risk Assessment of Dioxins in Australia. Office of Chemical Safety, Australian Government Department of the Environment and Heritage, Canberra.

Ingestion of Breastmilk

$$Intake\ Factor = \frac{IR \times FM \times Ab \times EF \times ED}{BW \times AT}$$

$$Daily\ Intake\ = Cmilk_{fat} \times Intake\ Factor$$

Parameter	Description and Units	Adopted Value (Child)	Notes
Intake Factor	Intake factor (kg/kg/day)	See model below	-
IR	Ingestion rate (kg/day)	0.85	enHealth (2012b). Suggested intake of breastmilk 850 mL/day for an infant less than 6-months of age. High end range of average intake.
FM	Fraction of Fat/Lipids in Milk (unitess)	0.037	DEH (2005)
Ab	Absorption Following Ingestion (unitless)	0.9	DEH (2005)
EF	Exposure frequency (days/year)	365	ASC NEPM (2013) - low to medium density residential
ED	Exposure duration (years)	0.5	Exposure time as an infant
BW	Body weight (kg)	6	Average weight of a 6-month old infant
AT	Averaging time - Non-threshold (days)	25550	ASC NEPM (2013) - low to medium density residential
	Averaging time -Threshold (days)	365	ASC NEPM (2013) - low to medium density residential

CoPC	Concentration of CoPC in milk fat (Cmilk fat) (mg/kg)	Child Intake Factor (kg/kg/day)		Child Daily Intake (mg/kg/day)	
		Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)	Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)
antimony	1.16E-04	3.37E-05	2.36E-03	-	2.74E-07
arsenic	3.02E-04			-	7.12E-07
cadmium	1.31E-01			-	3.08E-04
chromium (total)	1.52E-03			-	3.59E-06
cobalt	1.12E-06			-	2.64E-09
copper	8.99E-05			-	2.12E-07
lead	3.73E-01			-	8.80E-04
mercury	1.04E-01			-	2.46E-04
nickel	7.78E-05			-	1.83E-07
selenium	1.80E-05			-	4.25E-08
thallium	5.07E-06			-	1.20E-08
vanadium	1.41E-06			-	3.33E-09
zinc	1.60E-03			-	3.78E-06
dioxins and furans as PCDD and PCDF	1.30E-07			-	3.07E-10
PAHs as benzo(a)pyrene	1.92E-07			6.46E-12	-
polychlorinated biphenyls (PCBs)	2.87E-08			-	6.78E-11
hexachlorobenzene	5.18E-07			-	1.22E-09

Risk Estimate for Resident - Multiple Pathway (Scenario 2 - Grid Maximum)

CoPC	Oral Cancer Slope Factor (CSF) (mg/kg/day)$^{-1}$	Background Adjusted Oral Reference Dose (RfD) mg/kg/day	Child Non-Threshold Compounds (Carcinogens) Incremental Lifetime Cancer Risk (ILCR) (unitless)	Child Threshold Compounds (Non-carcinogens) Hazard Quotient (HQ)
antimony	-			
arsenic	-	1.00E-03	-	7.12E-04
cadmium	-	3.20E-04	-	9.62E-01
chromium (total)	-	9.00E-04	-	3.99E-03
cobalt	-	1.40E-03	-	1.88E-06
copper	-	1.40E-01	-	1.51E-06
lead	-	3.50E-03	-	2.51E-01
mercury	-	3.60E-04	-	6.85E-01
nickel	-	1.20E-02	-	1.53E-05
selenium	-	2.40E-03	-	1.77E-05
thallium	-	1.00E-05	-	1.20E-03
vanadium	-	1.00E-02	-	3.33E-07
zinc	-	5.00E-02	-	7.56E-05
dioxins and furans as PCDD and PCDF	-	9.89E-10	-	3.11E-01
PAHs as benzo(a)pyrene	0.5	-	3.23E-12	-
polychlorinated biphenyls (PCBs)	-	2.00E-05	-	3.39002E-06
hexachlorobenzene	-	1.60E-04	-	7.63388E-06
		Total	**3.23E-12**	**2.22E+00**

Health Risk Calculations - Cumulative Risk (Pathways Combined)
Site Energy from Waste Facility
Address Honeycomb Drive, Eastern Creek
Client Dial-A-Dump Industries
Scenario: Cumulative Risk to Residents

Exposure Pathway	Threshold Compounds (Non-carcinogens) - Hazard Index (HI)		Non-Threshold Compounds (Carcinogens) - Incremental Lifetime Cancer Risk (ILCR) (unitless)
	Adult	Child	
Inhalation of Air	3.72E-01	3.72E-01	1.13E-06
Incidental Ingestion of Soil	2.23E-04	2.08E-03	4.79E-12
Dermal Contact with Soil	6.64E-05	1.33E-04	8.74E-12
Ingestion of Home-grown Produce	5.37E-02	5.37E-02	6.33E-09
Ingestion of Eggs	4.63E-03	4.63E-03	1.48E-12
Ingestion of Beef	8.47E-03	8.47E-03	1.08E-10
Total	**4.39E-01**	**4.41E-01**	**1.14E-06**

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General Information:	
Site:	Energy from Waste Facility
Address:	Honeycomb Drive, Eastern Creek
Client:	Dial-A-Dump Industries
Scenario:	Scenario 2 Grid Maximum - Direct Contact with Soil by Off-site Residents (Adult and Child)

Receptor:
Residential (High Density/Minimal Soil Access)

Exposure Pathways to Include:

Enter "x" in box by clicking the select buttons.

Soil Pathways

x	Incidental Ingestion of Soil
x	Dermal Contact with Soil
	Inhalation of Surface Soil-Derived Dust in Indoor Air
	Inhalation of Surface Soil-Derived Dust in Outdoor Air
	Inhalation of Surface Soil-Derived Vapours in Outdoor Air
	Inhalation of Soil-Derived Vapours From Excavation (USEPA 2002 method)
	Inhalation of Subsurface Soil-Derived Vapours in Indoor Air
	Inhalation of Subsurface Soil-Derived Vapours in Outdoor Air
	Incidental Ingestion of Lead in Soil (Adult Lead Model)
	Inhalation of Lead in Soil/Dust Indoors (Adult Lead Model)
	Inhalation of Lead in Dust Outdoors (Adult Lead Model)

Chemicals for Quantitative Assessment:	Chemical Concentrations
	Soil (mg/kg)
Antimony	4.25E-03
Arsenic, Inorganic	7.33E-03
Cadmium	3.46E-02
Chromium(VI)	2.67E-02
Cobalt	1.62E-03
Copper	3.95E-03
Lead	4.98E-02
Mercury (elemental)	3.46E-02
Nickel	6.28E-02
Selenium	6.28E-04
Thallium	2.42E-04
Vanadium	1.72E-03
Zinc (Metallic)	8.97E-03
Dioxins and Furans as PCDD and PCDF	1.56E-08
Benzo(a)pyrene	1.10E-05
Polychlorinated biphenyls	6.26E-10
Hexachlorobenzene (HCB)	6.80E-07

Exposure Parameters:		Exposure Parameters (Adjust for site-specific conditions if required)		Reference (Refer to Exposure Parameter Table in the Report for Justification)	
		Adult	Child	Adult	Child
General receptor parameters:	**Units**				
Body weight	kg	70	15	NEPC (2013)	NEPC (2013)
Exposure duration	yr	29	6	NEPC (2013)	NEPC (2013)
Averaging time (carcinogens)	yr	70	70	NEPC (2013)	NEPC (2013)
Averaging time (non-carcinogens)	yr	29	6	NEPC (2013)	NEPC (2013)
Incidental Soil Ingestion					
Daily soil ingestion rate	mg/day	50	100	NEPC (2013)	NEPC (2013)
Exposure frequency for soil ingestion	days/yr	365	365	NEPC (2013)	NEPC (2013)
Dermal Contact With Soil					
Exposed skin surface area for soil contact	cm2	6300	2700	NEPC (2013). Assumes 31.5% of total body surface area (20,000 cm2)	NEPC (2013). Assumes 44.3% of total body surface area (6,100 cm2)
Soil to skin adherence factor	mg/cm2	0.5	0.5	NEPC (2013)	NEPC (2013)
Exposure frequency for dermal contact with soil	days/yr	365	365	NEPC (2013)	NEPC (2013)
Indoor Inhalation					
Exposure time (indoor air)	hrs/day				
Exposure frequency (indoor air)	days/yr				
Particulate emission factor (indoor air)	m3/kg				
Lung Retention Factor (dust inhalation)	unitless				
Outdoor Inhalation					
Exposure time (outdoor air)	hrs/day				
Exposure frequency (outdoor air)	days/yr				
Particulate emission factor (outdoor air)	m3/kg				
Lung Retention Factor (dust inhalation)	unitless				
Potable Water Ingestion					
Potable water intake rate	L/day				
Exposure frequency for potable water intake	days/yr				

Health Risk Calculations - Incidental Soil Ingestion

Energy from Waste Facility

Honeycomb Drive, Eastern Creek

Scenario 2 Grid Maximum - Direct Contact with Soil by Off-site Residents (Adult and Child) Scenario

Chemical	Soil Concentration (mg/kg)	Oral Soil Bioavailability Factor (unitless)	Threshold Intake and Risk Calculations: Oral RfD (Background Corrected) (mg/kg/day)	Adult Intake Factor (threshold) (kg/kg/day)	Adult Intake (threshold) (mg/kg/day)	Hazard Index (Adult) (unitless)	Child Intake Factor (threshold) (kg/kg/day)	Child Intake (threshold) (mg/kg/day)	Hazard Index (Child) (unitless)
Antimony	4.25E-03	2.00E+00	6.00E-03	1.43E-06	6.07E-09	1.01E-06	1.33E-05	5.66E-08	9.44E-06
Arsenic, Inorganic	7.33E-03	1.00E+00	1.00E-03	7.14E-07	5.24E-09	5.24E-06	6.67E-06	4.89E-08	4.89E-05
Cadmium	3.46E-02	1.00E+00	3.20E-04	7.14E-07	2.47E-08	7.72E-05	6.67E-06	2.30E-07	7.20E-04
Chromium(VI)	2.67E-02	1.00E+00	9.00E-04	7.14E-07	1.91E-08	2.12E-05	6.67E-06	1.78E-07	1.98E-04
Cobalt	1.62E-03	1.00E+00	1.12E-03	7.14E-07	1.16E-09	1.03E-06	6.67E-06	1.08E-08	9.65E-06
Copper	3.95E-03	1.00E+00	4.20E-02	7.14E-07	2.82E-09	6.71E-08	6.67E-06	2.63E-08	6.26E-07
Lead	4.98E-02	1.00E+00	3.50E-03	7.14E-07	3.56E-08	1.02E-05	6.67E-06	3.32E-07	9.48E-05
Mercury (elemental)	3.46E-02	1.00E+00	3.60E-04	7.14E-07	2.47E-08	6.86E-05	6.67E-06	2.30E-07	6.40E-04
Nickel	6.28E-02	1.00E+00	4.80E-03	7.14E-07	4.49E-08	9.35E-06	6.67E-06	4.19E-07	8.73E-05
Selenium	6.28E-04	1.00E+00	2.40E-03	7.14E-07	4.49E-10	1.87E-07	6.67E-06	4.19E-09	1.75E-06
Thallium	2.42E-04	1.00E+00	1.00E-05	7.14E-07	1.73E-10	1.73E-05	6.67E-06	1.62E-09	1.62E-04
Vanadium	1.72E-03	1.00E+00	1.00E-02	7.14E-07	1.23E-09	1.23E-07	6.67E-06	1.15E-08	1.15E-06
Zinc (Metallic)	8.97E-03	1.00E+00	5.00E-02	7.14E-07	6.40E-09	1.28E-07	6.67E-06	5.98E-08	1.20E-06
Dioxins and Furans as PCDD and PCDF	1.56E-08	1.00E+00	9.89E-10	7.14E-07	1.11E-14	1.12E-05	6.67E-06	1.04E-13	1.05E-04
Benzo(a)pyrene	1.10E-05	1.00E+00	-	-	-	-	-	-	-
Polychlorinated biphenyls	6.26E-10	1.00E+00	2.00E-05	7.14E-07	4.47E-16	2.24E-11	6.67E-06	4.17E-15	2.09E-10
Hexachlorobenzene (HCB)	6.80E-07	1.00E+00	1.60E-04	7.14E-07	4.86E-13	3.04E-09	6.67E-06	4.53E-12	2.83E-08
TOTAL						**2.23E-04**			**2.08E-03**

Chemical	Non-Threshold Intake and Risk Calculations: Oral CSF (mg/kg/day)-1	Adult Intake Factor (non-threshold) (kg/kg/day)	Child Intake Factor (non-threshold) (kg/kg/day)	Lifetime Intake Factor (non-threshold) (kg/kg/day)	Lifetime Intake (non-threshold) (mg/kg/day)	Lifetime Excess Cancer Risk (unitless)
Antimony	-	-	-	-	-	-
Arsenic, Inorganic	-	-	-	-	-	-
Cadmium	-	-	-	-	-	-
Chromium(VI)	-	-	-	-	-	-
Cobalt	-	-	-	-	-	-
Copper	-	-	-	-	-	-
Lead	-	-	-	-	-	-
Mercury (elemental)	-	-	-	-	-	-
Nickel	-	-	-	-	-	-
Selenium	-	-	-	-	-	-
Thallium	-	-	-	-	-	-
Vanadium	-	-	-	-	-	-
Zinc (Metallic)	-	-	-	-	-	-
Dioxins and Furans as PCDD and PCDF	-	-	-	-	-	-
Benzo(a)pyrene	5.00E-01	2.96E-07	5.71E-07	8.67E-07	9.58E-12	4.79E-12
Polychlorinated biphenyls	-	-	-	-	-	-
Hexachlorobenzene (HCB)	-	-	-	-	-	-
TOTAL						**4.79E-12**

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Health Risk Calculations - Dermal Contact with Soil
Energy from Waste Facility
Honeycomb Drive, Eastern Creek
Scenario 2 Grid Maximum - Direct Contact with Soil by Off-site Residents (Adult and Child) Scenario

Chemical	Soil Concentration	Dermal Absorption Factor (DAF)	Threshold Intake and Risk Calculations							Non-Threshold Intake and Risk Calculations					
			Dermal RfD (Background Corrected)	Adult Intake Factor (threshold)	Adult Intake (threshold)	Hazard Index (Adult)	Child Intake Factor (threshold)	Child Intake (threshold)	Hazard Index (Child)	Dermal CSF	Adult Intake Factor (non-threshold)	Child Intake Factor (non-threshold)	Lifetime Intake Factor (non-threshold)	Lifetime Intake (non-threshold)	Lifetime Excess Cancer Risk
	(mg/kg)	(unitless)	(mg/kg/day)	(kg/kg/day)	(mg/kg/day)	(unitless)	(kg/kg/day)	(mg/kg/day)	(unitless)	(mg/kg/day)-1	(kg/kg/day)	(kg/kg/day)	(kg/kg/day)	(mg/kg/day)	(unitless)
Antimony	0.004246452	-	6.00E-03	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic, Inorganic	0.007330868	0.005	1.00E-03	2.25E-07	1.65E-09	1.65E-06	4.50E-07	3.30E-09	3.30E-06	-	-	-	-	-	-
Cadmium	0.034574154	-	3.20E-04	-	-	-	-	-	-	-	-	-	-	-	-
Chromium(VI)	0.026683787	-	2.25E-05	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt	0.001621112	0.001	1.12E-03	4.50E-08	7.30E-11	6.51E-08	9.00E-08	1.46E-10	1.30E-07	-	-	-	-	-	-
Copper	0.003945184	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead	0.049781043	-	3.50E-03	-	-	-	-	-	-	-	-	-	-	-	-
Mercury (elemental)	0.034574154	0.001	2.52E-05	4.50E-08	1.56E-09	6.17E-05	9.00E-08	3.11E-09	1.23E-04	-	-	-	-	-	-
Nickel	0.062836015	0.005	4.80E-03	2.25E-07	1.41E-08	2.95E-06	4.50E-07	2.83E-08	5.89E-06	-	-	-	-	-	-
Selenium	0.00062836	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium	0.000242449	-	1.00E-05	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium	0.001721535	-	2.60E-04	-	-	-	-	-	-	-	-	-	-	-	-
Zinc (Metallic)	0.008966326	0.001	5.00E-02	4.50E-08	4.03E-10	8.07E-09	9.00E-08	8.07E-10	1.61E-08	-	-	-	-	-	-
Dioxins and Furans as PCDD and PCDF	1.55653E-08	-	2.30E-09	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	1.10478E-05	0.06	-	-	-	-	-	-	-	5.00E-01	1.12E-06	4.63E-07	1.58E-06	1.75E-11	8.74E-12
Polychlorinated biphenyls	6.2623E-10	0.14	2.00E-05	6.30E-06	3.95E-15	1.97E-10	1.26E-05	7.89E-15	3.95E-10	-	-	-	-	-	-
Hexachlorobenzene (HCB)	6.80235E-07	0.1	1.60E-04	4.50E-06	3.06E-12	1.91E-08	9.00E-06	6.12E-12	3.83E-08	-	-	-	-	-	-
TOTAL						**6.64E-05**			**1.33E-04**						**8.74E-12**

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Summary of Estimated Health Risks
Energy from Waste Facility
Honeycomb Drive, Eastern Creek
Scenario 2 Grid Maximum - Direct Contact with Soil by Off-site Residents (Adult and Child) Scenario

Exposure Pathway	Threshold Risk Estimates		Non-Threshold Risk Estimates (Lifetime Exposure)
	Adult Exposure	Childhood Exposure	
SOIL EXPOSURE PATHWAYS			
Incidental Ingestion of Soil	2.2E-04	2.1E-03	4.8E-12
Dermal Contact with Soil	6.6E-05	1.3E-04	8.7E-12
Inhalation of Surface Soil-Derived Dust in Indoor Air	-	-	-
Inhalation of Surface Soil-Derived Dust in Outdoor Air	-	-	-
Inhalation of Surface Soil-Derived Vapours in Outdoor Air	-	-	-
Inhalation of Surface Soil-Derived Vapours from Excavation	-	-	-
Inhalation of Subsurface Soil-Derived Vapours in Indoor Air	-	-	-
Inhalation of Subsurface Soil-Derived Vapours in Outdoor Air	-	-	-
TOTAL	**2.9E-04**	**2.2E-03**	**1.4E-11**

Scenario 4 (IED Limits) – Maximum Annual Average Concentrations

Risk Estimate for Resident - Inhalation Pathway (Scenario 4 - Annual Average Maximum)

Health Risk Calculations - Inhalation of Vapour

Site Energy from Waste Facility
Address Honeycomb Drive, Eastern Creek
Client Dial-A-Dump Industries
Scenario: Inhalation of Vapour by Off-site Residents (Adult and Child)

$$Exposure\ Adjusted\ Air\ Concentration\left(\frac{\mu g}{m^3}\right) = \frac{Cair\left(\frac{\mu g}{m^3}\right) \times ET\left(\frac{h}{d}\right) \times EF\left(\frac{d}{y}\right) \times ED(y)}{AT(h)}$$

Parameter	Description and Units	Adopted Value		Notes
		Adult	Child	
Cair	Chemical concentration in air (µg/m^3)	See model below		Maximum annual average ground level concentration (GLC)
ET	Exposure time (hours/day)	24	24	ASC NEPM (2013) - low to medium density residential
EF	Exposure frequency (days/year)	365	365	ASC NEPM (2013) - low to medium density residential
ED	Exposure duration (years)	29	6	ASC NEPM (2013) - low to medium density residential
AT	Averaging time - Non-threshold (hours)	613200	613200	ASC NEPM (2013) - low to medium density residential
	Averaging time -Threshold (hours)	254040	52560	ASC NEPM (2013) - low to medium density residential

CoPC	Maximum Annual Average GLC (µg/m^3)	Reference Concentration (RfC) (µg/m^3)	Background Concentration (%)	Background Adjusted Reference Concentration (µg/m^3)	Inhalation Unit Risk (µg/m^3)$^{-1}$	Adult			
						Non-Threshold Compounds (Carcinogens)		Threshold Compounds (Non-carcinogens)	
						Exposure Adjusted Air Concentration (µg/m^3)	Incremental Lifetime Cancer Risk (ILCR) (unitless)	Exposure Adjusted Air Concentration (µg/m^3)	Hazard Quotient (HQ)
antimony	5.85E-05	21	0%	21	-	-	-	5.85E-05	2.79E-06
arsenic	3.90E-05	1	0%	1	-	-	-	3.90E-05	3.90E-05
beryllium	3.44E-08	0.02	0%	0.02	2.40E-03	1.43E-08	3.42E-11	3.44E-08	1.72E-06
cadmium	1.97E-04	0.005	20%	0.004	-	-	-	1.97E-04	4.93E-02
cobalt	3.90E-05	0.1	0%	0.1	-	-	-	3.90E-05	3.90E-04
copper	2.93E-04	490	70%	147	-	-	-	2.93E-04	1.99E-06
chromium VI	3.34E-04	0.1	0%	0.1	-	-	-	3.34E-04	3.34E-03
lead	4.29E-04	0.5	0%	0.5	-	-	-	4.29E-04	8.58E-04
molybdenum	1.08E-07	12	0%	12	-	-	-	1.08E-07	9.00E-09
manganese	6.63E-04	0.15	20%	0.12	-	-	-	6.63E-04	5.53E-03
mercury	2.46E-04	0.2	10%	0.18	-	-	-	2.46E-04	1.37E-03
nickel	5.85E-04	0.02	20%	0.016	-	-	-	5.85E-04	3.66E-02
selenium	1.04E-05	21	60%	8.4	-	-	-	1.04E-05	1.24E-06
silver	1.67E-06	17.5	0%	17.5	-	-	-	1.67E-06	9.54E-08
tin	1.64E-05	700	0%	700	-	-	-	1.64E-05	2.34E-08
thallium	2.46E-05	0.035	0%	0.035	-	-	-	2.46E-05	7.03E-04
vanadium	1.95E-05	1	0%	1	-	-	-	1.95E-05	1.95E-05
zinc	1.82E-04	1750	90%	175	-	-	-	1.82E-04	1.04E-06
dioxins and furans as PCDD and PCDF	4.92E-10	0.00000805	57%	3.4615E-06	-	-	-	4.92E-10	1.42E-04
PAHs as benzo(a)pyrene	2.46E-06	-	-	-	8.70E-02	1.02E-06	8.87E-08	-	-
PCBs	7.87E-11	0.5	0%	0.5	-	-	-	7.87E-11	1.57E-10
hexachlorobenzene	4.04E-08	0.16	0%	0.16	-	-	-	4.04E-08	2.53E-07
benzene	4.92E-02	30	20%	24	6.00E-06	2.04E-02	1.22E-07	4.92E-02	2.05E-03
						Total ILCR (Adult)	**2.11E-07**	**Hazard Index (∑HQ) (Adultl)**	**1.00E-01**

Notes:
Where ground level concentrations were not available for Scenario 4, AECOM has adopted ground level concentrations from Scenario 1 to determine representative risk estimates i.e. Be, Mo, Se, Ag, Sn, Zn, PAHs, PCBs and HCB.

Risk Estimate for Resident - Inhalation Pathway (Scenario 4 - Annual Average Maximum)

Child			
Non-Threshold Compounds (Carcinogens)		Threshold Compounds (Non-carcinogens)	
Exposure Adjusted Air Concentration (µg/m^3)	Incremental Lifetime Cancer Risk (ILCR) (unitless)	Exposure Adjusted Air Concentration (µg/m^3)	Hazard Quotient (HQ)
-	-	5.85E-05	2.79E-06
-	-	3.90E-05	3.90E-05
2.95E-09	7.08E-12	3.44E-08	1.72E-06
-	-	1.97E-04	4.93E-02
-	-	3.90E-05	3.90E-04
-	-	2.93E-04	1.99E-06
-	-	3.34E-04	3.34E-03
-	-	4.29E-04	8.58E-04
-	-	1.08E-07	9.00E-09
-	-	6.63E-04	5.53E-03
-	-	2.46E-04	1.37E-03
-	-	5.85E-04	3.66E-02
-	-	1.04E-05	1.24E-06
-	-	1.67E-06	9.54E-08
-	-	1.64E-05	2.34E-08
-	-	2.46E-05	7.03E-04
-	-	1.95E-05	1.95E-05
-	-	1.82E-04	1.04E-06
-	-	4.92E-10	1.42E-04
2.11E-07	1.83E-08	-	-
-	-	7.87E-11	1.57E-10
-	-	4.04E-08	2.53E-07
4.22E-03	2.53E-08	4.92E-02	2.05E-03
Total ILCR (Child)	**4.37E-08**	**Hazard Index (∑HQ) (Child)**	**1.00E-01**

Risk Estimate for Commercial Worker - Inhalation Pathway (Scenario 4 - Annual Average Maximum)

Health Risk Calculations - Inhalation of Vapour
Site Energy from Waste Facility
Address Honeycomb Drive, Eastern Creek
Client Dial-A-Dump Industries
Scenario: Inhalation of Vapour by Off-site Commercial Workers (Adult)

$$Exposure\ Adjusted\ Air\ Concentration\left(\frac{\mu g}{m^3}\right) = \frac{Cair\left(\frac{\mu g}{m^3}\right) \times ET\left(\frac{h}{d}\right) \times EF\left(\frac{d}{y}\right) \times ED(y)}{averaging\ time\ (h)}$$

Parameter	Description and Units	Adopted Value	Notes
Cair	Chemical concentration in air (µg/m³)	See model below	Maximum annual average ground level concentration (GLC)
ET	Exposure time (hours/day)	9	ASC NEPM (2013) - commercial/industrial.
EF	Exposure frequency (days/year)	240	ASC NEPM (2013) - commercial/industrial.
ED	Exposure duration (years)	30	ASC NEPM (2013) - commercial/industrial.
AT	Averaging time - Non-threshold (hours)	613200	ASC NEPM (2013) - commercial/industrial.
	Averaging time -Threshold (hours)	262800	ASC NEPM (2013) - commercial/industrial.

CoPC	Maximum Annual Average GLC (µg/m³)	Reference Concentration (RfC) (µg/m³)	Background Concentration (%)	Background Adjusted Reference Concentration (µg/m³)	Inhalation Unit Risk (µg/m³)⁻¹	Non-Threshold Compounds (Carcinogens)		Threshold Compounds (non-carcinogens)	
						Exposure Adjusted Air Concentration (µg/m³)	Incremental Lifetime Cancer Risk (ILCR) (unitless)	Exposure Adjusted Air Concentration (µg/m³)	Hazard Quotient (HQ)
antimony	7.72E-05	21	0%	21	-	-	-	1.90E-05	9.06E-07
arsenic	5.15E-05	1	0%	1	-	-	-	1.27E-05	1.27E-05
beryllium	4.54E-08	0.02	0%	0.02	2.40E-03	4.80E-09	1.15E-11	1.12E-08	5.60E-07
cadmium	2.60E-04	0.005	20%	0.004	-	-	-	6.41E-05	1.60E-02
cobalt	5.15E-05	0.1	0%	0.1	-	-	-	1.27E-05	1.27E-04
copper	3.86E-04	490	70%	147	-	-	-	9.52E-05	6.47E-07
chromium VI	4.40E-04	0.1	0%	0.1	-	-	-	1.08E-04	1.08E-03
lead	5.66E-04	0.5	0%	0.5	-	-	-	1.40E-04	2.79E-04
molybdenum	1.43E-07	12	0%	12	-	-	-	3.53E-08	2.94E-09
manganese	8.75E-04	0.15	20%	0.12	-	-	-	2.16E-04	1.80E-03
mercury	3.25E-04	0.2	10%	0.18	-	-	-	8.01E-05	4.45E-04
nickel	7.72E-04	0.02	20%	0.016	-	-	-	1.90E-04	1.19E-02
selenium	1.38E-05	21	60%	8.4	-	-	-	3.40E-06	4.05E-07
silver	2.21E-06	17.5	0%	17.5	-	-	-	5.45E-07	3.11E-08
tin	2.16E-05	700	0%	700	-	-	-	5.33E-06	7.61E-09
thallium	3.25E-05	0.035	0%	0.035	-	-	-	8.01E-06	2.29E-04
vanadium	2.57E-05	1	0%	1	-	-	-	6.34E-06	6.34E-06
zinc	2.40E-04	1750	90%	175	-	-	-	5.92E-05	3.38E-07
dioxins and furans as PCDD and PCDF	6.49E-10	0.00000805	57%	3.4615E-06	-	-	-	1.60E-10	4.62E-05
PAHs as benzo(a)pyrene	3.25E-06	-	-	-	8.70E-02	3.43E-07	2.99E-08	-	-
PCBs	1.04E-10	0.5	0%	0.5	-	-	-	2.56E-11	5.13E-11
hexachlorobenzene	5.33E-08	0.16	0%	0.16	-	-	-	1.31E-08	8.21E-08
benzene	6.49E-02	30	20%	24	6.00E-06	6.86E-03	4.11E-08	1.60E-02	6.67E-04
						Total ILCR (Adult)	**7.10E-08**	**Hazard Index (∑HQ) (Adultl)**	**3.26E-02**

Notes:
Where ground level concentrations were not available for Scenario 4, AECOM has adopted ground level concentrations from Scenario 1 to determine representative risk estimates i.e. Be, Mo, Se, Ag, Sn, Zn, PAHs, PCBs and HCB.

Potential Concentration in Soils Following Dust Deposition
Site Energy from Waste Facility
Address Honeycomb Drive, Eastern Creek
Client Dial-A-Dump Industries

Concentration in Soils

$$C_s = \frac{DR \times (1 - e^{-k \times t})}{d \times \rho \times k} \times 1000$$

Parameter	Description and Units	Adopted Value		Notes
C_s	Concentration of CoPC in soil (mg/kg)	See below		Calculated using above equation (Stevens, 1991).
DR	Particle deposition rate for accidental release (mg/m^2/year)	See below		Provided by Pacific Environment. Maximum modelled deposition rate for receptors combined.
k	Chemical-specific soil-loss constant (1/year) = ln(2)/$T^{0.5}$	See below		Calculated using equation ln(2)/$T^{0.5}$.
$T^{0.5}$	Chemical half-life in soil (years)	See below		Howard et al. (1991) for PAHs (benzo(a)pyrene) and hexachlorobenzene. NHMRC (2002) for dioxins and furans (surface soil). OEHHA (2000) for PCBs (value for Aroclor 1254 used). Conservative value adopted for heavy metals in the absense of published data.
t	Accumulation time (years)	25		Emissions may occur for the assumed lifetime of the EFW Facility.
d	Soil mixing depth (m)	0.01	0.15	It is assumed that the soil where deposition occurs is not well mixed (as would be the case in a garden or cultivated bed), and hence the mixing depth for depositied soils and dusts has been taken to be 1cm. For the assessment of potential plant uptake, a soil mixing zone of 15cm has been assumed within the root zone of plants.
ρ	Soil bulk-density (g/m^3)	1.60E+06		Sandy soils (representative of surface soils) typically have bulk densities between 1.3 g/cm^3 to 1.7 g/cm^3 (McKenzie et al., 2004). In general, bulk densities greater than 1.6 g/cm^3 tend to restrict root growth.
1000	Conversion from g to kg	-		

CoPC	Deposition Rate (total) (mg/m^2/year)	k (1/year)	$T^{0.5}$ (years)	C_s (mg/kg) - Surface Soil	C_s (mg/kg) - Soil-Plant Root Zone
antimony	1.03E-03	0.01	100	1.48E-03	9.85E-05
arsenic	6.85E-04	0.01	100	9.83E-04	6.55E-05
beryllium	0.00E+00	Not bioaccumulative (ATSDR, 2002)			
cadmium	3.45E-03	0.01	100	4.95E-03	3.30E-04
chromium (total)	5.86E-03	0.01	100	8.41E-03	5.60E-04
cobalt	6.85E-04	0.01	100	9.83E-04	6.55E-05
copper	5.14E-03	0.01	100	7.37E-03	4.92E-04
lead	7.53E-03	0.01	100	1.08E-02	7.20E-04
molybdenum	0.00E+00	Not bioaccumulative (NHMRC, 2015)			
manganese	0.00E+00	Not bioaccumulative (ATSDR, 2012)			
mercury	4.32E-03	0.01	100	6.20E-03	4.13E-04
nickel	1.03E-02	0.01	100	1.48E-02	9.85E-04
selenium	1.83E-04	0.01	100	2.63E-04	1.75E-05
silver	0.00E+00	Not bioaccumulative (ATSDR, 1990)			
tin	0.00E+00	Not bioaccumulative (NHMRC, 2015)			
thallium	4.32E-04	0.01	100	6.20E-04	4.13E-05
vanadium	3.42E-04	0.01	100	4.91E-04	3.27E-05
zinc	3.20E-03	0.01	100	4.59E-03	3.06E-04
dioxins and furans as PCDD and PCDF	8.64E-09	0.05	15	8.01E-09	5.34E-10
PAHs as benzo(a)pyrene	4.32E-05	0.48	1.45	5.65E-06	3.77E-07
polychlorinated biphenyls (PCBs)	1.38E-09	0.27	2.58	3.20E-10	2.13E-11
hexachlorobenzene	7.09E-07	0.12	5.70	3.47E-07	2.31E-08

Notes:
Where dust deposition rates were not available for Scenario 4, AECOM has adopted dust deposition rates from Scenario 1 to determine representative risk estimates i.e. Se, Zn, PAHs, PCBs and HCB.

For metals that were considered to be bioaccumulative and/or persistent, a conservative half-life value of 100 years was adopted in the absence of published data to account for the slow (or no) breakdown in the environment.

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OEHHA, 2000. Technical Support Document for Exposure Assessment and Stochastic Analysis - Appendix G. September 2000.
Paustenbach et.al., 1992. Recent developments on the hazards posed by 2, 3, 7, 8-tetrachlorodibenzo-p-dioxin in soil: Implications for setting risk-based cleanup levels at residential and industrial sites. Paustenbach DJ, Wenning RJ, Lau V, Harrington NW, Rennix DK, Parsons AH. Journal of Toxicology and Environmental Health, Part A Current Issues. 36(2):103-49

Health Risk Calculations - Ingestion of Home-grown Produce

Site	Energy from Waste Facility
Address	Honeycomb Drive, Eastern Creek
Client	Dial-A-Dump Industries
Scenario:	Ingestion of Homegrown Produce by Off-site Residents (Adult and Child)

Concentration in Home-grown Produce

Deposited Material on Aboveground Plants

$$C_p = \frac{DR \times F \times (1 - e^{-k \times t})}{Y \times k}$$

Parameter	Description and Units	Adopted Value	Notes
C_p	Concentration of CoPC in plant (mg/kg plant - wet weight)	See below	Calculated using above equation from HHRAP (Stevens, 1991).
DR	Particle deposition rate for accidental release ($mg/m^2/day$)	See below	Provided by Pacific Environment. Maximum modelled deposition rate for receptors combined.
F	Fraction for the surface area of plant (unitless)	0.051	For leafy aboveground crops, the surface area fraction (or plant interception fraction - how much of the depositing material remains on the plant) is estimated to be 0.051 (Stevens, 1991).
k	Chemical-specific loss constant for particles on plants (1/days) = $ln(2)/T^{0.5}$	See below	Calculated using equation $ln(2)/T^{0.5}$.
$T^{0.5}$	Chemical half-life on plant (days)	14	Weathering of particulates on plant surfaces does occur and in the absence of measured data, it is generally assumed that organics deposited onto the outer portion of plant surfaces have a weathering half-life of 14 days (Stevens, 1991). Conservative value adopted for heavy metals in the absense of published data.
t	Deposition time or length of growing season (days)	70	The growing season for typical aboveground plants varies, however it may be up to 70 days (i.e. tomatoes), which has been used in the calculation on concentrations during normal operations.
Y	Crop yield (kg/m^2)	2	Given that the residential areas surrounding the Site are typically urban low-density residential properties, the types of edible plant expected to be grown on the properties include tomatoes and beans. Corn, hay and wheat are not expected to be grown for human consumption in significant quantities in the area. For typical crops grown aboveground an average crop yield of 2 kg/m^2 has been adopted.

CoPC	DR ($mg/m^2/day$)	k (1/days)	C_p (mg/kg plant - wet weight)
antimony	1.03E-03	4.95E-02	5.14E-04
arsenic	6.85E-04	4.95E-02	3.42E-04
cadmium	3.45E-03	4.95E-02	1.72E-03
chromium (total)	5.86E-03	4.95E-02	2.92E-03
cobalt	6.85E-04	4.95E-02	3.42E-04
copper	5.14E-03	4.95E-02	2.56E-03
lead	7.53E-03	4.95E-02	3.76E-03
mercury	4.32E-03	4.95E-02	2.16E-03
nickel	1.03E-02	4.95E-02	5.14E-03
selenium	1.83E-04	4.95E-02	9.13E-05
thallium	4.32E-04	4.95E-02	2.16E-04
vanadium	3.42E-04	4.95E-02	1.71E-04
zinc	3.20E-03	4.95E-02	1.60E-03
dioxins and furans as PCDD and PCDF	8.64E-09	4.95E-02	4.31E-09
PAHs as benzo(a)pyrene	4.32E-05	4.95E-02	2.16E-05
polychlorinated biphenyls (PCBs)	1.38E-09	4.95E-02	6.89E-10
hexachlorobenzene	7.09E-07	4.95E-02	3.54E-07

Uptake of Chemicals via Roots

$$C_{rp} = C_s \times RUF$$

Parameter	Description and Units	Adopted Value	Notes
C_{rp}	Concentration of persistent CoPC in root of plant (mg/kg plant - wet weight)	See below	Calculated using above equation (US EPA, 2005).
C_s	Concentration of persistent CoPC in soil assuming 15 cm mixing depth within gardens (mg/kg)	See below	Refer to Dust Deposition Model.
RUF	Root uptake factor (unitless)	See below	RAIS (Accessed 2017). Soil to wet plant uptake factor adopted. Value for 2,3,7,8-TCDD conservatively selected for dioxins and furans.

CoPC	Cs (mg/kg) - Soil-Plant Root Zone	RUF (unitless)	C_{rp} (mg/kg plant - wet weight)
antimony	9.85E-05	1.00E-02	9.85E-07
arsenic	6.55E-05	1.00E-02	6.55E-07
cadmium	3.30E-04	1.38E-01	4.55E-05
chromium (total)	5.60E-04	1.87E-03	1.05E-06
cobalt	6.55E-05	5.00E-03	3.28E-07
copper	4.92E-04	1.00E-01	4.92E-05
lead	7.20E-04	1.12E-02	8.07E-06
mercury	4.13E-04	2.25E-01	9.30E-05
nickel	9.85E-04	1.50E-02	1.48E-05
selenium	1.75E-05	6.25E-03	1.09E-07
thallium	4.13E-05	1.00E-03	4.13E-08
vanadium	3.27E-05	1.37E-03	4.48E-08
zinc	3.06E-04	2.64E-01	8.08E-05
dioxins and furans as PCDD and PCDF	5.34E-10	8.76E-04	4.67E-13
PAHs as benzo(a)pyrene	3.77E-07	2.14E-03	8.06E-10
polychlorinated biphenyls (PCBs)	2.13E-11	5.87E-04	1.25E-14
hexachlorobenzene	2.31E-08	3.66E-03	8.47E-11

Ingestion of Home-grown Produce

Percentage of Fruit and Vegatable per produce group (Table 7, Schedule B7, ASC NEPM (2013)).

Produce Group	Adults (%)	Adult Consumption Rate (g/day)	Portion of Aboveground Plants (Green Vegetables and Tree Fruit)	Portion of Root Plants (Root Vegetables and Tuber Vegetables)	Children (%)	Child Consumption Rate (g/day)	Portion of Aboveground Plants (Green Vegetables and Tree Fruit)	Portion of Root Plants (Root Vegetables and Tuber Vegetables)
Green Vegetables	59	153.4	0.73	0.27	55	55	0.84	0.16
Root Vegetables	18	46.8			17	17		
Tuber Vegetables	23	59.8			28	28		
Tree Fruit	100	140			100	180		
Total Consumption		**400**				**280**		

$$Intake\ Factor = \frac{IR \times FI \times ME \times EF \times ED}{BW \times AT}$$

$$Daily\ Intake = Concentration\ in\ Produce \times Intake\ Factor$$

Parameter	Description and Units	Adopted Value		Notes
		Adult	Child	
Intake Factor	Intake factor (kg/kg/day)	See model below		-
IR	Ingestion rate (kg/day)	0.469	0.202	
FI	Fraction ingested from a home-grown source (FI)	0.1		10% from home-grown source, as per ASC NEPM (2013) - low to medium density residential
ME	Matrix Effect (unitless)	1		Assumed to be 100% bioavailable
EF	Exposure frequency (days/year)	365	365	ASC NEPM (2013) - low to medium density residential
ED	Exposure duration (years)	29	6	ASC NEPM (2013) - low to medium density residential
BW	Body weight (kg)	70	15	ASC NEPM (2013) - low to medium density residential
AT	Averaging time - Non-threshold (days)	25550	25550	ASC NEPM (2013) - low to medium density residential. Based on a lifetime exposure of 70 years.
	Averaging time -Threshold (days)	10585	2190	ASC NEPM (2013) - low to medium density residential. Equal to exposure duration.

			Adult Intake Factor (kg/kg/day)		Child Intake Factor (kg/kg/day)		Adult Daily Intake from Produce (mg/kg/day)		Child Daily Intake from Produce (mg/kg/day)	
CoPC	Adult Concentration in Produce (wet weight, mg/kg) (a)	Child Concentration in Produce (wet weight, mg/kg) (a)	Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)	Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)	Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)	Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)
antimony	3.77E-04	4.31E-04					-	2.53E-07	-	5.81E-07
arsenic	2.51E-04	2.87E-04					-	1.68E-07	-	3.86E-07
cadmium	1.27E-03	1.45E-03					-	8.54E-07	-	1.96E-06
chromium (total)	2.14E-03	2.45E-03					-	1.44E-06	-	3.30E-06
cobalt	2.51E-04	2.87E-04					-	1.68E-07	-	3.86E-07
copper	1.89E-03	2.16E-03					-	1.27E-06	-	2.91E-06
lead	2.76E-03	3.15E-03					-	1.85E-06	-	4.25E-06
mercury	1.61E-03	1.82E-03					-	1.08E-06	-	2.46E-06
nickel	3.77E-03	4.32E-03	2.78E-04	6.70E-04	1.15E-04	1.35E-03	-	2.53E-06	-	5.81E-06
selenium	6.70E-05	7.67E-05					-	4.49E-08	-	1.03E-07
thallium	1.58E-04	1.81E-04					-	1.06E-07	-	2.44E-07
vanadium	1.25E-04	1.43E-04					-	8.39E-08	-	1.93E-07
zinc	1.19E-03	1.35E-03					-	7.99E-07	-	1.82E-06
dioxins and furans as PCDD and PCDF	3.16E-09	3.62E-09					-	2.12E-12	-	4.87E-12
PAHs as benzo(a)pyrene	1.58E-05	1.81E-05					4.39E-09	-	2.09E-09	-
polychlorinated biphenyls (PCBs)	5.05E-10	5.78E-10					-	3.38E-13	-	7.78E-13
hexachlorobenzene	2.60E-07	2.97E-07					-	1.74E-10	-	4.00E-10

(a) Calculated based on portions of aboveground and root plants as presented above.

			Adult Non-Threshold Compounds (Carcinogens)	Adult Threshold Compounds (Non-carcinogens)	Child Non-Threshold Compounds (Carcinogens)	Child Threshold Compounds (Non-carcinogens)
CoPC	Oral Cancer Slope Factor (CSF) $(mg/kg/day)^{-1}$	Background Adjusted Oral Reference Dose (RfD) mg/kg/day	Incremental Lifetime Cancer Risk (ILCR) (unitless)	Hazard Quotient (HQ)	Incremental Lifetime Cancer Risk (ILCR) (unitless)	Hazard Quotient (HQ)
antimony	-	6.00E-03	-	4.21E-05	-	9.68E-05
arsenic	-	1.00E-03	-	1.68E-04	-	3.86E-04
cadmium	-	3.20E-04	-	2.67E-03	-	6.11E-03
chromium (total)	-	9.00E-04	-	1.60E-03	-	3.67E-03
cobalt	-	0.0014	-	1.20E-04	-	2.76E-04
copper	-	0.14	-	9.07E-06	-	2.08E-05
lead	-	3.50E-03	-	5.28E-04	-	1.21E-03
mercury	-	3.60E-04	-	2.99E-03	-	6.82E-03
nickel	-	0.012	-	2.11E-04	-	4.84E-04
selenium	-	2.40E-03	-	1.87E-05	-	4.30E-05
thallium	-	0.00001	-	1.06E-02	-	2.44E-02
vanadium	-	0.01	-	8.39E-06	-	1.93E-05
zinc	-	5.00E-02	-	1.60E-05	-	3.64E-05
dioxins and furans as PCDD and PCDF	-	9.89E-10	-	2.14E-03	-	4.93E-03
PAHs as benzo(a)pyrene	0.5	-	2.19E-09	-	1.04E-09	-
polychlorinated biphenyls (PCBs)	-	0.00002	-	1.69E-08	-	3.89E-08
hexachlorobenzene	-	0.00016	-	1.09E-06	-	2.50E-06
		Total	**2.19E-09**	**2.11E-02**	**1.04E-09**	**4.85E-02**

Health Risk Calculations - Ingestion of Poultry and Eggs
Site Energy from Waste Facility
Address Honeycomb Drive, Eastern Creek
Client Dial-A-Dump Industries
Scenario: Ingestion of Poultry and Eggs by Off-site Residents (Adult and Child)

Concentration in Eggs

$$A_{egg} = [\Sigma(F_i \times Qpi \times Pi) + Qs \times Cs \times Bs] \times (Ba_{egg})$$

Parameter	Description and Units	Adopted Value	Notes
A_{egg}	Concentration of COPC in eggs (mg COPC/kg FW tissue)	See model below	Calculated using above equation.
F_i	Fraction of plant type (i) (grain) grown on contaminated soil and ingested by the animal (chicken) (unitless)	1	Recommended by HHRAP (US EPA, 2005). Assumed 100% of the plant material eaten by chickens were grown on soil contaminated by emission sources.
Qp_i	Quantity of plant type (i) (grain) eaten by the animal (chicken) each day (kg DW plant/day)	0.2	Recommended by HHRAP (US EPA, 2005). Estimated for grain feed only.
P_i	Concentration of CoPC in plant type (i) (grain) eaten by the animal (chicken) (mg/kg DW)	See home-grown produce model	Refer to C_p and C_{rp} (mg/kg plant - wet weight). Although C_p and C_{rp} are presented as a wet weight, this is unlikely to affected the outcome of the assessment as dust deposition rates included both wet and dry deposition.
Qs	Quantity of soil eaten by the animal (chicken) (kg/day)	0.022	Recommended by HHRAP (US EPA, 2005).
Cs	Average soil concentration over exposure duration (mg CoPC/kg soil)	See dust-deposition model	Refer to C_s Soil-Plant Root Zone (mg/kg)
Bs	Soil bioavailability factor (unitless)	1	Default value recommended by HHRAP (US EPA, 2005).
Ba_{egg}	CoPC biotransfer factor for eggs (day/kg FW tissue)	See model below	The highest biotransfer factor for eggs recommended by the HHRAP Database (US EPA, 2005) or published by OEHHA (2015) was conservatively selected in the HHRA. OEHHA values were adopted for arsenic, cadmium, lead, mercury, nickel, selenium, HCB, PCBs and dioxins and furans (value for 2,3,7,8-TCDD adopted for dioxins and furans). HHRAP Database values were adopted for antimony, chromium and PAHs. For antimony, chromium and thallium, an egg biotransfer coefficient was not available and therefore fat transfer coefficients were estimated from the beef transfer coefficient. The egg biotransfer coefficient was then estimated by using the fat transfer coefficient and assumed that eggs contain a fat content of 8% consistent with US EPA (2005) and the following equations: $Ba_{beef} = 10^{logBafat} \times 0.19$ $Ba_{egg} = 10^{logBafat} \times 0.08$ No biotransfer factors were available in literature for cobalt, copper and vandadium, therefore no transfer factor has been applied.

CoPC	Concentration of CoPC in Plant (mg/kg DW) (P_i)	Cs (mg/kg) - Soil-Plant Root Zone	A_{egg}	
			CoPC biotransfer factor for eggs (Ba_{egg}) (day/kg FW tissue)	Concentration of COPC in eggs (A_{egg}) (mg COPC/kg FW tissue)
antimony	5.15E-04	9.85E-05	4.21E-04	4.43E-08
arsenic	3.42E-04	6.55E-05	7.00E-02	4.89E-06
cadmium	1.77E-03	3.30E-04	1.00E-02	3.61E-06
chromium (total)	2.92E-03	5.60E-04	2.32E-03	1.38E-06
cobalt	3.42E-04	6.55E-05	0.00E+00	0.00E+00
copper	2.61E-03	4.92E-04	0.00E+00	0.00E+00
lead	3.77E-03	7.20E-04	4.00E-02	3.08E-05
mercury	2.25E-03	4.13E-04	8.00E-01	3.67E-04
nickel	5.15E-03	9.85E-04	2.00E-02	2.10E-05
selenium	9.14E-05	1.75E-05	3.00E+00	5.60E-05
thallium	2.16E-04	4.13E-05	1.68E-02	7.40E-07
vanadium	1.71E-04	3.27E-05	0.00E+00	0.00E+00
zinc	1.68E-03	3.06E-04	4.21E-02	1.44E-05
dioxins and furans as PCDD and PCDF	4.31E-09	5.34E-10	1.00E+01	8.74E-09
PAHs as benzo(a)pyrene	2.16E-05	3.77E-07	3.00E-03	1.30E-08
polychlorinated biphenyls (PCBs)	6.89E-10	2.13E-11	1.00E+01	1.38E-09
hexachlorobenzene	3.54E-07	2.31E-08	2.00E+01	1.43E-06

Ingestion of Eggs

$$Intake\ Factor = \frac{IR \times FI \times ME \times EF \times ED}{BW \times AT}$$

$$Daily\ Intake = Aegg \times Intake\ Factor$$

Parameter	Description and Units	Adopted Value		Notes
		Adult	Child	
Intake Factor	Intake factor (kg/kg/day)	See model below		-
IR	Ingestion rate (kg/day)	0.014	0.006	enHealth (2012b). Suggested (average) values for intake of total egg. Value for >19 years adopted for an adult (14 g/day) and 2-3 years adopted for a child (6 g/day).
FI	Fraction ingested from home-grown source (unitess)	1		100% home-sourced eggs as a conservative estimate
ME	Matrix effect (unitless)	1		Assumed 100% bioavailability
EF	Exposure frequency (days/year)	365	365	ASC NEPM (2013) - low to medium density residential
ED	Exposure duration (years)	29	6	ASC NEPM (2013) - low to medium density residential
BW	Body weight (kg)	70	15	ASC NEPM (2013) - low to medium density residential
AT	Averaging time - Non-threshold (days)	25550	25550	ASC NEPM (2013) - low to medium density residential. Based on a lifetime exposure of 70 years.
	Averaging time -Threshold (days)	10585	2190	ASC NEPM (2013) - low to medium density residential. Equal to exposure duration.

CoPC	Concentration of COPC in eggs (A_{egg}) (mg COPC/kg FW tissue)	Adult Intake Factor (kg/kg/day)		Child Intake Factor (kg/kg/day)		Adult Daily Intake (mg/kg/day)		Child Daily Intake (mg/kg/day)	
		Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)	Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)	Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)	Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)
antimony	4.43E-08	8.29E-05	2.00E-04	3.43E-05	4.00E-04	-	8.85E-12	-	1.77E-11
arsenic	4.89E-06					-	9.79E-10	-	1.96E-09
cadmium	3.61E-06					-	7.21E-10	-	1.44E-09
chromium (total)	1.38E-06					-	2.77E-10	-	5.53E-10
cobalt	0.00E+00					-	0.00E+00	-	0.00E+00
copper	0.00E+00					-	0.00E+00	-	0.00E+00
lead	3.08E-05					-	6.15E-09	-	1.23E-08
mercury	3.67E-04					-	7.34E-08	-	1.47E-07
nickel	2.10E-05					-	4.21E-09	-	8.42E-09
selenium	5.60E-05					-	1.12E-08	-	2.24E-08
thallium	7.40E-07					-	1.48E-10	-	2.96E-10
vanadium	0.00E+00					-	0.00E+00	-	0.00E+00
zinc	1.44E-05					-	2.88E-09	-	5.76E-09
dioxins and furans as PCDD and PCDF	8.74E-09					-	1.75E-12	-	3.50E-12
PAHs as benzo(a)pyrene	1.30E-08					1.07E-12	-	4.44E-13	-
polychlorinated biphenyls (PCBs)	1.38E-09					-	2.76E-13	-	5.53E-13
hexachlorobenzene	1.43E-06					-	2.85E-10	-	5.70E-10

CoPC	Oral Cancer Slope Factor (CSF) $(mg/kg/day)^{-1}$	Background Adjusted Oral Reference Dose (RfD) mg/kg/day	Adult Non-Threshold Compounds (Carcinogens)	Adult Threshold Compounds (Non-carcinogens)	Child Non-Threshold Compounds (Carcinogens)	Child Threshold Compounds (Non-carcinogens)
			Incremental Lifetime Cancer Risk (ILCR) (unitless)	Hazard Quotient (HQ)	Incremental Lifetime Cancer Risk (ILCR) (unitless)	Hazard Quotient (HQ)
antimony	-	6.00E-03	-	1.48E-09	-	2.95E-09
arsenic	-	1.00E-03	-	9.79E-07	-	1.96E-06
cadmium	-	3.20E-04	-	2.25E-06	-	4.51E-06
chromium (total)	-	9.00E-04	-	3.07E-07	-	6.15E-07
cobalt	-	1.40E-03	-	0.00E+00	-	0.00E+00
copper	-	1.40E-01	-	0.00E+00	-	0.00E+00
lead	-	3.50E-03	-	1.76E-06	-	3.51E-06
mercury	-	3.60E-04	-	2.04E-04	-	4.08E-04
nickel	-	1.20E-02	-	3.51E-07	-	7.02E-07
selenium	-	2.40E-03	-	4.67E-06	-	9.33E-06
thallium	-	1.00E-05	-	9.50E-09	-	1.90E-08
vanadium	-	1.00E-02	-	0.00E+00	-	0.00E+00
zinc	-	5.00E-02	-	5.76E-08	-	1.15E-07
dioxins and furans as PCDD and PCDF	-	9.89E-10	-	1.77E-03	-	3.53E-03
PAHs as benzo(a)pyrene	0.5	-	5.37E-13	-	2.22E-13	-
polychlorinated biphenyls (PCBs)	-	2.00E-05	-	1.38E-08	-	2.76E-08
hexachlorobenzene	-	1.60E-04	-	1.78E-06	-	3.56E-06
		Total	**5.37E-13**	**1.98E-03**	**2.22E-13**	**3.97E-03**

Health Risk Calculations - Ingestion of Homegrown Beef
Site Energy from Waste Facility
Address Honeycomb Drive, Eastern Creek
Client Dial-A-Dump Industries
Scenario: Ingestion of Homegrown Beef by Off-site Residents (Adult and Child)

Concentration in Beef

$$A_{beef} = [\Sigma(F_i \times Qpi \times Pi) + Qs \times Cs \times Bs] \times Ba_{beef} \times MF$$

Parameter	Description and Units	Adopted Value	Notes
A_{beef}	Concentration of CoPC in beef through ingestion of contaminated feed items (plant) and soil (mg CoPC/kg FW tissue)	See model below	Calculated using above equation.
F_i	Fraction of plant type (i) grown on contaminated soil and ingested by the animal (cattle) (unitless)	1	Recommended by HHRAP (US EPA, 2005). Assumed 100% of the plant material eaten by cattle were grown on soil contaminated by emission sources.
Qp_i	Quantity of plant type (i) eaten by the animal (cattle) per day (kg DW plant/day)	11.8	Recommended by HHRAP (US EPA, 2005). Sum of beef ingestion rates for forage (8.8 kg DW/day), silage (2.5 kg DW/day) and grain (0.47 kg DW/day).
P_i	Concentration of CoPC in each plant type (i) eaten by the animal (cattle) (mg/kg DW)	See home-grown produce model	Refer to C_p and C_{rp} (mg/kg plant - wet weight). Although C_p and C_{rp} are presented as a wet weight, this is unlikely to affected the outcome of the assessment as dust deposition rates included both wet and dry deposition.
Qs	Quantity of soil eaten by the animal (cattle) each day (kg/day)	0.5	Recommended by HHRAP (US EPA, 2005).
Cs	Average soil concentration over exposure duration (mg CoPC/kg soil)	See dust-deposition model	Refer to C_s Soil-Plant Root Zone (mg/kg)
Bs	Soil bioavailability factor (unitless)	1	Default value recommended by HHRAP (US EPA, 2005).
Ba_{beef}	CoPC biotransfer factor for beef (day/kg FW tissue)	See model below	The highest biotransfer factor for beef recommended by the HHRAP Database (US EPA, 2005) or published in RAIS (2015) was conservatively selected in the HHRA. RAIS values were adopted for all metals. HHRAP Database values were adopted for dioxins and furans (value for 2,3,7,8-TCDD adopted for dioxins and furans).
MF	Metabolism factor (unitless)	1	Default value recommended by HHRAP (US EPA, 2005).

CoPC	Concentration of CoPC in Plant (mg/kg DW) (P_i)	Cs (mg/kg) - Soil-Plant Root Zone	CoPC biotransfer factor for beef Ba_{beef} (day/kg FW tissue)	Concentration of CoPC in beef through ingestion of contaminated feed items (plant) and soil
antimony	5.15E-04	9.85E-05	0.001	6.11E-06
arsenic	3.42E-04	6.55E-05	0.002	8.13E-06
cadmium	1.77E-03	3.30E-04	0.00055	1.15E-05
chromium (total)	2.92E-03	5.60E-04	0.0055	1.91E-04
cobalt	3.42E-04	6.55E-05	0.02	8.12E-05
copper	2.61E-03	4.92E-04	0.01	3.10E-04
lead	3.77E-03	7.20E-04	0.0004	1.79E-05
mercury	2.25E-03	4.13E-04	0.25	6.67E-03
nickel	5.15E-03	9.85E-04	0.006	3.67E-04
selenium	9.14E-05	1.75E-05	0.015	1.63E-05
thallium	2.16E-04	4.13E-05	0.04	1.02E-04
vanadium	1.71E-04	3.27E-05	0.0025	5.06E-06
zinc	1.68E-03	3.06E-04	0.1	1.99E-03
dioxins and furans as PCDD and PCDF	4.31E-09	5.34E-10	2.612122866	1.33E-07
PAHs as benzo(a)pyrene	2.16E-05	3.77E-07	0.0337	8.56E-06
polychlorinated biphenyls (PCBs)	6.89E-10	2.13E-11	0.315	2.56E-09
hexachlorobenzene	3.54E-07	2.31E-08	0.0134	5.60E-08

Ingestion of Beef

$$Intake\ Factor = \frac{IR \times FI \times ME \times EF \times ED}{BW \times AT}$$

$$Daily\ Intake = Abeef \times Intake\ Factor$$

Parameter	Description and Units	Adopted Value Adult	Adopted Value Child	Notes
Intake Factor	Intake factor (kg/kg/day)	See model below		-
IR	Ingestion rate (kg/day)	0.16	0.06	enHealth (2012b). Suggested (average) values for intake of total meat. Value for >19 years adopted for an adult (160 g/day) and 2-3 years adopted for a child (60 g/day).
FI	Fraction ingested from home-grown source (unitess)	0.01		Assumed less than 1% of beef sourced from adjacent site ingested as a conservative estimate
ME	Matrix effect (unitless)	1		Assumed 100% bioavailability
EF	Exposure frequency (days/year)	365	365	ASC NEPM (2013) - low to medium density residential
ED	Exposure duration (years)	29	6	ASC NEPM (2013) - low to medium density residential
BW	Body weight (kg)	70	15	ASC NEPM (2013) - low to medium density residential
AT	Averaging time - Non-threshold (days)	25550	25550	ASC NEPM (2013) - low to medium density residential. Based on a lifetime exposure of 70 years.
	Averaging time -Threshold (days)	10585	2190	ASC NEPM (2013) - low to medium density residential. Equal to exposure duration.

		Adult Intake Factor (kg/kg/day)		Child Intake Factor (kg/kg/day)		Adult Daily Intake (mg/kg/day)		Child Daily Intake (mg/kg/day)	
CoPC	Concentration of CoPC in beef through ingestion of contaminated feed items (plant) and soil A_{beef} (mg CoPC/kg FW	Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)	Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)	Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)	Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)
antimony	6.11E-06	9.47E-06	2.29E-05	3.43E-06	4.00E-05	-	1.40E-10	-	2.44E-10
arsenic	8.13E-06					-	1.86E-10	-	3.25E-10
cadmium	1.15E-05					-	2.64E-10	-	4.61E-10
chromium (total)	1.91E-04					-	4.36E-09	-	7.64E-09
cobalt	8.12E-05					-	1.86E-09	-	3.25E-09
copper	3.10E-04					-	7.09E-09	-	1.24E-08
lead	1.79E-05					-	4.08E-10	-	7.15E-10
mercury	6.67E-03					-	1.52E-07	-	2.67E-07
nickel	3.67E-04					-	8.39E-09	-	1.47E-08
selenium	1.63E-05					-	3.72E-10	-	6.51E-10
thallium	1.02E-04					-	2.34E-09	-	4.09E-09
vanadium	5.06E-06					-	1.16E-10	-	2.03E-10
zinc	1.99E-03					-	4.55E-08	-	7.96E-08
dioxins and furans as PCDD and PCDF	1.33E-07					-	3.05E-12	-	5.33E-12
PAHs as benzo(a)pyrene	8.56E-06					8.10E-11	-	2.93E-11	-
polychlorinated biphenyls (PCBs)	2.56E-09					-	5.84E-14	-	1.02E-13
hexachlorobenzene	5.60E-08					-	1.28E-12	-	2.24E-12

			Adult Non-Threshold Compounds (Carcinogens)	Adult Threshold Compounds (Non-carcinogens)	Child Non-Threshold Compounds (Carcinogens)	Child Threshold Compounds (Non-carcinogens)
CoPC	Oral Cancer Slope Factor (CSF) $(mg/kg/day)^{-1}$	Background Adjusted Oral Reference Dose (RfD) mg/kg/day	Incremental Lifetime Cancer Risk (ILCR) (unitless)	Hazard Quotient (HQ)	Incremental Lifetime Cancer Risk (ILCR) (unitless)	Hazard Quotient (HQ)
antimony	-	6.00E-03	-	2.33E-08	-	4.07E-08
arsenic	-	1.00E-03	-	1.86E-07	-	3.25E-07
cadmium	-	3.20E-04	-	8.23E-07	-	1.44E-06
chromium (total)	-	9.00E-04	-	4.85E-06	-	8.48E-06
cobalt	-	1.40E-03	-	1.33E-06	-	2.32E-06
copper	-	1.40E-01	-	5.06E-08	-	8.86E-08
lead	-	3.50E-03	-	1.17E-07	-	2.04E-07
mercury	-	3.60E-04	-	4.23E-04	-	7.41E-04
nickel	-	1.20E-02	-	6.99E-07	-	1.22E-06
selenium	-	2.40E-03	-	1.55E-07	-	2.71E-07
thallium	-	1.00E-05	-	2.34E-04	-	4.09E-04
vanadium	-	1.00E-02	-	1.16E-08	-	2.03E-08
zinc	-	5.00E-02	-	9.10E-07	-	1.59E-06
dioxins and furans as PCDD and PCDF	-	9.89E-10	-	3.08E-03	-	5.39E-03
PAHs as benzo(a)pyrene	0.5	-	4.05E-11	-	1.47E-11	-
polychlorinated biphenyls (PCBs)	-	2.00E-05	-	2.92E-09	-	5.11E-09
hexachlorobenzene	-	1.60E-04	-	7.99E-09	-	1.40E-08
		Total	**4.05E-11**	**3.75E-03**	**1.47E-11**	**6.56E-03**

Health Risk Calculations - Ingestion of Breastmilk
Site Energy from Waste Facility
Address Honeycomb Drive, Eastern Creek
Client Dial-A-Dump Industries
Scenario: Ingestion of Breastmilk by Off-site Residents (Child)

Concentration in Breastmilk

$$C_{milk\ fat} = \frac{m \times h \times f_1}{0.693 \times f_2}$$

Parameter	Description and Units	Adopted Value	Notes
$C_{milk\ fat}$	Concentration of CoPC in milk fat (mg/kg)	See model below	-
m	Average maternal intake (mg/kg/day)	See model below	The potential maternal intake is a highly variable parameter in the above equation. It can be assumed that the calculations undertaken to calculate adult intake of each CoPC via inhalation and ingestion are relevant for a mother who may be breastfeeding an infant.
h	Half-life of chemical in body, adults (days)	See model below	Value from NHMRC (2002) for dioxins and furans. Value from HSDB online database for PAHs (current to 2010). Value from WHO (2011), NHMRC (2016) or the HSDB online database for most metals. For mercury, the biological half-life is stated to be 'many years', which was assumed to be 10 years. For copper a study by Johnson et al (1992) was used and for vanadium a study by Barceloux (1999) was used. For PCBs, a study by Ritter et al (2011) was used.
f_1	Fraction of ingested chemical stored in fat (unitless)	0.9	No data is available that is specific to the fraction of organic chemicals that may be stored as fat and hence available data for dioxins has been adopted. The fraction of ingested organic chemicals which is stored as fat is recommended to be 0.9 (US EPA, 1998).
f_2	Fraction of mothers weight that is fat (unitless)	0.35	The recommended fraction of mother's body weight which is fat is 0.35 (for females in south-eastern urban areas of Australia aged 31 to 45 years (DEH, 2005)).

CoPC	Adult intake from air, soil (ingestion and dermal contact), home-grown, produce, eggs and beef (m) (mg/kg/day)	Half-life of chemical in body, adults (h) (days)	Concentration of CoPC in milk fat ($C_{milk\ fat}$) (mg/kg)
antimony	2.82E-07	40	4.18E-05
arsenic	1.88E-07	60	4.19E-05
cadmium	9.49E-07	5475	1.93E-02
chromium (total)	1.60E-06	83.4	4.96E-04
cobalt	1.89E-07	1	7.00E-07
copper	1.42E-06	33	1.73E-04
lead	2.06E-06	10950	8.37E-02
mercury	1.42E-06	3650	1.92E-02
nickel	2.82E-06	1.8	1.89E-05
selenium	6.14E-08	34	7.75E-06
thallium	1.20E-07	30	1.34E-05
vanadium	9.33E-08	1.2	4.15E-07
zinc	9.35E-07	243.8	8.45E-04
dioxins and furans as PCDD and PCDF	7.14E-12	2555	6.77E-08
PAHs as benzo(a)pyrene	4.95E-09	5.5	1.01E-07
polychlorinated biphenyls (PCBs)	7.12E-13	5657.5	1.49E-08
hexachlorobenzene	4.81E-10	150	2.68E-07

Daily Intake from Air

$$Intake\ Factor = \frac{InhR \times ET \times FI \times EF \times ED}{BW \times AT}$$

Parameter	Description and Units	Adopted Value (Adult)	Notes
Intake Factor	Intake factor (m^3/kg/day)	See model below	-
InhR	Inhalation Rate (m^3/hour)	1.34	Inhalation rate assuming 20 hours indoors at 1.17 m^3/hour and 4 hours outdoors at 2.2 m^3/hour.
ET	Exposure time (hours/day)	24	ASC NEPM (2013) - low to medium density residential.
FI	Fraction inhaled from contamination source (unitless)	1	Assumed intake from contamination source for the whole ET.
EF	Exposure frequency (days/year)	365	ASC NEPM (2013) - low to medium density residential
ED	Exposure duration (years)	29	ASC NEPM (2013) - low to medium density residential
BW	Body weight (kg)	70	ASC NEPM (2013) - low to medium density residential
AT	Averaging time - Non-threshold (days)	25550	ASC NEPM (2013) - low to medium density residential. Based on a lifetime exposure of 70 years.
	Averaging time -Threshold (days)	10585	ASC NEPM (2013) - low to medium density residential. Equal to exposure duration.

Risk Estimate for Resident - Multiple Pathway (Scenario 4 - Annual Average Maximum)

CoPC	Maximum Annual Average GLC (mg/m^3)	Non-Threshold Slope Factor $(mg/kg/day)^{-1}$ (a)	Background Adjusted Oral Reference Dose (RfD) mg/kg/day (b)	Adult Intake Factor (m^3/kg/day) Non-Threshold Compounds (Carcinogens)	Adult Intake Factor (m^3/kg/day) Threshold Compounds (Non-carcinogens)	Daily Intake from Air (mg/kg/day)
antimony	5.85E-08	-	6.00E-03	0.19	0.46	2.69E-08
arsenic	3.90E-08	-	1.00E-03			1.79E-08
cadmium	1.97E-07	-	3.20E-04			9.05E-08
chromium (total)	3.34E-07	-	9.00E-04			1.53E-07
cobalt	3.90E-08	-	1.40E-03			1.79E-08
copper	2.93E-07	-	1.40E-01			1.35E-07
lead	4.29E-07	-	3.50E-03			1.97E-07
mercury	2.46E-07	-	3.60E-04			1.13E-07
nickel	5.85E-07	-	1.20E-02			2.69E-07
selenium	1.04E-08	-	2.40E-03			4.78E-09
thallium	2.46E-08	-	1.00E-05			1.13E-08
vanadium	1.95E-08	-	1.00E-02			8.96E-09
zinc	1.82E-07	-	5.00E-02			8.36E-08
dioxins and furans as PCDD and PCDF	4.92E-13	-	9.89E-10			2.26E-13
PAHs as benzo(a)pyrene	2.46E-09	0.5	-			4.68E-10
polychlorinated biphenyls (PCBs)	7.87E-14	-	2.00E-05			3.62E-14
hexachlorobenzene	4.04E-11	-	1.60E-04			1.86E-11

(a) WHO (2011) Guidelines for Drinking Water Quality. Fourth Edition. World Health Organization, Switzerland.

(b) DEH (2005) National Dioxins Program, Technical Report No. 12, Human Health Risk Assessment of Dioxins in Australia. Office of Chemical Safety, Australian Government Department of the Environment and Heritage, Canberra.

Ingestion of Breastmilk

$$Intake\ Factor = \frac{IR \times FM \times Ab \times EF \times ED}{BW \times AT}$$

$$Daily\ Intake\ = Cmilk_{fat} \times Intake\ Factor$$

Parameter	Description and Units	Adopted Value (Child)	Notes
Intake Factor	Intake factor (kg/kg/day)	See model below	-
IR	Ingestion rate (kg/day)	0.85	enHealth (2012b). Suggested intake of breastmilk 850 mL/day for an infant less than 6-months of age. High end range of average intake.
FM	Fraction of Fat/Lipids in Milk (unitess)	0.037	DEH (2005)
Ab	Absorption Following Ingestion (unitless)	0.9	DEH (2005)
EF	Exposure frequency (days/year)	365	ASC NEPM (2013) - low to medium density residential
ED	Exposure duration (years)	0.5	Exposure time as an infant
BW	Body weight (kg)	6	Average weight of a 6-month old infant
AT	Averaging time - Non-threshold (days)	25550	ASC NEPM (2013) - low to medium density residential
	Averaging time -Threshold (days)	365	ASC NEPM (2013) - low to medium density residential

		Child Intake Factor (kg/kg/day)		Child Daily Intake (mg/kg/day)	
CoPC	Concentration of CoPC in milk fat (Cmilk fat) (mg/kg)	Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)	Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)
antimony	4.18E-05	3.37E-05	2.36E-03	-	9.87E-08
arsenic	4.19E-05			-	9.88E-08
cadmium	1.93E-02			-	4.55E-05
chromium (total)	4.96E-04			-	1.17E-06
cobalt	7.00E-07			-	1.65E-09
copper	1.73E-04			-	4.09E-07
lead	8.37E-02			-	1.97E-04
mercury	1.92E-02			-	4.53E-05
nickel	1.89E-05			-	4.45E-08
selenium	7.75E-06			-	1.83E-08
thallium	1.34E-05			-	3.16E-08
vanadium	4.15E-07			-	9.80E-10
zinc	8.45E-04			-	1.99E-06
dioxins and furans as PCDD and PCDF	6.77E-08			-	1.60E-10
PAHs as benzo(a)pyrene	1.01E-07			3.41E-12	-
polychlorinated biphenyls (PCBs)	1.49E-08			-	3.52E-11
hexachlorobenzene	2.68E-07			-	6.31E-10

			Child Non-Threshold Compounds (Carcinogens)	Child Threshold Compounds (Non-carcinogens)
CoPC	Oral Cancer Slope Factor (CSF) $(mg/kg/day)^{-1}$	Background Adjusted Oral Reference Dose (RfD) mg/kg/day	Incremental Lifetime Cancer Risk (ILCR) (unitless)	Hazard Quotient (HQ)
antimony	-	6.00E-03	-	1.64E-05
arsenic	-	1.00E-03	-	9.88E-05
cadmium	-	3.20E-04	-	1.42E-01
chromium (total)	-	9.00E-04	-	1.30E-03
cobalt	-	1.40E-03	-	1.18E-06
copper	-	1.40E-01	-	2.92E-06
lead	-	3.50E-03	-	5.64E-02
mercury	-	3.60E-04	-	1.26E-01
nickel	-	1.20E-02	-	3.71E-06
selenium	-	2.40E-03	-	7.62E-06
thallium	-	1.00E-05	-	3.16E-03
vanadium	-	1.00E-02	-	9.80E-08
zinc	-	5.00E-02	-	3.99E-05
dioxins and furans as PCDD and PCDF	-	9.89E-10	-	1.62E-01
PAHs as benzo(a)pyrene	0.5	-	1.70E-12	-
polychlorinated biphenyls (PCBs)	-	2.00E-05	-	1.76173E-06
hexachlorobenzene	-	1.60E-04	-	3.94364E-06
		Total	**1.70E-12**	**4.91E-01**

Health Risk Calculations - Cumulative Risk (Pathways Combined)
Site Energy from Waste Facility
Address Honeycomb Drive, Eastern Creek
Client Dial-A-Dump Industries
Scenario: Cumulative Risk to Residents

Exposure Pathway	Threshold Compounds (Non-carcinogens) - Hazard Index (HI)		Non-Threshold Compounds (Carcinogens) - Incremental Lifetime Cancer Risk (ILCR) (unitless)
	Adult	Child	
Inhalation of Air	1.00E-01	1.00E-01	2.55E-07
Incidental Ingestion of Soil	8.65E-05	8.07E-04	2.45E-12
Dermal Contact with Soil	1.20E-05	2.41E-05	4.47E-12
Ingestion of Home-grown Produce	2.11E-02	2.11E-02	3.24E-09
Ingestion of Eggs	1.98E-03	1.98E-03	7.59E-13
Ingestion of Beef	3.75E-03	3.75E-03	5.52E-11
Total	**1.27E-01**	**1.28E-01**	**2.58E-07**

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General Information:	
Site:	Energy from Waste Facility
Address:	Honeycomb Drive, Eastern Creek
Client:	Dial-A-Dump Industries
Scenario:	Scenario 4 Annual Average Maximum - Direct Contact with Soil by Off-site Residents (Adult and Child)

Receptor:
Residential (High Density/Minimal Soil Access)

Exposure Pathways to Include:

Enter "x" in box by clicking the select buttons.

Soil Pathways

Select	Pathway
x	Incidental Ingestion of Soil
x	Dermal Contact with Soil
	Inhalation of Surface Soil-Derived Dust in Indoor Air
	Inhalation of Surface Soil-Derived Dust in Outdoor Air
	Inhalation of Surface Soil-Derived Vapours in Outdoor Air
	Inhalation of Soil-Derived Vapours From Excavation (USEPA 2002 method)
	Inhalation of Subsurface Soil-Derived Vapours in Indoor Air
	Inhalation of Subsurface Soil-Derived Vapours in Outdoor Air
	Incidental Ingestion of Lead in Soil (Adult Lead Model)
	Inhalation of Lead in Soil/Dust Indoors (Adult Lead Model)
	Inhalation of Lead in Dust Outdoors (Adult Lead Model)

Chemicals for Quantitative Assessment:	Chemical Concentrations
	Soil (mg/kg)
Antimony	1.48E-03
Arsenic, Inorganic	9.83E-04
Cadmium	4.95E-03
Chromium(VI)	8.41E-03
Cobalt	9.83E-04
Copper	7.37E-03
Lead	1.08E-02
Mercury (elemental)	6.20E-03
Nickel	1.48E-02
Selenium	2.63E-04
Thallium	6.20E-04
Vanadium	4.91E-04
Zinc (Metallic)	4.59E-03
Dioxins and Furans as PCDD and PCDF	8.01E-09
Benzo(a)pyrene	5.65E-06
Polychlorinated biphenyls	3.20E-10
Hexachlorobenzene (HCB)	3.47E-07

Exposure Parameters:		Exposure Parameters (Adjust for site-specific conditions if required)		Reference (Refer to Exposure Parameter Table in the Report for Justification)	
		Adult	Child	Adult	Child
General receptor parameters:	**Units**				
Body weight	kg	70	15	NEPC (2013)	NEPC (2013)
Exposure duration	yr	29	6	NEPC (2013)	NEPC (2013)
Averaging time (carcinogens)	yr	70	70	NEPC (2013)	NEPC (2013)
Averaging time (non-carcinogens)	yr	29	6	NEPC (2013)	NEPC (2013)
Incidental Soil Ingestion					
Daily soil ingestion rate	mg/day	50	100	NEPC (2013)	NEPC (2013)
Exposure frequency for soil ingestion	days/yr	365	365	NEPC (2013)	NEPC (2013)
Dermal Contact With Soil					
Exposed skin surface area for soil contact	cm2	6300	2700	NEPC (2013). Assumes 31.5% of total body surface area (20,000 cm2)	NEPC (2013). Assumes 44.3% of total body surface area (6,100 cm2)
Soil to skin adherence factor	mg/cm2	0.5	0.5	NEPC (2013)	NEPC (2013)
Exposure frequency for dermal contact with soil	days/yr	365	365	NEPC (2013)	NEPC (2013)
Indoor Inhalation					
Exposure time (indoor air)	hrs/day				
Exposure frequency (indoor air)	days/yr				
Particulate emission factor (indoor air)	m3/kg				
Lung Retention Factor (dust inhalation)	unitless				
Outdoor Inhalation					
Exposure time (outdoor air)	hrs/day				
Exposure frequency (outdoor air)	days/yr				
Particulate emission factor (outdoor air)	m3/kg				
Lung Retention Factor (dust inhalation)	unitless				
Potable Water Ingestion					
Potable water intake rate	L/day				
Exposure frequency for potable water intake	days/yr				

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Health Risk Calculations - Incidental Soil Ingestion

Energy from Waste Facility

Honeycomb Drive, Eastern Creek

Scenario 4 Annual Average Maximum - Direct Contact with Soil by Off-site Residents (Adult and Child) Scenario

Chemical	Soil Concentration	Oral Soil Bioavailability Factor	Threshold Intake and Risk Calculations							Non-Threshold Intake and Risk Calculations					
			Oral RfD (Background Corrected)	Adult Intake Factor (threshold)	Adult Intake (threshold)	Hazard Index (Adult)	Child Intake Factor (threshold)	Child Intake (threshold)	Hazard Index (Child)	Oral CSF	Adult Intake Factor (non-threshold)	Child Intake Factor (non-threshold)	Lifetime Intake Factor (non-threshold)	Lifetime Intake (non-threshold)	Lifetime Excess Cancer Risk
	(mg/kg)	(unitless)	(mg/kg/day)	(kg/kg/day)	(mg/kg/day)	(unitless)	(kg/kg/day)	(mg/kg/day)	(unitless)	(mg/kg/day)-1	(kg/kg/day)	(kg/kg/day)	(kg/kg/day)	(mg/kg/day)	(unitless)
Antimony	0.001477651	2.00E+00	6.00E-03	1.43E-06	2.11E-09	3.52E-07	1.33E-05	1.97E-08	3.28E-06	-	-	-	-	-	-
Arsenic, Inorganic	0.000982709	1.00E+00	1.00E-03	7.14E-07	7.02E-10	7.02E-07	6.67E-06	6.55E-09	6.55E-06	-	-	-	-	-	-
Cadmium	0.004949412	1.00E+00	3.20E-04	7.14E-07	3.54E-09	1.10E-05	6.67E-06	3.30E-08	1.03E-04	-	-	-	-	-	-
Chromium(VI)	0.008406828	1.00E+00	9.00E-04	7.14E-07	6.00E-09	6.67E-06	6.67E-06	5.60E-08	6.23E-05	-	-	-	-	-	-
Cobalt	0.000982709	1.00E+00	1.12E-03	7.14E-07	7.02E-10	6.27E-07	6.67E-06	6.55E-09	5.85E-06	-	-	-	-	-	-
Copper	0.007373907	1.00E+00	4.20E-02	7.14E-07	5.27E-09	1.25E-07	6.67E-06	4.92E-08	1.17E-06	-	-	-	-	-	-
Lead	0.01080263	1.00E+00	3.50E-03	7.14E-07	7.72E-09	2.20E-06	6.67E-06	7.20E-08	2.06E-05	-	-	-	-	-	-
Mercury (elemental)	0.006197525	1.00E+00	3.60E-04	7.14E-07	4.43E-09	1.23E-05	6.67E-06	4.13E-08	1.15E-04	-	-	-	-	-	-
Nickel	0.014776506	1.00E+00	4.80E-03	7.14E-07	1.06E-08	2.20E-06	6.67E-06	9.85E-08	2.05E-05	-	-	-	-	-	-
Selenium	0.000262534	1.00E+00	2.40E-03	7.14E-07	1.88E-10	7.81E-08	6.67E-06	1.75E-09	7.29E-07	-	-	-	-	-	-
Thallium	0.000619752	1.00E+00	1.00E-05	7.14E-07	4.43E-10	4.43E-05	6.67E-06	4.13E-09	4.13E-04	-	-	-	-	-	-
Vanadium	0.000490637	1.00E+00	1.00E-02	7.14E-07	3.50E-10	3.50E-08	6.67E-06	3.27E-09	3.27E-07	-	-	-	-	-	-
Zinc (Metallic)	0.004590759	1.00E+00	5.00E-02	7.14E-07	3.28E-09	6.56E-08	6.67E-06	3.06E-08	6.12E-07	-	-	-	-	-	-
Dioxins and Furans as PCDD and PCDF	8.00502E-09	1.00E+00	9.89E-10	7.14E-07	5.72E-15	5.78E-06	6.67E-06	5.34E-14	5.40E-05	-	-	-	-	-	-
Benzo(a)pyrene	5.64811E-06	1.00E+00	-	-	-	-	-	-	-	5.00E-01	2.96E-07	5.71E-07	8.67E-07	4.90E-12	2.45E-12
Polychlorinated biphenyls	3.20073E-10	1.00E+00	2.00E-05	7.14E-07	2.29E-16	1.14E-11	6.67E-06	2.13E-15	1.07E-10	-	-	-	-	-	-
Hexachlorobenzene (HCB)	3.46969E-07	1.00E+00	1.60E-04	7.14E-07	2.48E-13	1.55E-09	6.67E-06	2.31E-12	1.45E-08	-	-	-	-	-	-
TOTAL						**8.65E-05**			**8.07E-04**						**2.45E-12**

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Health Risk Calculations - Dermal Contact with Soil
Energy from Waste Facility
Honeycomb Drive, Eastern Creek
Scenario 4 Annual Average Maximum - Direct Contact with Soil by Off-site Residents (Adult and Child) Scenario

			Threshold Intake and Risk Calculations							Non-Threshold Intake and Risk Calculations					
Chemical	Soil Concentration	Dermal Absorption Factor (DAF)	Dermal RfD (Background Corrected)	Adult Intake Factor (threshold)	Adult Intake (threshold)	Hazard Index (Adult)	Child Intake Factor (threshold)	Child Intake (threshold)	Hazard Index (Child)	Dermal CSF	Adult Intake Factor (non-threshold)	Child Intake Factor (non-threshold)	Lifetime Intake Factor (non-threshold)	Lifetime Intake (non-threshold)	Lifetime Excess Cancer Risk
	(mg/kg)	(unitless)	(mg/kg/day)	(kg/kg/day)	(mg/kg/day)	(unitless)	(kg/kg/day)	(mg/kg/day)	(unitless)	(mg/kg/day)-1	(kg/kg/day)	(kg/kg/day)	(kg/kg/day)	(mg/kg/day)	(unitless)
Antimony	0.001477651	-	6.00E-03	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic, Inorganic	0.000982709	0.005	1.00E-03	2.25E-07	2.21E-10	2.21E-07	4.50E-07	4.42E-10	4.42E-07	-	-	-	-	-	-
Cadmium	0.004949412	-	3.20E-04	-	-	-	-	-	-	-	-	-	-	-	-
Chromium(VI)	0.008406828	-	2.25E-05	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt	0.000982709	0.001	1.12E-03	4.50E-08	4.42E-11	3.95E-08	9.00E-08	8.84E-11	7.90E-08	-	-	-	-	-	-
Copper	0.007373907	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead	0.01080263	-	3.50E-03	-	-	-	-	-	-	-	-	-	-	-	-
Mercury (elemental)	0.006197525	0.001	2.52E-05	4.50E-08	2.79E-10	1.11E-05	9.00E-08	5.58E-10	2.21E-05	-	-	-	-	-	-
Nickel	0.014776506	0.005	4.80E-03	2.25E-07	3.32E-09	6.93E-07	4.50E-07	6.65E-09	1.39E-06	-	-	-	-	-	-
Selenium	0.000262534	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium	0.000619752	-	1.00E-05	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium	0.000490637	-	2.60E-04	-	-	-	-	-	-	-	-	-	-	-	-
Zinc (Metallic)	0.004590759	0.001	5.00E-02	4.50E-08	2.07E-10	4.13E-09	9.00E-08	4.13E-10	8.26E-09	-	-	-	-	-	-
Dioxins and Furans as PCDD and PCDF	8.00502E-09	-	2.30E-09	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	5.64811E-06	0.06	-	-	-	-	-	-	-	5.00E-01	1.12E-06	4.63E-07	1.58E-06	8.93E-12	4.47E-12
Polychlorinated biphenyls	3.20073E-10	0.14	2.00E-05	6.30E-06	2.02E-15	1.01E-10	1.26E-05	4.03E-15	2.02E-10	-	-	-	-	-	-
Hexachlorobenzene (HCB)	3.46969E-07	0.1	1.60E-04	4.50E-06	1.56E-12	9.76E-09	9.00E-06	3.12E-12	1.95E-08	-	-	-	-	-	-
TOTAL						**1.20E-05**			**2.41E-05**						**4.47E-12**

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Summary of Estimated Health Risks
Energy from Waste Facility
Honeycomb Drive, Eastern Creek
Scenario 4 Annual Average Maximum - Direct Contact with Soil by Off-site Residents (Adult and Child) Scenario

Exposure Pathway	Threshold Risk Estimates		Non-Threshold Risk Estimates (Lifetime Exposure)
	Adult Exposure	Childhood Exposure	
SOIL EXPOSURE PATHWAYS			
Incidental Ingestion of Soil	8.65E-05	8.07E-04	2.45E-12
Dermal Contact with Soil	1.20E-05	2.41E-05	4.47E-12
Inhalation of Surface Soil-Derived Dust in Indoor Air	-	-	-
Inhalation of Surface Soil-Derived Dust in Outdoor Air	-	-	-
Inhalation of Surface Soil-Derived Vapours in Outdoor Air	-	-	-
Inhalation of Surface Soil-Derived Vapours from Excavation	-	-	-
Inhalation of Subsurface Soil-Derived Vapours in Indoor Air	-	-	-
Inhalation of Subsurface Soil-Derived Vapours in Outdoor Air	-	-	-
TOTAL	**9.85E-05**	**8.31E-04**	**6.92E-12**

Scenario 4 (IED Limits) – Grid Maximum Concentrations

Risk Estimate for Resident - Inhalation Pathway (Scenario 4 - Grid Maximum)

Health Risk Calculations - Inhalation of Vapour

Site Energy from Waste Facility
Address Honeycomb Drive, Eastern Creek
Client Dial-A-Dump Industries
Scenario: Inhalation of Vapour by Off-site Residents (Adult and Child)

$$Exposure\ Adjusted\ Air\ Concentration \left(\frac{\mu g}{m^3}\right) = \frac{Cair\left(\frac{\mu g}{m^3}\right) \times ET\left(\frac{h}{d}\right) \times EF\left(\frac{d}{y}\right) \times ED(y)}{AT(h)}$$

Parameter	Description and Units	Adopted Value		Notes
		Adult	Child	
Cair	Chemical concentration in air (µg/m³)	See model below		Grid maximum ground level concentration (GLC)
ET	Exposure time (hours/day)	24	24	ASC NEPM (2013) - low to medium density residential
EF	Exposure frequency (days/year)	365	365	ASC NEPM (2013) - low to medium density residential
ED	Exposure duration (years)	29	6	ASC NEPM (2013) - low to medium density residential
AT	Averaging time - Non-threshold (hours)	613200	613200	ASC NEPM (2013) - low to medium density residential
	Averaging time -Threshold (hours)	254040	52560	ASC NEPM (2013) - low to medium density residential

CoPC	Grid Maximum GLC (µg/m³)	Reference Concentration (RfC) (µg/m³)	Background Concentration (%)	Background Adjusted Reference Concentration (µg/m³)	Inhalation Unit Risk (µg/m³)⁻¹	Adult			
						Non-Threshold Compounds (Carcinogens)		Threshold Compounds (Non-carcinogens)	
						Exposure Adjusted Air Concentration (µg/m³)	**Incremental Lifetime Cancer Risk (ILCR) (unitless)**	**Exposure Adjusted Air Concentration (µg/m³)**	**Hazard Quotient (HQ)**
antimony	7.72E-05	21	0%	21	-	-	-	7.72E-05	3.68E-06
arsenic	5.15E-05	1	0%	1	-	-	-	5.15E-05	5.15E-05
beryllium	4.54E-08	0.02	0%	0.02	2.40E-03	1.88E-08	4.51E-11	4.54E-08	2.27E-06
cadmium	2.60E-04	0.005	20%	0.004	-	-	-	2.60E-04	6.50E-02
cobalt	5.15E-05	0.1	0%	0.1	-	-	-	5.15E-05	5.15E-04
copper	3.86E-04	490	70%	147	-	-	-	3.86E-04	2.63E-06
chromium VI	4.40E-04	0.1	0%	0.1	-	-	-	4.40E-04	4.40E-03
lead	5.66E-04	0.5	0%	0.5	-	-	-	5.66E-04	1.13E-03
molybdenum	1.43E-07	12	0%	12	-	-	-	1.43E-07	1.19E-08
manganese	8.75E-04	0.15	20%	0.12	-	-	-	8.75E-04	7.29E-03
mercury	3.25E-04	0.2	10%	0.18	-	-	-	3.25E-04	1.81E-03
nickel	7.72E-04	0.02	20%	0.016	-	-	-	7.72E-04	4.83E-02
selenium	1.38E-05	21	60%	8.4	-	-	-	1.38E-05	1.64E-06
silver	2.21E-06	17.5	0%	17.5	-	-	-	2.21E-06	1.26E-07
tin	2.16E-05	700	0%	700	-	-	-	2.16E-05	3.09E-08
thallium	3.25E-05	0.035	0%	0.035	-	-	-	3.25E-05	9.29E-04
vanadium	2.57E-05	1	0%	1	-	-	-	2.57E-05	2.57E-05
zinc	2.40E-04	1750	90%	175	-	-	-	2.40E-04	1.37E-06
dioxins and furans as PCDD and PCDF	6.49E-10	0.00000805	57%	3.4615E-06	-	-	-	6.49E-10	1.87E-04
PAHs as benzo(a)pyrene	3.25E-06	-	-	-	8.70E-02	1.35E-06	1.17E-07	-	-
PCBs	1.04E-10	0.5	0%	0.5	-	-	-	1.04E-10	2.08E-10
hexachlorobenzene	5.33E-08	0.16	0%	0.16	-	-	-	5.33E-08	3.33E-07
benzene	6.49E-02	30	20%	24	6.00E-06	2.69E-02	1.61E-07	6.49E-02	2.70E-03
						Total ILCR (Adult)	**2.79E-07**	**Hazard Index (∑HQ) (Adultl)**	**1.32E-01**

Notes:
Where ground level concentrations were not available for Scenario 4, AECOM has adopted ground level concentrations from Scenario 1 to determine representative risk estimates i.e. Be, Mo, Se, Ag, Sn, Zn, PAHs, PCBs and HCB.

Risk Estimate for Resident - Inhalation Pathway (Scenario 4 - Grid Maximum)

Child			
Non-Threshold Compounds (Carcinogens)		Threshold Compounds (Non-carcinogens)	
Exposure Adjusted Air Concentration (µg/m^3)	Incremental Lifetime Cancer Risk (ILCR) (unitless)	Exposure Adjusted Air Concentration (µg/m^3)	Hazard Quotient (HQ)
-	-	7.72E-05	3.68E-06
-	-	5.15E-05	5.15E-05
3.89E-09	9.34E-12	4.54E-08	2.27E-06
-	-	2.60E-04	6.50E-02
-	-	5.15E-05	5.15E-04
-	-	3.86E-04	2.63E-06
-	-	4.40E-04	4.40E-03
-	-	5.66E-04	1.13E-03
-	-	1.43E-07	1.19E-08
-	-	8.75E-04	7.29E-03
-	-	3.25E-04	1.81E-03
-	-	7.72E-04	4.83E-02
-	-	1.38E-05	1.64E-06
-	-	2.21E-06	1.26E-07
-	-	2.16E-05	3.09E-08
-	-	3.25E-05	9.29E-04
-	-	2.57E-05	2.57E-05
-	-	2.40E-04	1.37E-06
-	-	6.49E-10	1.87E-04
2.79E-07	2.42E-08	-	-
-	-	1.04E-10	2.08E-10
-	-	5.33E-08	3.33E-07
5.56E-03	3.34E-08	6.49E-02	2.70E-03
Total ILCR (Child)	**5.76E-08**	**Hazard Index (∑HQ) (Child)**	**1.32E-01**

Risk Estimate for Commercial Worker - Inhalation Pathway (Scenario 4 - Grid Maximum)

Health Risk Calculations - Inhalation of Vapour
Site Energy from Waste Facility
Address Honeycomb Drive, Eastern Creek
Client Dial-A-Dump Industries
Scenario: Inhalation of Vapour by Off-site Commercial Workers (Adult)

$$Exposure\ Adjusted\ Air\ Concentration\left(\frac{\mu g}{m^3}\right) = \frac{Cair\left(\frac{\mu g}{m^3}\right) \times ET\left(\frac{h}{d}\right) \times EF\left(\frac{d}{y}\right) \times ED(y)}{averaging\ time\ (h)}$$

Parameter	Description and Units	Adopted Value	Notes
Cair	Chemical concentration in air (µg/m^3)	See model below	Grid maximum ground level concentration (GLC)
ET	Exposure time (hours/day)	9	ASC NEPM (2013) - commercial/industrial.
EF	Exposure frequency (days/year)	240	ASC NEPM (2013) - commercial/industrial.
ED	Exposure duration (years)	30	ASC NEPM (2013) - commercial/industrial.
AT	Averaging time - Non-threshold (hours)	613200	ASC NEPM (2013) - commercial/industrial.
	Averaging time -Threshold (hours)	262800	ASC NEPM (2013) - commercial/industrial.

CoPC	Grid Maximum GLC (µg/m^3)	Reference Concentration (RfC) (µg/m^3)	Background Concentration (%)	Background Adjusted Reference Concentration (µg/m^3)	Inhalation Unit Risk (µg/m^3)$^{-1}$	Non-Threshold Compounds (Carcinogens)		Threshold Compounds (non-carcinogens)	
						Exposure Adjusted Air Concentration (µg/m^3)	Incremental Lifetime Cancer Risk (ILCR) (unitless)	Exposure Adjusted Air Concentration (µg/m^3)	Hazard Quotient (HQ)
antimony	7.72E-05	21	0%	21	-	-	-	1.90E-05	9.06E-07
arsenic	5.15E-05	1	0%	1	-	-	-	1.27E-05	1.27E-05
beryllium	4.54E-08	0.02	0%	0.02	2.40E-03	4.80E-09	1.15E-11	1.12E-08	5.60E-07
cadmium	2.60E-04	0.005	20%	0.004	-	-	-	6.41E-05	1.60E-02
cobalt	5.15E-05	0.1	0%	0.1	-	-	-	1.27E-05	1.27E-04
copper	3.86E-04	490	70%	147	-	-	-	9.52E-05	6.47E-07
chromium VI	4.40E-04	0.1	0%	0.1	-	-	-	1.08E-04	1.08E-03
lead	5.66E-04	0.5	0%	0.5	-	-	-	1.40E-04	2.79E-04
molybdenum	1.43E-07	12	0%	12	-	-	-	3.53E-08	2.94E-09
manganese	8.75E-04	0.15	20%	0.12	-	-	-	2.16E-04	1.80E-03
mercury	3.25E-04	0.2	10%	0.18	-	-	-	8.01E-05	4.45E-04
nickel	7.72E-04	0.02	20%	0.016	-	-	-	1.90E-04	1.19E-02
selenium	1.38E-05	21	60%	8.4	-	-	-	3.40E-06	4.05E-07
silver	2.21E-06	17.5	0%	17.5	-	-	-	5.45E-07	3.11E-08
tin	2.16E-05	700	0%	700	-	-	-	5.33E-06	7.61E-09
thallium	3.25E-05	0.035	0%	0.035	-	-	-	8.01E-06	2.29E-04
vanadium	2.57E-05	1	0%	1	-	-	-	6.34E-06	6.34E-06
zinc	2.40E-04	1750	90%	175	-	-	-	5.92E-05	3.38E-07
dioxins and furans as PCDD and PCDF	6.49E-10	0.00000805	57%	3.4615E-06	-	-	-	1.60E-10	4.62E-05
PAHs as benzo(a)pyrene	3.25E-06	-	-	-	8.70E-02	3.43E-07	2.99E-08	-	-
PCBs	1.04E-10	0.5	0%	0.5	-	-	-	2.56E-11	5.13E-11
hexachlorobenzene	5.33E-08	0.16	0%	0.16	-	-	-	1.31E-08	8.21E-08
benzene	6.49E-02	30	20%	24	6.00E-06	6.86E-03	4.11E-08	1.60E-02	6.67E-04
						Total ILCR (Adult)	**7.10E-08**	**Hazard Index (∑HQ) (Adult)**	**3.26E-02**

Notes:
Where ground level concentrations were not available for Scenario 4, AECOM has adopted ground level concentrations from Scenario 1 to determine representative risk estimates i.e. Be, Mo, Se, Ag, Sn, Zn, PAHs, PCBs and HCB.

Potential Concentration in Soils Following Dust Deposition

Site Energy from Waste Facility
Address Honeycomb Drive, Eastern Creek
Client Dial-A-Dump Industries

Concentration in Soils

$$C_s = \frac{DR \times (1 - e^{-k \times t})}{d \times \rho \times k} \times 1000$$

Parameter	Description and Units	Adopted Value		Notes
C_s	Concentration of CoPC in soil (mg/kg)	See below		Calculated using above equation (Stevens, 1991).
DR	Particle deposition rate for accidental release (mg/m^2/year)	See below		Provided by Pacific Environment. Maximum modelled deposition rate for receptors combined.
k	Chemical-specific soil-loss constant (1/year) = ln(2)/$T^{0.5}$	See below		Calculated using equation ln(2)/$T^{0.5}$.
$T^{0.5}$	Chemical half-life in soil (years)	See below		NHMRC (2002) for dioxins and furans (surface soil). Conservative value adopted for heavy metals in the absense of published data.
t	Accumulation time (years)	25		Emissions may occur for the assumed lifetime of the EFW Facility.
d	Soil mixing depth (m)	0.01	0.15	It is assumed that the soil where deposition occurs is not well mixed (as would be the case in a garden or cultivated bed), and hence the mixing depth for depositied soils and dusts has been taken to be 1cm. For the assessment of potential plant uptake, a soil mixing zone of 15cm has been assumed within the root zone of plants.
ρ	Soil bulk-density (g/m^3)	1.60E+06		Sandy soils (representative of surface soils) typically have bulk densities between 1.3 g/cm^3 to 1.7 g/cm^3 (McKenzie et al., 2004). In general, bulk densities greater than 1.6 g/cm^3 tend to restrict root growth.
1000	Conversion from g to kg	-		

CoPC	Deposition Rate (total) (mg/m^2/year)	k (1/year)	$T^{0.5}$ (years)	C_s (mg/kg) - Surface Soil	C_s (mg/kg) - Soil-Plant Root Zone
antimony	2.01E-03	0.01	100	2.88E-03	1.92E-04
arsenic	1.34E-03	0.01	100	1.92E-03	1.28E-04
beryllium	0.00E+00	Not bioaccumulative (ATSDR, 2002)			
cadmium	6.76E-03	0.01	100	9.70E-03	6.47E-04
chromium (total)	1.15E-02	0.01	100	1.65E-02	1.10E-03
cobalt	1.34E-03	0.01	100	1.92E-03	1.28E-04
copper	1.00E-02	0.01	100	1.43E-02	9.56E-04
lead	1.47E-02	0.01	100	2.11E-02	1.41E-03
molybdenum	0.00E+00	Not bioaccumulative (NHMRC, 2015)			
manganese	0.00E+00	Not bioaccumulative (ATSDR, 2012)			
mercury	8.45E-03	0.01	100	1.21E-02	8.08E-04
nickel	2.01E-02	0.01	100	2.88E-02	1.92E-03
selenium	3.58E-04	0.01	100	5.14E-04	3.42E-05
silver	0.00E+00	Not bioaccumulative (ATSDR, 1990)			
tin	0.00E+00	Not bioaccumulative (NHMRC, 2015)			
thallium	8.45E-04	0.01	100	1.21E-03	8.08E-05
vanadium	6.70E-04	0.01	100	9.61E-04	6.41E-05
zinc	6.25E-03	0.01	100	8.97E-03	5.98E-04
dioxins and furans as PCDD and PCDF	1.69E-08	0.05	15	1.57E-08	1.04E-09
PAHs as benzo(a)pyrene	8.45E-05	0.48	1.45	1.10E-05	7.37E-07
polychlorinated biphenyls (PCBs)	2.70E-09	0.27	2.58	6.26E-10	4.17E-11
hexachlorobenzene	1.39E-06	0.12	5.70	6.80E-07	4.53E-08

Notes:

Where dust deposition rates were not available for Scenario 4, AECOM has adopted dust deposition rates from Scenario 1 to determine representative risk estimates i.e. Se, Zn, PAHs, PCBs and HCB.

For metals that were considered to be bioaccumulative and/or persistent, a conservative half-life value of 100 years was adopted in the absence of published data to account for the slow (or no) breakdown in the environment.

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Health Risk Calculations - Ingestion of Home-grown Produce

Site	Energy from Waste Facility
Address	Honeycomb Drive, Eastern Creek
Client	Dial-A-Dump Industries
Scenario:	Ingestion of Homegrown Produce by Off-site Residents (Adult and Child)

Concentration in Home-grown Produce

Deposited Material on Aboveground Plants

$$C_p = \frac{DR \times F \times (1 - e^{-k \times t})}{Y \times k}$$

Parameter	Description and Units	Adopted Value	Notes
C_p	Concentration of CoPC in plant (mg/kg plant - wet weight)	See below	Calculated using above equation from HHRAP (Stevens, 1991).
DR	Particle deposition rate for accidental release (mg/m^2/day)	See below	Provided by Pacific Environment. Maximum modelled deposition rate for receptors combined.
F	Fraction for the surface area of plant (unitless)	0.051	For leafy aboveground crops, the surface area fraction (or plant interception fraction - how much of the depositing material remains on the plant) is estimated to be 0.051 (Stevens, 1991).
k	Chemical-specific loss constant for particles on plants (1/days) = ln(2)/$T^{0.5}$	See below	Calculated using equation ln(2)/$T^{0.5}$.
$T^{0.5}$	Chemical half-life on plant (days)	14	Weathering of particulates on plant surfaces does occur and in the absence of measured data, it is generally assumed that organics deposited onto the outer portion of plant surfaces have a weathering half-life of 14 days (Stevens, 1991). Conservative value adopted for heavy metals in the absense of published data.
t	Deposition time or length of growing season (days)	70	The growing season for typical aboveground plants varies, however it may be up to 70 days (i.e. tomatoes), which has been used in the calculation on concentrations during normal operations.
Y	Crop yield (kg/m^2)	2	Given that the residential areas surrounding the Site are typically urban low-density residential properties, the types of edible plant expected to be grown on the properties include tomatoes and beans. Corn, hay and wheat are not expected to be grown for human consumption in significant quantities in the area. For typical crops grown aboveground an average crop yield of 2 kg/m^2 has been adopted.

CoPC	DR (mg/m^2/day)	k (1/days)	C_p (mg/kg plant - wet weight)
antimony	2.01E-03	4.95E-02	1.00E-03
arsenic	1.34E-03	4.95E-02	6.69E-04
cadmium	6.76E-03	4.95E-02	3.37E-03
chromium (total)	1.15E-02	4.95E-02	5.74E-03
cobalt	1.34E-03	4.95E-02	6.69E-04
copper	1.00E-02	4.95E-02	4.99E-03
lead	1.47E-02	4.95E-02	7.33E-03
mercury	8.45E-03	4.95E-02	4.22E-03
nickel	2.01E-02	4.95E-02	1.00E-02
selenium	3.58E-04	4.95E-02	1.79E-04
thallium	8.45E-04	4.95E-02	4.22E-04
vanadium	6.70E-04	4.95E-02	3.34E-04
zinc	6.25E-03	4.95E-02	3.12E-03
dioxins and furans as PCDD and PCDF	1.69E-08	4.95E-02	8.43E-09
PAHs as benzo(a)pyrene	8.45E-05	4.95E-02	4.22E-05
polychlorinated biphenyls (PCBs)	2.70E-09	4.95E-02	1.35E-09
hexachlorobenzene	1.39E-06	4.95E-02	6.94E-07

Uptake of Chemicals via Roots

$$C_{rp} = C_s \times RUF$$

Parameter	Description and Units	Adopted Value	Notes
C_{rp}	Concentration of persistent CoPC in root of plant (mg/kg plant - wet weight)	See below	Calculated using above equation (US EPA, 2005).
C_s	Concentration of persistent CoPC in soil assuming 15 cm mixing depth within gardens (mg/kg)	See below	Refer to Dust Deposition Model.
RUF	Root uptake factor (unitless)	See below	RAIS (Accessed 2017). Soil to wet plant uptake factor adopted. Value for 2,3,7,8-TCDD conservatively selected for dioxins and furans.

CoPC	Cs (mg/kg) - Soil-Plant Root Zone	RUF (unitless)	C_{rp} (mg/kg plant - wet weight)
antimony	1.92E-04	1.00E-02	1.92E-06
arsenic	1.28E-04	1.00E-02	1.28E-06
cadmium	6.47E-04	1.38E-01	8.92E-05
chromium (total)	1.10E-03	1.87E-03	2.06E-06
cobalt	1.28E-04	5.00E-03	6.41E-07
copper	9.56E-04	1.00E-01	9.56E-05
lead	1.41E-03	1.12E-02	1.57E-05
mercury	8.08E-04	2.25E-01	1.82E-04
nickel	1.92E-03	1.50E-02	2.88E-05
selenium	3.42E-05	6.25E-03	2.14E-07
thallium	8.08E-05	1.00E-03	8.08E-08
vanadium	6.41E-05	1.37E-03	8.78E-08
zinc	5.98E-04	2.64E-01	1.58E-04
dioxins and furans as PCDD and PCDF	1.04E-09	8.76E-04	9.14E-13
PAHs as benzo(a)pyrene	7.37E-07	2.14E-03	1.58E-09
polychlorinated biphenyls (PCBs)	4.17E-11	5.87E-04	2.45E-14
hexachlorobenzene	4.53E-08	3.66E-03	1.66E-10

Ingestion of Home-grown Produce

Percentage of Fruit and Vegatable per produce group (Table 7, Schedule B7, ASC NEPM (2013)).

Produce Group	Adults (%)	Adult Consumption Rate (g/day)	Portion of Aboveground Plants (Green Vegetables and Tree Fruit)	Portion of Root Plants (Root Vegetables and Tuber Vegetables)	Children (%)	Child Consumption Rate (g/day)	Portion of Aboveground Plants (Green Vegetables and Tree Fruit)	Portion of Root Plants (Root Vegetables and Tuber Vegetables)
Green Vegetables	59	153.4	0.73	0.27	55	55	0.84	0.16
Root Vegetables	18	46.8			17	17		
Tuber Vegetables	23	59.8			28	28		
Tree Fruit	100	140			100	180		
Total Consumption		**400**				**280**		

$$Intake\ Factor = \frac{IR \times FI \times ME \times EF \times ED}{BW \times AT}$$

$$Daily\ Intake = Concentration\ in\ Produce \times Intake\ Factor$$

Parameter	Description and Units	Adopted Value Adult	Adopted Value Child	Notes
Intake Factor	Intake factor (kg/kg/day)	See model below		-
IR	Ingestion rate (kg/day)	0.469	0.202	
FI	Fraction ingested from a home-grown source (FI)	0.1		10% from home-grown source, as per ASC NEPM (2013) - low to medium density residential
ME	Matrix Effect (unitless)	1		Assumed to be 100% bioavailable
EF	Exposure frequency (days/year)	365	365	ASC NEPM (2013) - low to medium density residential
ED	Exposure duration (years)	29	6	ASC NEPM (2013) - low to medium density residential
BW	Body weight (kg)	70	15	ASC NEPM (2013) - low to medium density residential
AT	Averaging time - Non-threshold (days)	25550	25550	ASC NEPM (2013) - low to medium density residential. Based on a lifetime exposure of 70 years.
	Averaging time -Threshold (days)	10585	2190	ASC NEPM (2013) - low to medium density residential. Equal to exposure duration.

			Adult Intake Factor (kg/kg/day)		Child Intake Factor (kg/kg/day)		Adult Daily Intake from Produce (mg/kg/day)		Child Daily Intake from Produce (mg/kg/day)	
CoPC	Adult Concentration in Produce (wet weight, mg/kg) (a)	Child Concentration in Produce (wet weight, mg/kg) (a)	Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)	Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)	Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)	Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)
antimony	7.36E-04	8.42E-04	2.78E-04	6.70E-04	1.15E-04	1.35E-03	-	4.93E-07	-	1.13E-06
arsenic	4.91E-04	5.61E-04					-	3.29E-07	-	7.56E-07
cadmium	2.50E-03	2.85E-03					-	1.67E-06	-	3.83E-06
chromium (total)	4.21E-03	4.82E-03					-	2.82E-06	-	6.49E-06
cobalt	4.91E-04	5.61E-04					-	3.29E-07	-	7.56E-07
copper	3.69E-03	4.20E-03					-	2.47E-06	-	5.66E-06
lead	5.38E-03	6.16E-03					-	3.61E-06	-	8.29E-06
mercury	3.14E-03	3.57E-03					-	2.10E-06	-	4.80E-06
nickel	7.36E-03	8.42E-03					-	4.93E-06	-	1.13E-05
selenium	1.31E-04	1.50E-04					-	8.78E-08	-	2.02E-07
thallium	3.09E-04	3.54E-04					-	2.07E-07	-	4.77E-07
vanadium	2.45E-04	2.81E-04					-	1.64E-07	-	3.78E-07
zinc	2.33E-03	2.64E-03					-	1.56E-06	-	3.56E-06
dioxins and furans as PCDD and PCDF	6.19E-09	7.08E-09					-	4.14E-12	-	9.53E-12
PAHs as benzo(a)pyrene	3.09E-05	3.54E-05					8.58E-09	-	4.08E-09	-
polychlorinated biphenyls (PCBs)	9.88E-10	1.13E-09					-	6.62E-13	-	1.52E-12
hexachlorobenzene	5.09E-07	5.82E-07					-	3.41E-10	-	7.84E-10

(a) Calculated based on portions of aboveground and root plants as presented above.

			Adult Non-Threshold Compounds (Carcinogens)	Adult Threshold Compounds (Non-carcinogens)	Child Non-Threshold Compounds (Carcinogens)	Child Threshold Compounds (Non-carcinogens)
CoPC	Oral Cancer Slope Factor (CSF) $(mg/kg/day)^{-1}$	Background Adjusted Oral Reference Dose (RfD) mg/kg/day	Incremental Lifetime Cancer Risk (ILCR) (unitless)	Hazard Quotient (HQ)	Incremental Lifetime Cancer Risk (ILCR) (unitless)	Hazard Quotient (HQ)
antimony	-	6.00E-03	-	8.22E-05	-	1.89E-04
arsenic	-	1.00E-03	-	3.29E-04	-	7.56E-04
cadmium	-	3.20E-04	-	5.23E-03	-	1.20E-02
chromium (total)	-	9.00E-04	-	3.13E-03	-	7.21E-03
cobalt	-	0.0014	-	2.35E-04	-	5.40E-04
copper	-	0.14	-	1.76E-05	-	4.04E-05
lead	-	3.50E-03	-	1.03E-03	-	2.37E-03
mercury	-	3.60E-04	-	5.85E-03	-	1.33E-02
nickel	-	0.012	-	4.11E-04	-	9.45E-04
selenium	-	2.40E-03	-	3.66E-05	-	8.41E-05
thallium	-	0.00001	-	2.07E-02	-	4.77E-02
vanadium	-	0.01	-	1.64E-05	-	3.78E-05
zinc	-	5.00E-02	-	3.12E-05	-	7.12E-05
dioxins and furans as PCDD and PCDF	-	9.89E-10	-	4.19E-03	-	9.64E-03
PAHs as benzo(a)pyrene	0.5	-	4.29E-09	-	2.04E-09	-
polychlorinated biphenyls (PCBs)	-	0.00002	-	3.31E-08	-	7.61E-08
hexachlorobenzene	-	0.00016	-	2.13E-06	-	4.90E-06
		Total	**4.29E-09**	**4.13E-02**	**2.04E-09**	**9.49E-02**

Health Risk Calculations - Ingestion of Poultry and Eggs
Site Energy from Waste Facility
Address Honeycomb Drive, Eastern Creek
Client Dial-A-Dump Industries
Scenario: Ingestion of Poultry and Eggs by Off-site Residents (Adult and Child)

Concentration in Eggs

$$A_{egg} = [\Sigma(F_i \times Qpi \times Pi) + Qs \times Cs \times Bs] \times (Ba_{egg})$$

Parameter	Description and Units	Adopted Value	Notes
A_{egg}	Concentration of COPC in eggs (mg COPC/kg FW tissue)	See model below	Calculated using above equation.
F_i	Fraction of plant type (i) (grain) grown on contaminated soil and ingested by the animal (chicken) (unitless)	1	Recommended by HHRAP (US EPA, 2005). Assumed 100% of the plant material eaten by chickens were grown on soil contaminated by emission sources.
Qp_i	Quantity of plant type (i) (grain) eaten by the animal (chicken) each day (kg DW plant/day)	0.2	Recommended by HHRAP (US EPA, 2005). Estimated for grain feed only.
P_i	Concentration of CoPC in plant type (i) (grain) eaten by the animal (chicken) (mg/kg DW)	See home-grown produce model	Refer to C_p and C_{rp} (mg/kg plant - wet weight). Although C_p and C_{rp} are presented as a wet weight, this is unlikely to affected the outcome of the assessment as dust deposition rates included both wet and dry deposition.
Qs	Quantity of soil eaten by the animal (chicken) (kg/day)	0.022	Recommended by HHRAP (US EPA, 2005).
Cs	Average soil concentration over exposure duration (mg CoPC/kg soil)	See dust-deposition model	Refer to C_s Soil-Plant Root Zone (mg/kg)
Bs	Soil bioavailability factor (unitless)	1	Default value recommended by HHRAP (US EPA, 2005).
Ba_{egg}	CoPC biotransfer factor for eggs (day/kg FW tissue)	See model below	The highest biotransfer factor for eggs recommended by the HHRAP Database (US EPA, 2005) or published by OEHHA (2015) was conservatively selected in the HHRA. OEHHA values were adopted for arsenic, cadmium, lead, mercury, nickel, selenium, HCB, PCBs and dioxins and furans (value for 2,3,7,8-TCDD adopted for dioxins and furans). HHRAP Database values were adopted for antimony, chromium and PAHs. For antimony, chromium and thallium, an egg biotransfer coefficient was not available and therefore fat transfer coefficients were estimated from the beef transfer coefficient. The egg biotransfer coefficient was then estimated by using the fat transfer coefficient and assumed that eggs contain a fat content of 8% consistent with US EPA (2005) and the following equations: $Ba_{beef} = 10^{logBafat} \times 0.19$ $Ba_{egg} = 10^{logBafat} \times 0.08$ No biotransfer factors were available in literature for cobalt, copper and vandadium, therefore no transfer factor has been applied.

CoPC	Concentration of CoPC in Plant (mg/kg DW) (P_i)	Cs (mg/kg) - Soil-Plant Root Zone	A_{egg} CoPC biotransfer factor for eggs (Ba_{egg}) (day/kg FW tissue)	A_{egg} Concentration of COPC in eggs (A_{egg}) (mg COPC/kg FW tissue)
antimony	1.00E-03	1.92E-04	4.21E-04	8.64E-08
arsenic	6.70E-04	1.28E-04	7.00E-02	9.58E-06
cadmium	3.46E-03	6.47E-04	1.00E-02	7.07E-06
chromium (total)	5.74E-03	1.10E-03	2.32E-03	2.71E-06
cobalt	6.69E-04	1.28E-04	0.00E+00	0.00E+00
copper	5.09E-03	9.56E-04	0.00E+00	0.00E+00
lead	7.35E-03	1.41E-03	4.00E-02	6.00E-05
mercury	4.40E-03	8.08E-04	8.00E-01	7.18E-04
nickel	1.01E-02	1.92E-03	2.00E-02	4.11E-05
selenium	1.79E-04	3.42E-05	3.00E+00	1.10E-04
thallium	4.22E-04	8.08E-05	1.68E-02	1.45E-06
vanadium	3.34E-04	6.41E-05	0.00E+00	0.00E+00
zinc	3.28E-03	5.98E-04	4.21E-02	2.81E-05
dioxins and furans as PCDD and PCDF	8.43E-09	1.04E-09	1.00E+01	1.71E-08
PAHs as benzo(a)pyrene	4.22E-05	7.37E-07	3.00E-03	2.53E-08
polychlorinated biphenyls (PCBs)	1.35E-09	4.17E-11	1.00E+01	2.70E-09
hexachlorobenzene	6.94E-07	4.53E-08	2.00E+01	2.79E-06

Ingestion of Eggs

$$Intake\ Factor = \frac{IR \times FI \times ME \times EF \times ED}{BW \times AT}$$

$$Daily\ Intake\ = Aegg\ \times Intake\ Factor$$

Parameter	Description and Units	Adopted Value		Notes
		Adult	Child	
Intake Factor	Intake factor (kg/kg/day)	See model below		-
IR	Ingestion rate (kg/day)	0.014	0.006	enHealth (2012b). Suggested (average) values for intake of total egg. Value for >19 years adopted for an adult (14 g/day) and 2-3 years adopted for a child (6 g/day).
FI	Fraction ingested from home-grown source (unitess)	1		100% home-sourced eggs as a conservative estimate
ME	Matrix effect (unitless)	1		Assumed 100% bioavailability
EF	Exposure frequency (days/year)	365	365	ASC NEPM (2013) - low to medium density residential
ED	Exposure duration (years)	29	6	ASC NEPM (2013) - low to medium density residential
BW	Body weight (kg)	70	15	ASC NEPM (2013) - low to medium density residential
AT	Averaging time - Non-threshold (days)	25550	25550	ASC NEPM (2013) - low to medium density residential. Based on a lifetime exposure of 70 years.
	Averaging time -Threshold (days)	10585	2190	ASC NEPM (2013) - low to medium density residential. Equal to exposure duration.

		Adult Intake Factor (kg/kg/day)		Child Intake Factor (kg/kg/day)		Adult Daily Intake (mg/kg/day)		Child Daily Intake (mg/kg/day)	
CoPC	Concentration of COPC in eggs (A_{egg}) (mg COPC/kg FW tissue)	Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)	Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)	Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)	Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)
antimony	8.64E-08					-	1.73E-11	-	3.46E-11
arsenic	9.58E-06					-	1.92E-09	-	3.83E-09
cadmium	7.07E-06					-	1.41E-09	-	2.83E-09
chromium (total)	2.71E-06					-	5.43E-10	-	1.09E-09
cobalt	0.00E+00					-	0.00E+00	-	0.00E+00
copper	0.00E+00					-	0.00E+00	-	0.00E+00
lead	6.00E-05					-	1.20E-08	-	2.40E-08
mercury	7.18E-04					-	1.44E-07	-	2.87E-07
nickel	4.11E-05	8.29E-05	2.00E-04	3.43E-05	4.00E-04	-	8.22E-09	-	1.64E-08
selenium	1.10E-04					-	2.19E-08	-	4.38E-08
thallium	1.45E-06					-	2.89E-10	-	5.79E-10
vanadium	0.00E+00					-	0.00E+00	-	0.00E+00
zinc	2.81E-05					-	5.63E-09	-	1.13E-08
dioxins and furans as PCDD and PCDF	1.71E-08					-	3.42E-12	-	6.84E-12
PAHs as benzo(a)pyrene	2.53E-08					2.10E-12	-	8.69E-13	-
polychlorinated biphenyls (PCBs)	2.70E-09					-	5.41E-13	-	1.08E-12
hexachlorobenzene	2.79E-06					-	5.59E-10	-	1.12E-09

			Adult Non-Threshold Compounds (Carcinogens)	Adult Threshold Compounds (Non-carcinogens)	Child Non-Threshold Compounds (Carcinogens)	Child Threshold Compounds (Non-carcinogens)
CoPC	Oral Cancer Slope Factor (CSF) $(mg/kg/day)^{-1}$	Background Adjusted Oral Reference Dose (RfD) mg/kg/day	Incremental Lifetime Cancer Risk (ILCR) (unitless)	Hazard Quotient (HQ)	Incremental Lifetime Cancer Risk (ILCR) (unitless)	Hazard Quotient (HQ)
antimony	-	6.00E-03	-	2.88E-09	-	5.76E-09
arsenic	-	1.00E-03	-	1.92E-06	-	3.83E-06
cadmium	-	3.20E-04	-	4.42E-06	-	8.83E-06
chromium (total)	-	9.00E-04	-	6.03E-07	-	1.21E-06
cobalt	-	1.40E-03	-	0.00E+00	-	0.00E+00
copper	-	1.40E-01	-	0.00E+00	-	0.00E+00
lead	-	3.50E-03	-	3.43E-06	-	6.86E-06
mercury	-	3.60E-04	-	3.99E-04	-	7.98E-04
nickel	-	1.20E-02	-	6.85E-07	-	1.37E-06
selenium	-	2.40E-03	-	9.13E-06	-	1.83E-05
thallium	-	1.00E-05	-	2.89E-05	-	5.79E-05
vanadium	-	1.00E-02	-	0.00E+00	-	0.00E+00
zinc	-	5.00E-02	-	1.13E-07	-	2.25E-07
dioxins and furans as PCDD and PCDF	-	9.89E-10	-	3.46E-03	-	6.91E-03
PAHs as benzo(a)pyrene	0.5	-	1.05E-12	-	4.35E-13	-
polychlorinated biphenyls (PCBs)	-	2.00E-05	-	2.70E-08	-	5.41E-08
hexachlorobenzene	-	1.60E-04	-	3.49E-06	-	6.99E-06
		Total	**1.05E-12**	**3.91E-03**	**4.35E-13**	**7.82E-03**

Health Risk Calculations - Ingestion of Homegrown Beef
Site Energy from Waste Facility
Address Honeycomb Drive, Eastern Creek
Client Dial-A-Dump Industries
Scenario: Ingestion of Homegrown Beef by Off-site Residents (Adult and Child)

Concentration in Beef

$$A_{beef} = [\Sigma(F_i \times Qpi \times Pi) + Qs \times Cs \times Bs] \times Ba_{beef} \times MF$$

Parameter	Description and Units	Adopted Value	Notes
A_{beef}	Concentration of CoPC in beef through ingestion of contaminated feed items (plant) and soil (mg CoPC/kg FW tissue)	See model below	Calculated using above equation.
F_i	Fraction of plant type (i) grown on contaminated soil and ingested by the animal (cattle) (unitless)	1	Recommended by HHRAP (US EPA, 2005). Assumed 100% of the plant material eaten by cattle were grown on soil contaminated by emission sources.
Qp_i	Quantity of plant type (i) eaten by the animal (cattle) per day (kg DW plant/day)	11.8	Recommended by HHRAP (US EPA, 2005). Sum of beef ingestion rates for forage (8.8 kg DW/day), silage (2.5 kg DW/day) and grain (0.47 kg DW/day).
P_i	Concentration of CoPC in each plant type (i) eaten by the animal (cattle) (mg/kg DW)	See home-grown produce model	Refer to C_p and C_{rp} (mg/kg plant - wet weight). Although C_p and C_{rp} are presented as a wet weight, this is unlikely to affected the outcome of the
Qs	Quantity of soil eaten by the animal (cattle) each day (kg/day)	0.5	Recommended by HHRAP (US EPA, 2005).
Cs	Average soil concentration over exposure duration (mg CoPC/kg soil)	See dust-deposition model	Refer to C_s Soil-Plant Root Zone (mg/kg)
Bs	Soil bioavailability factor (unitless)	1	Default value recommended by HHRAP (US EPA, 2005).
Ba_{beef}	CoPC biotransfer factor for beef (day/kg FW tissue)	See model below	The highest biotransfer factor for beef recommended by the HHRAP Database (US EPA, 2005) or published in RAIS (2017) was conservatively selected in the HHRA. RAIS values were adopted for all metals. HHRAP Database values were adopted for dioxins and furans (value for 2,3,7,8-TCDD adopted for dioxins and furans).
MF	Metabolism factor (unitless)	1	Default value recommended by HHRAP (US EPA, 2005).

CoPC	Concentration of CoPC in Plant (mg/kg DW) (P_i)	Cs (mg/kg) - Soil-Plant Root Zone	CoPC biotransfer factor for beef Ba_{beef} (day/kg FW tissue)	Concentration of CoPC in beef through ingestion of contaminated feed items (plant) and soil A_{beef} (mg CoPC/kg FW tissue)
antimony	1.00E-03	1.92E-04	0.001	1.19E-05
arsenic	6.70E-04	1.28E-04	0.002	1.59E-05
cadmium	3.46E-03	6.47E-04	0.00055	2.26E-05
chromium (total)	5.74E-03	1.10E-03	0.0055	3.75E-04
cobalt	6.69E-04	1.28E-04	0.02	1.59E-04
copper	5.09E-03	9.56E-04	0.01	6.03E-04
lead	7.35E-03	1.41E-03	0.0004	3.49E-05
mercury	4.40E-03	8.08E-04	0.25	1.30E-02
nickel	1.01E-02	1.92E-03	0.006	7.16E-04
selenium	1.79E-04	3.42E-05	0.015	3.18E-05
thallium	4.22E-04	8.08E-05	0.04	2.00E-04
vanadium	3.34E-04	6.41E-05	0.0025	9.92E-06
zinc	3.28E-03	5.98E-04	0.1	3.89E-03
dioxins and furans as PCDD and PCDF	8.43E-09	1.04E-09	2.61	2.61E-07
PAHs as benzo(a)pyrene	4.22E-05	7.37E-07	0.0337	1.67E-05
polychlorinated biphenyls (PCBs)	1.35E-09	4.17E-11	0.315	5.00E-09
hexachlorobenzene	6.94E-07	4.53E-08	0.0134	1.10E-07

Ingestion of Beef

$$Intake\ Factor = \frac{IR \times FI \times ME \times EF \times ED}{BW \times AT}$$

$$Daily\ Intake\ = Abeef\ \times Intake\ Factor$$

Parameter	Description and Units	Adopted Value		Notes
		Adult	Child	
Intake Factor	Intake factor (kg/kg/day)	See model below		-
IR	Ingestion rate (kg/day)	0.16	0.06	enHealth (2012b). Suggested (average) values for intake of total meat. Value for >19 years adopted for an adult (160 g/day) and 2-3 years adopted for a child (60 g/day).
FI	Fraction ingested from home-grown source (unitess)	0.01		Assumed less than 1% of beef sourced from adjacent site ingested as a conservative estimate
ME	Matrix effect (unitless)	1		Assumed 100% bioavailability
EF	Exposure frequency (days/year)	365	365	ASC NEPM (2013) - low to medium density residential
ED	Exposure duration (years)	29	6	ASC NEPM (2013) - low to medium density residential
BW	Body weight (kg)	70	15	ASC NEPM (2013) - low to medium density residential
AT	Averaging time - Non-threshold (days)	25550	25550	ASC NEPM (2013) - low to medium density residential. Based on a lifetime exposure of 70 years.
	Averaging time -Threshold (days)	10585	2190	ASC NEPM (2013) - low to medium density residential. Equal to exposure duration.

CoPC	Concentration of CoPC in beef through ingestion of contaminated feed items (plant) and soil A_{beef} (mg CoPC/kg FW)	Adult Intake Factor (kg/kg/day)		Child Intake Factor (kg/kg/day)		Adult Daily Intake (mg/kg/day)		Child Daily Intake (mg/kg/day)	
		Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)	Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)	Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)	Non-Threshold Compounds (Carcinogens)	Threshold Compounds (Non-carcinogens)
antimony	1.19E-05					-	2.73E-10	-	4.77E-10
arsenic	1.59E-05					-	3.63E-10	-	6.36E-10
cadmium	2.26E-05					-	5.16E-10	-	9.04E-10
chromium (total)	3.75E-04					-	8.56E-09	-	1.50E-08
cobalt	1.59E-04					-	3.63E-09	-	6.35E-09
copper	6.03E-04					-	1.38E-08	-	2.41E-08
lead	3.49E-05					-	7.97E-10	-	1.40E-09
mercury	1.30E-02					-	2.98E-07	-	5.22E-07
nickel	7.16E-04	9.47E-06	2.29E-05	3.43E-06	4.00E-05	-	1.64E-08	-	2.86E-08
selenium	3.18E-05					-	7.28E-10	-	1.27E-09
thallium	2.00E-04					-	4.57E-09	-	8.01E-09
vanadium	9.92E-06					-	2.27E-10	-	3.97E-10
zinc	3.89E-03					-	8.88E-08	-	1.55E-07
dioxins and furans as PCDD and PCDF	2.61E-07					-	5.96E-12	-	1.04E-11
PAHs as benzo(a)pyrene	1.67E-05					1.58E-10	-	5.74E-11	-
polychlorinated biphenyls (PCBs)	5.00E-09					-	1.14E-13	-	2.00E-13
hexachlorobenzene	1.10E-07					-	2.51E-12	-	4.39E-12

CoPC	Oral Cancer Slope Factor (CSF) $(mg/kg/day)^{-1}$	Background Adjusted Oral Reference Dose (RfD) mg/kg/day	Adult Non-Threshold Compounds (Carcinogens)	Adult Threshold Compounds (Non-carcinogens)	Child Non-Threshold Compounds (Carcinogens)	Child Threshold Compounds (Non-carcinogens)
			Incremental Lifetime Cancer Risk (ILCR) (unitless)	Hazard Quotient (HQ)	Incremental Lifetime Cancer Risk (ILCR) (unitless)	Hazard Quotient (HQ)
antimony	-	6.00E-03	-	4.54E-08	-	7.95E-08
arsenic	-	1.00E-03	-	3.63E-07	-	6.36E-07
cadmium	-	3.20E-04	-	1.61E-06	-	2.82E-06
chromium (total)	-	9.00E-04	-	9.51E-06	-	1.66E-05
cobalt	-	1.40E-03	-	2.59E-06	-	4.54E-06
copper	-	1.40E-01	-	9.85E-08	-	1.72E-07
lead	-	3.50E-03	-	2.28E-07	-	3.99E-07
mercury	-	3.60E-04	-	8.28E-04	-	1.45E-03
nickel	-	1.20E-02	-	1.36E-06	-	2.39E-06
selenium	-	2.40E-03	-	3.03E-07	-	5.31E-07
thallium	-	1.00E-05	-	4.57E-04	-	8.01E-04
vanadium	-	1.00E-02	-	2.27E-08	-	3.97E-08
zinc	-	5.00E-02	-	1.78E-06	-	3.11E-06
dioxins and furans as PCDD and PCDF	-	9.89E-10	-	6.02E-03	-	1.05E-02
PAHs as benzo(a)pyrene	0.5	-	7.92E-11	-	2.87E-11	-
polychlorinated biphenyls (PCBs)	-	2.00E-05	-	5.72E-09	-	1.00E-08
hexachlorobenzene	-	1.60E-04	-	1.57E-08	-	2.74E-08
		Total	**7.92E-11**	**7.33E-03**	**2.87E-11**	**1.28E-02**

Health Risk Calculations - Ingestion of Breastmilk

Site	Energy from Waste Facility
Address	Honeycomb Drive, Eastern Creek
Client	Dial-A-Dump Industries
Scenario:	Ingestion of Breastmilk by Off-site Residents (Child)

Concentration in Breastmilk

$$C_{\text{milk fat}} = \frac{m \times h \times f_1}{0.693 \times f_2}$$

Parameter	Description and Units	Adopted Value	Notes
$C_{\text{milk fat}}$	Concentration of CoPC in milk fat (mg/kg)	See model below	-
m	Average maternal intake (mg/kg/day)	See model below	The potential maternal intake is a highly variable parameter in the above equation. It can be assumed that the calculations undertaken to calculate adult intake of each CoPC via inhalation and ingestion are relevant for a mother who may be breastfeeding an infant.
h	Half-life of chemical in body, adults (days)	See model below	Value from NHMRC (2002) for dioxins and furans. Value from HSDB online database for PAHs (current to 2010). Value from WHO (2011), NHMRC (2016) or the HSDB online database for most metals. For mercury, the biological half-life is stated to be 'many years', which was assumed to be 10 years. For copper a study by Johnson et al (1992) was used and for vanadium a study by Barceloux (1999) was used. For PCBs, a study by Ritter et al (2011) was used.
f_1	Fraction of ingested chemical stored in fat (unitless)	0.9	No data is available that is specific to the fraction of organic chemicals that may be stored as fat and hence available data for dioxins has been adopted. The fraction of ingested organic chemicals which is stored as fat is recommended to be 0.9 (US EPA, 1998).
f_2	Fraction of mothers weight that is fat (unitless)	0.35	The recommended fraction of mother's body weight which is fat is 0.35 (for females in south-eastern urban areas of Australia aged 31 to 45 years (DEH, 2005)).

CoPC	Adult intake from air, soil (ingestion and dermal contact), home-grown, produce, eggs and beef (m) (mg/kg/day)	Half-life of chemical in body, adults (h) (days)	Concentration of CoPC in milk fat ($C_{\text{milk fat}}$) (mg/kg)
antimony	5.33E-07	40	7.91E-05
arsenic	3.57E-07	60	7.94E-05
cadmium	1.80E-06	5475	3.66E-02
chromium (total)	3.04E-06	83.4	9.42E-04
cobalt	3.57E-07	1	1.33E-06
copper	2.67E-06	33	3.27E-04
lead	3.90E-06	10950	1.58E-01
mercury	2.70E-06	3650	3.66E-02
nickel	5.34E-06	1.8	3.57E-05
selenium	1.17E-07	34	1.48E-05
thallium	2.28E-07	30	2.54E-05
vanadium	1.77E-07	1.2	7.88E-07
zinc	1.77E-06	243.8	1.60E-03
dioxins and furans as PCDD and PCDF	1.38E-11	2555	1.31E-07
PAHs as benzo(a)pyrene	9.39E-09	5.5	1.92E-07
polychlorinated biphenyls (PCBs)	1.37E-12	5657.5	2.87E-08
hexachlorobenzene	9.30E-10	150	5.18E-07

Daily Intake from Air

$$Intake\ Factor = \frac{InhR \times ET \times FI \times EF \times ED}{BW \times AT}$$

Parameter	Description and Units	Adopted Value (Adult)	Notes
Intake Factor	Intake factor (m^3/kg/day)	See model below	-
InhR	Inhalation Rate (m^3/hour)	1.34	Inhalation rate assuming 20 hours indoors at 1.17 m^3/hour and 4 hours outdoors at 2.2 m^3/hour.
ET	Exposure time (hours/day)	24	ASC NEPM (2013) - low to medium density residential.
FI	Fraction inhaled from contamination source (unitless)	1	Assumed intake from contamination source for the whole ET.
EF	Exposure frequency (days/year)	365	ASC NEPM (2013) - low to medium density residential
ED	Exposure duration (years)	29	ASC NEPM (2013) - low to medium density residential
BW	Body weight (kg)	70	ASC NEPM (2013) - low to medium density residential
AT	Averaging time - Non-threshold (days)	25550	ASC NEPM (2013) - low to medium density residential. Based on a lifetime exposure of 70 years.
	Averaging time -Threshold (days)	10585	ASC NEPM (2013) - low to medium density residential. Equal to exposure duration.

CoPC	Grid Maximum GLC (mg/m^3)	Non-Threshold Slope Factor $(mg/kg/day)^{-1}$ (a)	Background Adjusted Oral Reference Dose (RfD) mg/kg/day (b)	Adult Intake Factor (m^3/kg/day) Non-Threshold Compounds (Carcinogens)	Adult Intake Factor (m^3/kg/day) Threshold Compounds (Non-carcinogens)	Daily Intake from Air (mg/kg/day)
antimony	7.72E-08	-	6.00E-03	0.19	0.46	3.55E-08
arsenic	5.15E-08	-	1.00E-03			2.37E-08
cadmium	2.60E-07	-	3.20E-04			1.19E-07
chromium (total)	4.40E-07	-	9.00E-04			2.02E-07
cobalt	5.15E-08	-	1.40E-03			2.37E-08
copper	3.86E-07	-	1.40E-01			1.77E-07
lead	5.66E-07	-	3.50E-03			2.60E-07
mercury	3.25E-07	-	3.60E-04			1.49E-07
nickel	7.72E-07	-	1.20E-02			3.55E-07
selenium	1.38E-08	-	2.40E-03			6.34E-09
thallium	3.25E-08	-	1.00E-05			1.49E-08
vanadium	2.57E-08	-	1.00E-02			1.18E-08
zinc	2.40E-07	-	5.00E-02			1.10E-07
dioxins and furans as PCDD and PCDF	6.49E-13	-	9.89E-10			2.98E-13
PAHs as benzo(a)pyrene	3.25E-09	0.5	-			6.19E-10
polychlorinated biphenyls (PCBs)	1.04E-13	-	2.00E-05			4.78E-14
hexachlorobenzene	5.33E-11	-	1.60E-04			2.45E-11

(a) WHO (2011) Guidelines for Drinking Water Quality. Fourth Edition. World Health Organization, Switzerland.

(b) DEH (2005) National Dioxins Program, Technical Report No. 12, Human Health Risk Assessment of Dioxins in Australia. Office of Chemical Safety, Australian Government Department of the Environment and Heritage, Canberra.

Ingestion of Breastmilk

$$Intake\ Factor = \frac{IR \times FM \times Ab \times EF \times ED}{BW \times AT}$$

$$Daily\ Intake\ = Cmilk_{fat} \times Intake\ Factor$$

Parameter	Description and Units	Adopted Value (Child)	Notes
Intake Factor	Intake factor (kg/kg/day)	See model below	-
IR	Ingestion rate (kg/day)	0.85	enHealth (2012b). Suggested intake of breastmilk 850 mL/day for an infant less than 6-months of age. High end range of average intake.
FM	Fraction of Fat/Lipids in Milk (unitess)	0.037	DEH (2005)
Ab	Absorption Following Ingestion (unitless)	0.9	DEH (2005)
EF	Exposure frequency (days/year)	365	ASC NEPM (2013) - low to medium density residential
ED	Exposure duration (years)	0.5	Exposure time as an infant
BW	Body weight (kg)	6	Average weight of a 6-month old infant
AT	Averaging time - Non-threshold (days)	25550	ASC NEPM (2013) - low to medium density residential
	Averaging time -Threshold (days)	365	ASC NEPM (2013) - low to medium density residential

CoPC	Concentration of CoPC in milk fat (Cmilk fat) (mg/kg)	Child Intake Factor (kg/kg/day) Non-Threshold Compounds (Carcinogens)	Child Intake Factor (kg/kg/day) Threshold Compounds (Non-carcinogens)	Child Daily Intake (mg/kg/day) Non-Threshold Compounds (Carcinogens)	Child Daily Intake (mg/kg/day) Threshold Compounds (Non-carcinogens)
antimony	7.91E-05	3.37E-05	2.36E-03	-	1.87E-07
arsenic	7.94E-05			-	1.87E-07
cadmium	3.66E-02			-	8.63E-05
chromium (total)	9.42E-04			-	2.22E-06
cobalt	1.33E-06			-	3.13E-09
copper	3.27E-04			-	7.71E-07
lead	1.58E-01			-	3.73E-04
mercury	3.66E-02			-	8.64E-05
nickel	3.57E-05			-	8.41E-08
selenium	1.48E-05			-	3.49E-08
thallium	2.54E-05			-	5.98E-08
vanadium	7.88E-07			-	1.86E-09
zinc	1.60E-03			-	3.78E-06
dioxins and furans as PCDD and PCDF	1.31E-07			-	3.09E-10
PAHs as benzo(a)pyrene	1.92E-07			6.46E-12	-
polychlorinated biphenyls (PCBs)	2.87E-08			-	6.78E-11
hexachlorobenzene	5.18E-07			-	1.22E-09

			Child Non-Threshold Compounds (Carcinogens)	Child Threshold Compounds (Non-carcinogens)
CoPC	**Oral Cancer Slope Factor (CSF) (mg/kg/day)$^{-1}$**	**Background Adjusted Oral Reference Dose (RfD) mg/kg/day**	**Incremental Lifetime Cancer Risk (ILCR) (unitless)**	**Hazard Quotient (HQ)**
antimony	-			
arsenic	-	1.00E-03	-	1.87E-04
cadmium	-	3.20E-04	-	2.70E-01
chromium (total)	-	9.00E-04	-	2.47E-03
cobalt	-	1.40E-03	-	2.23E-06
copper	-	1.40E-01	-	5.51E-06
lead	-	3.50E-03	-	1.07E-01
mercury	-	3.60E-04	-	2.40E-01
nickel	-	1.20E-02	-	7.01E-06
selenium	-	2.40E-03	-	1.45E-05
thallium	-	1.00E-05	-	5.98E-03
vanadium	-	1.00E-02	-	1.86E-07
zinc	-	5.00E-02	-	7.56E-05
dioxins and furans as PCDD and PCDF	-	9.89E-10	-	3.13E-01
PAHs as benzo(a)pyrene	0.5	-	3.23E-12	-
polychlorinated biphenyls (PCBs)	-	2.00E-05	-	3.39002E-06
hexachlorobenzene	-	1.60E-04	-	7.63388E-06
		Total	**3.23E-12**	**9.38E-01**

Health Risk Calculations - Cumulative Risk (Pathways Combined)

Site Energy from Waste Facility
Address Honeycomb Drive, Eastern Creek
Client Dial-A-Dump Industries
Scenario: Cumulative Risk to Residents

Exposure Pathway	Threshold Compounds (Non-carcinogens) - Hazard Index (HI)		Non-Threshold Compounds (Carcinogens) - Incremental Lifetime Cancer Risk (ILCR) (unitless)
	Adult	Child	
Inhalation of Air	1.32E-01	1.32E-01	3.36E-07
Incidental Ingestion of Soil	1.69E-04	1.58E-03	4.79E-12
Dermal Contact with Soil	2.35E-05	4.71E-05	8.74E-12
Ingestion of Home-grown Produce	4.13E-02	4.13E-02	6.33E-09
Ingestion of Eggs	3.91E-03	3.91E-03	1.48E-12
Ingestion of Beef	7.33E-03	7.33E-03	1.08E-10
Total	**1.85E-01**	**1.86E-01**	**3.43E-07**

General Information:	
Site:	Energy from Waste Facility
Address:	Honeycomb Drive, Eastern Creek
Client:	Dial-A-Dump Industries
Scenario:	Scenario 2 Grid Maximum - Direct Contact with Soil by Off-site Residents (Adult and Child)

Receptor:
Residential (High Density/Minimal Soil Access)

Exposure Pathways to Include:	
	Enter "x" in box by clicking the select buttons.
Soil Pathways	
x	Incidental Ingestion of Soil
x	Dermal Contact with Soil
	Inhalation of Surface Soil-Derived Dust in Indoor Air
	Inhalation of Surface Soil-Derived Dust in Outdoor Air
	Inhalation of Surface Soil-Derived Vapours in Outdoor Air
	Inhalation of Soil-Derived Vapours From Excavation (USEPA 2002 method)
	Inhalation of Subsurface Soil-Derived Vapours in Indoor Air
	Inhalation of Subsurface Soil-Derived Vapours in Outdoor Air
	Incidental Ingestion of Lead in Soil (Adult Lead Model)
	Inhalation of Lead in Soil/Dust Indoors (Adult Lead Model)
	Inhalation of Lead in Dust Outdoors (Adult Lead Model)

Chemicals for Quantitative Assessment:	Chemical Concentrations
	Soil (mg/kg)
Antimony	2.88E-03
Arsenic, Inorganic	1.92E-03
Cadmium	9.70E-03
Chromium(VI)	1.65E-02
Cobalt	1.92E-03
Copper	1.43E-02
Lead	2.11E-02
Mercury (elemental)	1.21E-02
Nickel	2.88E-02
Selenium	5.14E-04
Thallium	1.21E-03
Vanadium	9.61E-04
Zinc (Metallic)	8.97E-03
Dioxins and Furans as PCDD and PCDF	1.57E-08
Benzo(a)pyrene	1.10E-05
Polychlorinated biphenyls	6.26E-10
Hexachlorobenzene (HCB)	6.80E-07

Exposure Parameters:		Exposure Parameters (Adjust for site-specific conditions if required)		Reference (Refer to Exposure Parameter Table in the Report for Justification)	
		Adult	Child	Adult	Child
General receptor parameters:	**Units**				
Body weight	kg	70	15	NEPC (2013)	NEPC (2013)
Exposure duration	yr	29	6	NEPC (2013)	NEPC (2013)
Averaging time (carcinogens)	yr	70	70	NEPC (2013)	NEPC (2013)
Averaging time (non-carcinogens)	yr	29	6	NEPC (2013)	NEPC (2013)
Incidental Soil Ingestion					
Daily soil ingestion rate	mg/day	50	100	NEPC (2013)	NEPC (2013)
Exposure frequency for soil ingestion	days/yr	365	365	NEPC (2013)	NEPC (2013)
Dermal Contact With Soil					
Exposed skin surface area for soil contact	cm2	6300	2700	NEPC (2013). Assumes 31.5% of total body surface area (20,000 cm2)	NEPC (2013). Assumes 44.3% of total body surface area (6,100 cm2)
Soil to skin adherence factor	mg/cm2	0.5	0.5	NEPC (2013)	NEPC (2013)
Exposure frequency for dermal contact with soil	days/yr	365	365	NEPC (2013)	NEPC (2013)
Indoor Inhalation					
Exposure time (indoor air)	hrs/day				
Exposure frequency (indoor air)	days/yr				
Particulate emission factor (indoor air)	m3/kg				
Lung Retention Factor (dust inhalation)	unitless				
Outdoor Inhalation					
Exposure time (outdoor air)	hrs/day				
Exposure frequency (outdoor air)	days/yr				
Particulate emission factor (outdoor air)	m3/kg				
Lung Retention Factor (dust inhalation)	unitless				
Potable Water Ingestion					
Potable water intake rate	L/day				
Exposure frequency for potable water intake	days/yr				

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Health Risk Calculations - Incidental Soil Ingestion

Energy from Waste Facility

Honeycomb Drive, Eastern Creek

Scenario 2 Grid Maximum - Direct Contact with Soil by Off-site Residents (Adult and Child) Scenario

			Threshold Intake and Risk Calculations							Non-Threshold Intake and Risk Calculations					
Chemical	Soil Concentration	Oral Soil Bioavailability Factor	Oral RfD (Background Corrected)	Adult Intake Factor (threshold)	Adult Intake (threshold)	Hazard Index (Adult)	Child Intake Factor (threshold)	Child Intake (threshold)	Hazard Index (Child)	Oral CSF	Adult Intake Factor (non-threshold)	Child Intake Factor (non-threshold)	Lifetime Intake Factor (non-threshold)	Lifetime Intake (non-threshold)	Lifetime Excess Cancer Risk
	(mg/kg)	(unitless)	(mg/kg/day)	(kg/kg/day)	(mg/kg/day)	(unitless)	(kg/kg/day)	(mg/kg/day)	(unitless)	(mg/kg/day)-1	(kg/kg/day)	(kg/kg/day)	(kg/kg/day)	(mg/kg/day)	(unitless)
Antimony	0.002883571	2.00E+00	6.00E-03	1.43E-06	4.12E-09	6.87E-07	1.33E-05	3.84E-08	6.41E-06	-	-	-	-	-	-
Arsenic, Inorganic	0.00192238	1.00E+00	1.00E-03	7.14E-07	1.37E-09	1.37E-06	6.67E-06	1.28E-08	1.28E-05	-	-	-	-	-	-
Cadmium	0.009697979	1.00E+00	3.20E-04	7.14E-07	6.93E-09	2.16E-05	6.67E-06	6.47E-08	2.02E-04	-	-	-	-	-	-
Chromium(VI)	0.01649804	1.00E+00	9.00E-04	7.14E-07	1.18E-08	1.31E-05	6.67E-06	1.10E-07	1.22E-04	-	-	-	-	-	-
Cobalt	0.00192238	1.00E+00	1.12E-03	7.14E-07	1.37E-09	1.23E-06	6.67E-06	1.28E-08	1.14E-05	-	-	-	-	-	-
Copper	0.014346122	1.00E+00	4.20E-02	7.14E-07	1.02E-08	2.44E-07	6.67E-06	9.56E-08	2.28E-06	-	-	-	-	-	-
Lead	0.021088799	1.00E+00	3.50E-03	7.14E-07	1.51E-08	4.30E-06	6.67E-06	1.41E-07	4.02E-05	-	-	-	-	-	-
Mercury (elemental)	0.012122473	1.00E+00	3.60E-04	7.14E-07	8.66E-09	2.41E-05	6.67E-06	8.08E-08	2.24E-04	-	-	-	-	-	-
Nickel	0.028835705	1.00E+00	4.80E-03	7.14E-07	2.06E-08	4.29E-06	6.67E-06	1.92E-07	4.00E-05	-	-	-	-	-	-
Selenium	0.000513591	1.00E+00	2.40E-03	7.14E-07	3.67E-10	1.53E-07	6.67E-06	3.42E-09	1.43E-06	-	-	-	-	-	-
Thallium	0.001212247	1.00E+00	1.00E-05	7.14E-07	8.66E-10	8.66E-05	6.67E-06	8.08E-09	8.08E-04	-	-	-	-	-	-
Vanadium	0.00096119	1.00E+00	1.00E-02	7.14E-07	6.87E-10	6.87E-08	6.67E-06	6.41E-09	6.41E-07	-	-	-	-	-	-
Zinc (Metallic)	0.008966326	1.00E+00	5.00E-02	7.14E-07	6.40E-09	1.28E-07	6.67E-06	5.98E-08	1.20E-06	-	-	-	-	-	-
Dioxins and Furans as PCDD and PCDF	1.5658E-08	1.00E+00	9.89E-10	7.14E-07	1.12E-14	1.13E-05	6.67E-06	1.04E-13	1.06E-04	-	-	-	-	-	-
Benzo(a)pyrene	1.10478E-05	1.00E+00	-	-	-	-	-	-	-	5.00E-01	2.96E-07	5.71E-07	8.67E-07	9.58E-12	4.79E-12
Polychlorinated biphenyls	6.2623E-10	1.00E+00	2.00E-05	7.14E-07	4.47E-16	2.24E-11	6.67E-06	4.17E-15	2.09E-10	-	-	-	-	-	-
Hexachlorobenzene (HCB)	6.80235E-07	1.00E+00	1.60E-04	7.14E-07	4.86E-13	3.04E-09	6.67E-06	4.53E-12	2.83E-08	-	-	-	-	-	-
TOTAL						**1.69E-04**			**1.58E-03**						**4.79E-12**

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Health Risk Calculations - Dermal Contact with Soil
Energy from Waste Facility
Honeycomb Drive, Eastern Creek
Scenario 2 Grid Maximum - Direct Contact with Soil by Off-site Residents (Adult and Child) Scenario

Chemical	Soil Concentration	Dermal Absorption Factor (DAF)	Threshold Intake and Risk Calculations							Non-Threshold Intake and Risk Calculations					
			Dermal RfD (Background Corrected)	Adult Intake Factor (threshold)	Adult Intake (threshold)	Hazard Index (Adult)	Child Intake Factor (threshold)	Child Intake (threshold)	Hazard Index (Child)	Dermal CSF	Adult Intake Factor (non-threshold)	Child Intake Factor (non-threshold)	Lifetime Intake Factor (non-threshold)	Lifetime Intake (non-threshold)	Lifetime Excess Cancer Risk
	(mg/kg)	(unitless)	(mg/kg/day)	(kg/kg/day)	(mg/kg/day)	(unitless)	(kg/kg/day)	(mg/kg/day)	(unitless)	(mg/kg/day)-1	(kg/kg/day)	(kg/kg/day)	(kg/kg/day)	(mg/kg/day)	(unitless)
Antimony	0.002883571	-	6.00E-03	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic, Inorganic	0.00192238	0.005	1.00E-03	2.25E-07	4.33E-10	4.33E-07	4.50E-07	8.65E-10	8.65E-07	-	-	-	-	-	-
Cadmium	0.009697979	-	3.20E-04	-	-	-	-	-	-	-	-	-	-	-	-
Chromium(VI)	0.01649804	-	2.25E-05	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt	0.00192238	0.001	1.12E-03	4.50E-08	8.65E-11	7.72E-08	9.00E-08	1.73E-10	1.54E-07	-	-	-	-	-	-
Copper	0.014346122	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead	0.021088799	-	3.50E-03	-	-	-	-	-	-	-	-	-	-	-	-
Mercury (elemental)	0.012122473	0.001	2.52E-05	4.50E-08	5.46E-10	2.16E-05	9.00E-08	1.09E-09	4.33E-05	-	-	-	-	-	-
Nickel	0.028835705	0.005	4.80E-03	2.25E-07	6.49E-09	1.35E-06	4.50E-07	1.30E-08	2.70E-06	-	-	-	-	-	-
Selenium	0.000513591	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium	0.001212247	-	1.00E-05	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium	0.00096119	-	2.60E-04	-	-	-	-	-	-	-	-	-	-	-	-
Zinc (Metallic)	0.008966326	0.001	5.00E-02	4.50E-08	4.03E-10	8.07E-09	9.00E-08	8.07E-10	1.61E-08	-	-	-	-	-	-
Dioxins and Furans as PCDD and PCDF	1.5658E-08	-	2.30E-09	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	1.10478E-05	0.06	-	-	-	-	-	-	-	5.00E-01	1.12E-06	4.63E-07	1.58E-06	1.75E-11	8.74E-12
Polychlorinated biphenyls	6.2623E-10	0.14	2.00E-05	6.30E-06	3.95E-15	1.97E-10	1.26E-05	7.89E-15	3.95E-10	-	-	-	-	-	-
Hexachlorobenzene (HCB)	6.80235E-07	0.1	1.60E-04	4.50E-06	3.06E-12	1.91E-08	9.00E-06	6.12E-12	3.83E-08	-	-	-	-	-	-
TOTAL						**2.35E-05**			**4.71E-05**						**8.74E-12**

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Summary of Estimated Health Risks
Energy from Waste Facility
Honeycomb Drive, Eastern Creek
Scenario 2 Grid Maximum - Direct Contact with Soil by Off-site Residents (Adult and Child) Scenario

Exposure Pathway	Threshold Risk Estimates		Non-Threshold Risk Estimates (Lifetime Exposure)
	Adult Exposure	Childhood Exposure	
SOIL EXPOSURE PATHWAYS			
Incidental Ingestion of Soil	1.69E-04	1.58E-03	4.79E-12
Dermal Contact with Soil	2.35E-05	4.71E-05	8.74E-12
Inhalation of Surface Soil-Derived Dust in Indoor Air	-	-	-
Inhalation of Surface Soil-Derived Dust in Outdoor Air	-	-	-
Inhalation of Surface Soil-Derived Vapours in Outdoor Air	-	-	-
Inhalation of Surface Soil-Derived Vapours from Excavation	-	-	-
Inhalation of Subsurface Soil-Derived Vapours in Indoor Air	-	-	-
Inhalation of Subsurface Soil-Derived Vapours in Outdoor Air	-	-	-
TOTAL	**1.93E-04**	**1.63E-03**	**1.35E-11**

Appendix F

Equations

Risk Assessment Equations

1.1 Estimate of Concentration in Media

Concentration in Soil following Dust Deposition (Stevens, 1991)

$$C_s = \frac{DR * (1 - e^{-k*t})}{d * p * k} * 1000$$

Where:

C_s = Concentration of CoPC in soil (mg/kg)

DR = Particle deposition rate for accidental release ($mg/m^2/year$)

K = Chemical-specific soil-loss constant (1/year) = $\ln(2)/T^{0.5}$

T0.5 = Chemical half-life in soil (years)

T = Accumulation time (years)

D = Soil mixing depth (m)

P = Soil bulk-density (g/m^3)

1000 = Conversion from g to kg

Concentration in Home-grown Produce

Plant Uptake Factors

Plants can accumulate contaminants via a number of pathways, the most important of which is typically absorption from the soil solution by roots where, depending on the nature of the contaminant, translocation to other portions of the plant may occur (ASC NEPM 2013).

Reviews of plant uptake models previously conducted by MfE (2011) and EA (2009) identified a range of both simple and complex models are available, however a number of limitations were identified including the limited range of compounds tested (namely polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs) and dioxins) and problems with study data (in reporting dry or fresh weight and whether data was from roots, shoots, fruits or tubers). Overall, the EA (2009) review concluded that the model performance was highly variable and all but one model over-predicted root uptake by at least an order of magnitude. On this basis, MfE (2011) recommended to adopt concentration factors (CFs) based on available published data, and only utilise models when measured values are not available. This approach was adopted in the ASC NEPM 2013 and has therefore been adopted for this assessment.

Before undertaking these calculations it should be ensured that the data sourced from literature are consistently expressed as either mg/kg fresh weight or mg/kg dry weight for the relevant media.

Deposited Material on Aboveground Plants (Stevens, 1991)

$$C_p = \frac{DR * F * (1 - e^{-k*t})}{Y * k}$$

Where:

C_p = Concentration of CoPC in plant (mg/kg plant - wet weight)

DR = Particle deposition rate for accidental release (mg/m^2/day)

F = Fraction for the surface area of plant (unitless)

k = Chemical-specific loss constant for particles on plants (1/days) = ln(2)/$T^{0.5}$

$T^{0.5}$ = Chemical half-life on plant (days)

t = Deposition time or length of growing season (days)

Y = Crop yield (kg/m2)

Uptake of Chemicals via Roots (US EPA, 2005)

$$C_{rp} = C_s * RUF$$

Where:

C_{rp} = Concentration of persistent CoPC in root of plant (mg/kg plant - wet weight)

C_s = Concentration of persistent CoPC in soil assuming 15 cm mixing depth within gardens (mg/kg)

RUF = Root uptake factor (unitless)

Concentration in Eggs (US EPA, 2005)

$$A_{egg} = \left[\sum (Fi * Qpi * Pi) + Qs * Cs * Bs\right] * \left(Ba_{egg}\right)$$

Where:

A_{egg} = Concentration of COPC in eggs (mg COPC/kg FW tissue)

Fi = Fraction of plant type (i) (grain) grown on contaminated soil and ingested by the animal (chicken) (unitless)

Qpi = Quantity of plant type (i) (grain) eaten by the animal (chicken) each day (kg DW plant/day)

Pi = Concentration of CoPC in plant type (i) (grain) eaten by the animal (chicken) (mg/kg DW)

Qs = Quantity of soil eaten by the animal (chicken) (kg/day)

Cs = Average soil concentration over exposure duration (mg CoPC/kg soil)

Bs = Soil bioavailability factor (unitless)

Ba_{egg}= CoPC biotransfer factor for eggs (day/kg FW tissue)

Concentration in Beef (US EPA, 2005)

$$A_{beef} = \left[\sum (Fi * Qpi * Pi) + Qs * Cs * Bs\right] * \left(Ba_{beef}\right) * MF$$

Where:

A_{beef} = Concentration of CoPC in beef through ingestion of contaminated feed items (plant) and soil (mg CoPC/kg FW tissue)

Fi = Fraction of plant type (i) grown on contaminated soil and ingested by the animal (cattle) (unitless)

Qpi = Quantity of plant type (i) eaten by the animal (cattle) per day (kg DW plant/day)

Pi = Concentration of CoPC in each plant type (i) eaten by the animal (cattle) (mg/kg DW)

Qs = Quantity of soil eaten by the animal (cattle) each day (kg/day)

Cs = Average soil concentration over exposure duration (mg CoPC/kg soil)

Bs = Soil bioavailability factor (unitless)

Ba_{beef} = CoPC biotransfer factor for beef (day/kg FW tissue)

MF = Metabolism factor (unitless)

Concentration in Breast Milk (US EPA, 2005)

$$C_{milkfat} = \frac{m * h * f_1}{0.693 * f_2}$$

Where:

$C_{milk\ fat}$ = Concentration of CoPC in milk fat (mg/kg)

m = Average maternal intake (mg/kg/day)

h = Half-life of chemical in body, adults (days)

f_1 = Fraction of ingested chemical stored in fat (unitless)

f_2 = Fraction of mothers weight that is fat (unitless)

Total (wet and dry) particle phase COPC direct deposition load to water body (g/yr) (based on Equation 5-29, US EPA, 2005)

$$L_{Dep} = Q \times D_{wtwp} \times A_w$$

Where:

L_{Dep} = Total (wet and dry) particle phase and vapor phase COPC direct deposition load to water body (g/yr)

Q = Emission Rate (g/s)

D_{wtwp} = Unitised Yearly (water body) average total (wet and dry) deposition from particulate phase (s/m^2/year)

A_w = Water Body Surface Area (m^2)

Total Water Body CoPC Concentration from Dust Deposition (based on Equation 5-35, US EPA, 2005)

$$C_{wtot} = \frac{L_{DEP}}{Vf_x \times f_{wc} \times k_{wt} \times A_w \times (d_{wc} \times d_{bs})}$$

Where:

C_{wtot} = Total water body CoPC concentration from dust deposition (g CoPC/m^3 water body) (or mg/L)

L_{Dep} = Total (wet and dry) particle phase and vapor phase COPC direct deposition load to water body (g/yr)

Vf_x = Average volumetric flow rate through water body (m^3/yr)

f_{wc} = Fraction of total water body CoPC concentration in the water column (unitless)

k_{wt} = Overall total water body CoPC dissipation rate constant (yr^{-1})

A_w = Water Body Surface Area (m^2)

d_{wc} = Depth of water column (m)

d_{bs} = Depth of upper benthic sediment layer (m)

1.2 Estimate of Exposure

Incidental Ingestion of Soil

$$CDI_{ing,s} = \frac{C_s * IngR_s * EF * ED * CF}{365 \frac{days}{year} * AT * BW}$$

Where:

$CDI_{ing,s}$ = Chronic Daily Intake for Soil Ingestion (mg/kg/day)

C_s = Chemical Concentration in Soil (mg/kg)

$IngR_s$ = Soil Ingestion Rate (mg/day)

EF = Exposure Frequency (days/year)

ED = Exposure Duration (years)

CF = Unit conversion factor (kg/10^6 mg)

AT = Averaging Time (years)

= 70 years for non-threshold carcinogens

= ED for chemicals assessed based on threshold effects

BW = Body weight (kg)

Dermal Contact with Soil

$$CDI_{der,s} = \frac{C_s * AH * SA * AF * EF * ED * CF}{365 \frac{days}{year} * AT * BW}$$

Where:

$CDI_{der,s}$ = Chronic Daily Intake for Dermal Contact with Soil (mg/kg/day)

AH = Soil Adherence Factor (mg/cm^2/day)

SA = Skin Surface Avalable for Contact (cm^2)

AF = Dermal Absorption Factor (chemical-specific; unitless)

and other factors are as defined earlier.

Inhalation of Particulates or Vapours

The following equation has been adopted to estimate intakes associated with inhalation of chemicals in air (particulates or vapours). Inhalation exposures have been estimated using the revised methodology recently published by the USEPA (USEPA, 2009), which recommends adjustment of the measured or estimated contaminant concentration in air to account for site-specific exposure considerations, rather than estimation of a chronic daily intake of contaminant via the inhalation pathway.

For particulates, it is assumed that all particulates inhaled are small enough to penetrate deep into the lungs (i.e., are inspirable), and that the particulate air EPCs have been estimated as inspirable (PM_{10}) dust concentrations.

$$EC_{inh} = \frac{C_a * ET * EF * ED}{AT * 365 \frac{days}{year} * 24 \frac{hours}{day}}$$

Where:

EC_{inh} = Exposure Adjusted Air Concentration (mg/m^3)

C_a = Chemical Concentration in Air (mg/m^3)

ET = Exposure Time (hours/day)

and other factors are as defined earlier.

Vegetable Ingestion

The following equation has been adopted to estimate intakes associated with the consumption of vegetables grown in soil.

$$\text{Intake Factor} = \frac{IR * FI * ME * EF * ED}{BW * AT}$$

Where:

Intake Factor = Intake factor (kg/kg/day)

IR = Ingestion rate (kg/day)

FI = Fraction ingested from a home-grown source (FI)

ME = Matrix Effect (unitless)

EF = Exposure frequency (days/year)

ED = Exposure duration (years)

BW = Body weight (kg)

AT = Averaging Time (days)

= 70 years for non-threshold carcinogens

= ED for chemicals assessed based on threshold effects

$$\text{Daily Intake} = \text{Concentration in Produce} * \text{Intake Factor}$$

Egg Ingestion

$$\text{Intake Factor} = \frac{IR * FI * ME * EF * ED}{BW * AT}$$

Where:

Intake Factor = Intake factor (kg/kg/day)

IR = Ingestion rate (kg/day)

FI = Fraction ingested from a home-grown source (FI)

ME = Matrix Effect (unitless)

EF = Exposure frequency (days/year)

ED = Exposure duration (years)

BW = Body weight (kg)

AT = Averaging Time (days)

= 70 years for non-threshold carcinogens

= ED for chemicals assessed based on threshold effects

$$\text{Daily Intake} = A_{egg} * \text{Intake Factor}$$

Beef Ingestion

$$\text{Intake Factor} = \frac{IR * FI * ME * EF * ED}{BW * AT}$$

Where:

Intake Factor = Intake factor (kg/kg/day)

IR = Ingestion rate (kg/day)

FI = Fraction ingested from a home-grown source (FI)

ME = Matrix Effect (unitless)

EF = Exposure frequency (days/year)

ED = Exposure duration (years)

BW = Body weight (kg)

AT = Averaging Time (days)

= 70 years for non-threshold carcinogens

= ED for chemicals assessed based on threshold effects

$$\text{Daily Intake} = A_{beef} * \text{Intake Factor}$$

Breastmilk Ingestion by Infants

$$\text{Intake Factor} = \frac{IR * FM * Ab * EF * ED}{BW * AT}$$

Where:

Intake Factor = Intake factor (kg/kg/day)

IR = Ingestion rate (kg/day)

FM = Fraction of Fat/Lipids in Milk (unitess)

Ab = Absorption Following Ingestion (unitless)

EF = Exposure frequency (days/year)

ED = Exposure duration (years)

BW = Body weight (kg)

AT = Averaging Time (days)

= 70 years for non-threshold carcinogens

= ED for chemicals assessed based on threshold effects

$$\text{Daily Intake} = C_{\text{milk fat}} * \text{Intake Factor}$$

1.3 Estimation of Risks

Threshold Risk Estimates

Risks to human health for CoPCs assessed on the basis of a threshold approach were estimated by comparison of the daily chemical intake or exposure adjusted air concentration of each CoPC with its respective TDI or Reference Concentration allowable from the Site (i.e., the TDI minus background intakes). The resulting ratio, referred to as the hazard quotient, is derived in the following manner:

$$HQ = \frac{CDI_t}{TDI - \text{background}}$$

or

$$HQ = \frac{EC_{inh}}{RfC - \text{background}}$$

Where:

HQ = Hazard Quotient (unitless)

CDI_t = Chronic Daily Intake (calculated based on threshold averaging time) (mg/kg/day)

TDI = Tolerable Daily Intake (mg/kg/day) – adjusted for background intake

EC_{inh} = Exposure adjusted air concentration (mg/m^3)

RfC = Tolerable Concentration in air (mg/m^3) – adjusted for background intake

A potentially unacceptable chemical intake/exposure is indicated if the exposure level exceeds the TDI or TC (i.e. if the hazard quotient is greater than 1).

To assess the overall potential for adverse health effects posed by exposure to multiple chemicals, the hazard quotients for each chemical and exposure pathway relevant to a receptor are summed. The resulting sum is referred to as the hazard index (HI), and is calculated using the following equation.

$$HI = \sum_{i=1,j=1}^{n} HQ_{i,j}$$

Where:

- HI = Hazard Index (unitless)
- $HQ_{i,j}$ = Hazard Quotient for pathway *i* and chemical *j* (unitless)
- n = Number of chemicals and/or pathways relevant to land use scenario

If the HI is less than one, then cumulative exposure to the CoPC is considered unlikely to result in an adverse effect. If the sum is greater than one, a more detailed and critical evaluation of the hazards may be required, or appropriate risk management measures at the Site may need to be implemented.

Non-Threshold (Carcinogenic) Risk Estimates

Risks to human health for CoPC considered to be genotoxic carcinogens were estimated as the incremental probability of an individual developing cancer over a lifetime as a result of chemical exposure. The numerical estimate of incremental lifetime carcinogenic risk was calculated using the following relationship:

$$ILCR = CDI_{nt} * SF$$

or

$$ILCR = EC_{inh} * IUR * 10^{3} \frac{\mu g}{mg}$$

Where:

- ILCR = Incremental Lifetime Cancer Risk (unitless)
- CDI_{nt} = Chronic Daily Intake (calculated based on non-threshold averaging time) (mg/kg/day)
- SF = Cancer Slope Factor $(mg/kg/day)^{-1}$
- EC_{inh} = Exposure adjusted air concentration (mg/m^3)
- IUR = Inhalation Unit Risk $(\mu g/m^3)^{-1}$

To assess the overall potential for effects posed by simultaneous exposure to more than one chemical that is associated with non-threshold carcinogenic effects, the risk for each chemical and pathway relevant to a receptor, and for adults and children (as relevant), were summed. The resulting sum is referred to as the cumulative incremental lifetime carcinogenic risk and is estimated as follows:

$$ILCR_{cum} = \sum_{i=1,j=1}^{n} ILCR_{i,j}$$

Where

- $ILCR_{cum}$ = Cumulative ILCR for a given receptor (unitless)
- $ILCR_{i,j}$ = ILCR for chemical i and pathway j
- *n* = Number of chemicals and/or pathways relevant to land use scenario.

This approach assumes that exposure to multiple carcinogens over a lifetime results in a cumulative effect, and therefore, exposures are summed over all intake routes.

1.4 References

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Appendix G

Toxicological Profiles

Carbon Monoxide

The following information has been sourced from the Australian National Environment Protection Council (NEPC), World Health Organisation (WHO) and United States Environment Protection Authority (USEPA).

Chemical Identification

Synonyms: carbon oxide, flue gas, monoxide

CAS: 630-08-0

Molecular Formula: CO

Molecular Weight: 28.01 g/mol

General

Carbon monoxide (CO) is a colourless, non-irritating, odourless and tasteless gas that is ubiquitous in the atmosphere.

CO is made when carbon in fuel is not burned completely. It is produced from both anthropogenic (human-made) and natural sources. The most important human-made source of CO arises from the exhaust of automobiles. Inside homes, improperly adjusted gas appliances, furnaces, wood burning stoves, and fireplaces are a potential source of carbon monoxide. CO is also released from wood burning, volcanoes and forest fires (ATSDR, 2012).

CO usually remains in the atmosphere for approximately one to two months. It is removed by oxidation to form carbon dioxide, absorption by some plants and micro-organisms, and rain (OEH, 2012).

CO can be used in industry to synthesize many compounds such as acetic anhydride, polycarbonates, acetic acid and polyketone (ATSDR, 2012).

Significance of Exposure Pathways and Background

The most significant exposure pathway is inhalation of contaminated air and tobacco smoke (from both active and passive smoking). Although CO has been detected in certain foods, beverages and tap water, these do not constitute major sources of exposure for most people (ATSDR, 2012).

Natural ambient concentrations of CO range between 0.01-0.23 mg/m^3. In urban environments, average concentrations over an eight hour period are usually less than 20 mg/m^3, and one hour peak levels are usually less than 60 mg/m^3 (WHO 1994).

From 1993 to 1998, maximum eight-hour CO concentrations in Sydney ranged from 5.4 mg/m^3 (Westmead) to 13.5 mg/m^3 (Sydney). Concentrations in regional areas were reported to be less than urban areas (NSW EPA, 2012).

Non-Carcinogenic Health Effects

They key adverse health effect associated with the inhalation of CO is carboxyhaemoglobin (COHb) in blood, as it rapidly diffuses across alveolar, capillary and placental membranes. COHb is where CO binds to the oxygen-carrying site on the blood's haemoglobin, which reduces oxygen transport in the body (NEPM, 2010). This can lead to tissue hypoxia at low exposure levels. At higher concentrations the rest of the absorbed CO binds with other haem proteins such as myoglobin, and with cytochrome oxidase and cytochrome P-450. The toxic effects of CO become evident in organs and tissues with high oxygen consumption such as the brain, the heart, exercising skeletal muscle and the developing fetus.

Additionally, at high concentrations CO is very toxic, causing headaches, dizziness, reduced ability to concentrate, and nausea (OEH, 2012).

Identification of Non-Carcinogenic Toxicity Reference Values

The dose-response values provide an estimate of exposure to the human population that is likely to be without an appreciable risk of deleterious effects during a lifetime. The oral exposure represents a daily value and the inhalation exposure represents continuous inhalation. These values are intended for use in risk assessments for health effects known or assumed to be produced through a nonlinear (presumed threshold) mode of action (USEPA, 2012). Available chronic dose-response values published by sources recognised and endorsed by WHO and NEPM are summarised below.

Oral

The oral dose-response value is expressed in units of mg/kg/day. This value may be termed a Reference Dose (RfD), Tolerable Daily Intake (TDI), or Minimal Risk Level for oral exposure (MRL) depending on the agency of derivation.

ATSDR evaluated the non-carcinogenic oral toxicity data for CO but did not derive any oral minimum risk level (MRL) because the only relevant pathway of exposure to humans is the inhalation pathway.

Inhalation

The WHO (2000a) guidelines are based on the Coburn-Foster-Kane exponential equation, which takes in account all the known physiological variables affecting CO uptake. The CO guideline values and periods of time-weighted average exposures published by WHO (2000a), were determined in such a way that the COHb level of 2.5% is not exceeded, even when a normal subject engages in light or moderate exercise.

A summary of the published CO air guideline values are presented in the table below.

Table 1 Published Air Guideline Values for Carbon Monoxide

Agency	Air Guideline Value (mg/m^3)	Source	Target Endpoint	Test Animal	UF	Notes
WHO	100 (15 mins) 60 (30 mins) 30 (1 hr) 10 (8 hr)	WHO, 2000a	Critical level of COHb <2.5%	Human	n.a.	WHO, 1999
NEPM	11.1	NEPM, 2010	Critical level of COHb <2.5%	Human	1.5	Converted from 9ppm. NEPM, 2003

WHO – World Health Organisation; NEPM – National Environmental Protection Measure.

ATSDR evaluated the non-carcinogenic inhalation toxicity data for CO, but did not derive any inhalation minimal risk level (MRL) based on four supporting rationales.

1) Endogenous CO production is physiologically regulated and plays a role in regulating various important physiological processes, including processes that may underlie the adverse effects that have been observed in the available studies.
2) ATSDR observed that an exposure threshold for CO**,** if one exists at all, would be at or near the endogenous production rate. Therefore, any exogenous source of CO exposure would have the potential for exceeding the threshold and producing potentially adverse effects.
3) The currently available toxicological and epidemiological data do not identify exposure levels that pose minimal risk of adverse effects.
4) Any exposure level determined to be of minimal risk at sea level would not necessarily be of minimal risk at higher altitudes (i.e., at lower O_2 partial pressures).

Carcinogenicity and Genotoxicity

ATSDR (2012) have evaluated the cancer inhalation toxicity data for carbon monoxide. ATSDR discusses carcinogenicity in its Toxicological Profile, it does not currently assess cancer potency or perform cancer risk assessments.

Adopted Dose-Response Values

Threshold (Non-Carcinogenic)

For assessment of potential threshold effects associated with inhalation exposure to carbon monoxide, AECOM has adopted the WHO (2000) guideline values.

References

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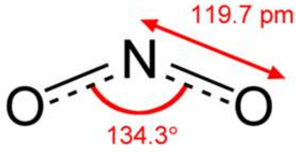

Nitrogen Dioxide

The following information has been sourced from the Australian National Health and Medical Research Council (NHMRC), the Australian National Environment Protection Council (NEPC), World Health Organisation (WHO) and United States Environment Protection Authority (USEPA).

Chemical Identification

Synonyms: dinitrogen tetroxide, nitrogen peroxide, nitrogen tetroxide, and nitrogen oxide.

CAS: 10102-44-0

Molecular Formula: NO_2

Molecular Weight: 46.01 g/mol

General

Nitrogen dioxide (NO_2) is a colourless, non-irritating, odourless and non-flammable gas (ATSDR, 2011).

NO_2 is formed naturally in the atmosphere in substantial quantities, from sources including the oxidation of atmospheric nitrogen by lightning, oxidation of ammonia, releases from the soil and ocean and naturally occurring bushfires. It can also be formed as by-product of human activity, in particular, from the combustion of fuel in mobile and stationary sources and, to a lesser extent, from chemical manufacturing.

NO_2 can react with other compounds in the air to form inorganic and organic nitrates, such as nitric acid and peroxyacetyl nitrate (PAN) respectively. It is also a major initiator of photochemical smog and is a component of brown haze (enHealth, 1997).

Significance of Exposure Pathways and Background

The most significant exposure pathway is inhalation of contaminated air, but exposure by oral pathways can cause systemic effects (ATSDR, 2011).

Ambient concentrations of NO_2 in air are variable, with natural background concentrations ranging from <1 µg/m^3 to >9 µg/m^3. In urban environments, the annual average concentrations can range from 20 to 90 µg/m^3, with the hourly maximum concentrations ranging from 75 to 1000 µg/m^3. Concentrations of NO_2 in indoor air can reach average concentrations of 200 µg/m^3 over a number of days, with an hourly maximum concentration of 2000 µg/m^3 where there are unvented appliances and poor ventilation (WHO, 1994).

From 1996 to 1998, maximum one-hour NO_2 concentrations in Sydney ranged from 90 µg/m3 (Oakdale and Vineyard) to 250 µg/m3 (Lidcombe). Concentrations in regional areas were reported to be less than urban areas (NSW EPA, 2012).

Non-Carcinogenic Health Effects

A variety of health effects were identified as being associated with exposure to NO_2. Exposure appears to decrease lung function and irritate the lower respiratory tract, both directly and indirectly (enHealth, 1997). NO_2 exposure is thought to damage the lungs in three ways:

1) It is converted to nitric and nitrous acids in the distal airways, which directly damages particular structural and functional lung cells.

2) It initiates free radical generation, which results in protein oxidation, lipid peroxidation and cell membrane damage.

3) It reduces resistance to infection by altering macrophage and immune function.

There could also be an immediate response to NO_2 exposure, including coughing, fatigue, nausea, choking, headache, abdominal pain and difficulty breathing. If no symptoms are experienced for 3 to 30 hours, it may still be followed by pulmonary edema systems, with anxiety, mental confusion, lethargy and loss of consciousness.

Additionally, this may be followed by bronchiolitis obliterans (fibrous obstruction of the bronchioles) several weeks later. Any of these phases can be fatal (ATSDR, 1997).

If absorbed, NO_2 can lead to a weak rapid pulse, dilated heart, chest congestion and circulatory collapse. Skin moisture in contact with liquid NO_2 or high concentrations of its vapour can result in nitric acid formation, which may lead to second-and third-degree skin burns. Nitric acid may also cause yellowing of the skin and erosion of dental enamel.

Asthmatics, the elderly, children and people with existing cardiovascular and respiratory disease are particularly susceptible to the effects of NO_2 (NEPM, 2010).

It should be noted that the health impacts depend significantly on both the duration of exposure as well as the concentration of NO_2 to which they are exposed (NEPM, 2010).

Identification of Non-Carcinogenic Toxicity Reference Values

The dose-response values provide an estimate of exposure to the human population that is likely to be without an appreciable risk of deleterious effects during a lifetime. The oral exposure represents a daily value and the inhalation exposure represents continuous inhalation. These values are intended for use in risk assessments for health effects known or assumed to be produced through a nonlinear (presumed threshold) mode of action (USEPA, 2012). Available chronic dose-response values published by sources recognised and endorsed by NHMRC, WHO, NEPC and USEPA are summarised below.

Oral

The oral dose-response value is expressed in units of mg/kg/day. This value may be termed a Reference Dose (RfD), Tolerable Daily Intake (TDI), or Minimal Risk Level for oral exposure (MRL) depending on the agency of derivation.

USEPA has evaluated the non-carcinogenic oral toxicity data for NO_2. The USEPA has withdrawn the RfD because NO_2 does not exist per se in water, since it reacts instantaneously with water to form nitric and nitrous acids. In the presence of alkali (pH > 7), nitrates and nitrites are formed, respectively, from nitric and nitrous acids. RfDs presently exist for nitrates and nitrites and can be found in the respective Integrated Risk Information System (IRIS) and International Toxicity Estimates for Risk (ITER) files.

Inhalation

The inhalation dose-response value is expressed in units of mg/m^3. This value may be termed a Reference Concentration (RfC), Tolerable Concentration (TC), or Minimal Risk Level for inhalation (MRL) depending on the agency of derivation.

Table 1 Published Guideline values for Nitrogen Dioxide

Agency	Inhalation Dose-Response Value (mg/m^3)	Source	Target Endpoint	Test Animal	UF	Notes
NHMRC	0.32 (1hr)	enHealth, 1997	-	-	-	NHMRC, 1996. Ambient Air. Converted from 0.16 ppm.
WHO	0.2 (1-hour mean) 0.04 (annual average)	WHO, 2005b	Slight changes in lung function in asthmatics	Human	0.5	WHO, 1997
NEPC	0.243 (1 hr) 0.0608 (1 yr)	NEPM, 2003	-	-	-	Converted from 0.12 ppm (1 hr) and 0.03 ppm (1 yr).
USEPA	0.203 (1 hr) 0.107 (1 yr)	NAAQS	-	-	-	Converted from 100 ppb (1 hr) and 53 ppb (1 yr).

NHMRC - National Health and Medical Research Council
WHO – World Health Organisation
NEPC – National Environment Protection Council
NAAQS – National Ambient Air Quality Standards

Carcinogenicity and Genotoxicity

No data was available.

Adopted Dose-Response Values

Threshold (Non-Carcinogenic)

For assessment of potential threshold effects associated with inhalation exposure to carbon monoxide, AECOM has adopted the WHO (2005b) guideline values.

References

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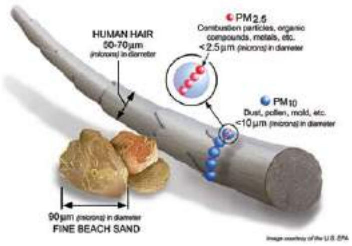

Particulate Matter ($PM_{2.5}$ and PM_{10})

The following information has been sourced from the Australian National Environment Protection Council (NEPC), World Health Organisation (WHO) and United States Environment Protection Authority (USEPA).

General

The NSW Office of Environment and Heritage (NSW OEH) measures particulate matter (PM) as PM_{10} (particles less than 10 micrometers in diameter) and $PM_{2.5}$ (particles less than 2.5 micrometers in diameter). PM is typically classified by size, with larger particles usually settling out of the air quicker than smaller particles. PM can be in a solid or liquid form.

Examples of PM_{10} include dust, pollen and mould, while $PM_{2.5}$ includes combustion particles, organic compounds and metals. Particulate matter may be primary pollutants that are emitted directly from a source, such as construction sites, unpaved roads, fields, smokestacks or fires. A secondary pollutant is formed from the atmospheric chemical reaction of gaseous pollutants (USEPA, 2012).

Human activities resulting in PM in the air include mining; burning of fossil fuels; transportation; agricultural and hazard reduction burning; the use of incinerators; and the use of solid fuel for cooking and heating.

WHO (2005b) states that "The evidence on airborne particulate matter (PM) and its public health impact is consistent in showing adverse health effects at exposures that are currently experienced by urban populations in both developed and developing countries".

Significance of Exposure Pathways and Background

The most significant exposure pathway is inhalation of air containing PM.

Concentrations of PM in air are highly variable. In some areas very high levels occur naturally due to wind-blown dust from arid soils. Human activities, such as fires, overgrazing, agricultural practices and mining, can increase particle concentrations in air in remote areas.

In Western Europe and North America efforts to control emissions of particulate matter have generally resulted in lower levels of particles in ambient air. In many cities the annual average concentrations of PM_{10} are in the range 20 to 50 mg/m^3 for ambient air (WHO, 1994). However, annual average concentrations in some cities in Eastern Europe and in some developing countries can be above 100 mg/m^3. Concentrations of $PM_{2.5}$ are usually about 45% to 65% of the concentrations of PM_{10}.

From 1996 to 1998, maximum 24-hour PM_{10} concentrations in Sydney ranged from 0.050 mg/m^3 (Lidcombe) to 0.092 mg/m^3 (Bringelly). Concentrations in regional areas were reported to be less than urban areas (NSW EPA, 2012).

Non-Carcinogenic Health Effects

WHO (2005b) considers that the risk for various health effects has been shown to increase with exposure to PM and there is little evidence to suggest a threshold below which no adverse health effects would be anticipated. There is substantial inter-individual variability in exposure to PM and in the response resultant from a given exposure, and therefore WHO (2005b) considers that it is unlikely that any standard or guideline value will lead to complete protection for every individual against all possible adverse health effects of PM.

The size of a particle is directly linked to their potential for causing human health problems. Coarse particles (2.5-10 µm) are usually deposited in the upper respiratory tract (e.g. nose or throat) and fine particles (<2.5 µm) travel to the lower respiratory tract (e.g. lungs) (WHO, 2000). Health implications from PM exposure include:

- Premature death in people with health or lung disease;
- Non-fatal heart attacks;
- Irregular heartbeat;
- Aggravated asthma;
- Decreased lung function; and

- Increased respiratory symptoms (e.g. irritation of the airways, coughing and difficulty breathing).

When exposed to PM, people suffering from heart or lung disease may experience symptoms such as chest pain and shortness of breath.

It should be noted that current scientific evidence indicates that guidelines cannot be proposed that will lead to complete protection against adverse health effects of PM, as thresholds have not been identified (WHO, 2005a).

Identification of Non-Carcinogenic Toxicity Reference Values

The dose-response values provide an estimate of exposure to the human population that is likely to be without an appreciable risk of deleterious effects during a lifetime. The oral exposure represents a daily value and the inhalation exposure represents continuous inhalation. These values are intended for use in risk assessments for health effects known or assumed to be produced through a nonlinear (presumed threshold) mode of action. Available chronic dose-response values published by sources recognised and endorsed by NEPC, WHO and the USEPA are summarised below.

Oral

No data was available.

Inhalation

The inhalation dose-response value is expressed in units of µg/m^3. This value is defined as a standard by NEPC, WHO and the USEPA.

Table 1 Published Particulate Matter Guideline Values

Agency	Inhalation Dose-Response Value (µg/m^3)	Source	Notes
$PM_{2.5}$			
WHO	25 (24 hour) 10 (annual average)	WHO, 2005b	Annual average concentration represents the lowest level at which cardiopulmonary and lung cancer mortality have been shown to increase with more than 95% confidence in response to long-term exposure to $PM_{2.5}$. The short-term 24hr concentration is based on a relationship between 24-hour and annual PM levels (WHO, 2005b).
USEPA	12 (1 yr) - primary 15 (1 yr) – secondary 35 (24 hr) – primary and secondary	NAAQS, 2011	The annual mean was averaged over 3 years. The 24 hour was the 98th percentile, averaged over 3 years.
NEPC	25 (24 hr) 8 (1 yr)	NEPM, 2003	-

Agency	Inhalation Dose-Response Value (µg/m^3)	Source	Notes
PM_{10}			
WHO	50 (24 hour) 20 (annual average)	WHO, 2005b	Annual average concentration represents the lowest level at which cardiopulmonary and lung cancer mortality have been shown to increase with more than 95% confidence in response to long-term exposure to $PM_{2.5}$. The short-term 24hr concentration is based on a relationship between 24-hour and annual PM levels (WHO, 2005b).
USEPA	150 (24 hr) – primary and secondary	NAAQS, 2011	Not to be exceeded more than once per year.
NEPC	50 (24 hr)	NEPM, 2003	-

WHO – World Health Organisation
USEPA – United States Environment Protection Authority
NAAQS – United States National Ambient Air Quality Standards
NEPC – National Environment Protection Council

Carcinogenicity and Genotoxicity

No data was available.

Adopted Dose-Response Values

Threshold (Non-Carcinogenic)

For assessment of potential threshold effects associated with inhalation exposure to PM_{10} and $PM_{2.5}$, AECOM has adopted the WHO (2005b) guideline values.

References

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OEH, 2012. *About Air Quality Monitoring*. N.S.W Office of Environment and Heritage. August 2012.

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WHO, 2000. *Guidelines for Air Quality*. World Health Organisation. Geneva. 2000

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WHO, 2005b. *WHO Air Quality Guidelines for Particulate Matter, Ozone, Nitrogen Dioxide and Sulfur Dioxide – Global Update 2005, Summary of Risk Assessment*. World Health Organization, Geneva. 2005

Sulphur Dioxide

The following information has been sourced from the Australian National Health and Medical Research Council (NHMRC), the Australian National Environment Protection Council (NEPC), World Health Organisation (WHO) and United States Environment Protection Authority (USEPA).

Chemical Identification

Synonyms: sulphurous acid anhydride, sulphurous oxide, sulphur oxide

CAS: 7446-09-5

Molecular Formula: SO_2

Molecular Weight: 64.066 g/mol

General

Sulphur dioxide (SO_2) is a colourless gas that forms an acidic solution in water, which is readily oxidised to sulphuric acid (enHealth, 1999). It has a pungent odour and is not flammable (ATSDR, 1998).

SO_2 is released into the atmosphere in large quantities by natural processes. An important source is from the action of anaerobic bacteria in peat bogs and tidal marshes, forming hydrogen sulphide, which is oxidised to SO_2 and sulphur trioxide (SO_3) in the atmosphere. Sulphur and sulphur gases are also emitted in large quantities as a result of volcanic activity (enHealth, 1999).

Most of the SO_2 that is of concern to human health results from anthropogenic activities, principally the burning of fossil fuels and smelting of mineral ores containing sulphur (OEH, 2012). It is readily converted to sulphuric acid and sulphates in the atmosphere which is an important process in the formation of aerosols and particulate matter associated with smog. SO_2 is also a major component of acid rain (enHealth, 1999).

Significance of Exposure Pathways and Background

The most significant exposure pathway is inhalation of contaminated air, but exposure by oral (dermal) pathways can cause systemic effects (ATSDR, 1998).

In most analysed cities, the annual mean concentrations of SO_2 in residential areas have not exceeded 50 μg/m^3. Notable exceptions are several cities in China, with the SO_2 concentration of 330 μg/m^3 in Chongqing and 100 μg/m^3 in Beijing in 1994. In some Chinese cities, the levels reported from "residential" locations exceed those from "commercial" regions of the city and are comparable with the levels in industrial zones. This may reflect the impact of combustion of sulphur-containing coal for domestic heating and cooking (WHO, 2000a).

From 1996 to 1998, maximum one-hour CO concentrations in Sydney ranged from 26.2 μg /m^3 (Bargo and Bringelly) to 105 μg /m^3 (Randwick and Lindfield). Concentrations in regional areas were reported to be less than urban areas (NSW EPA, 2012).

Non-Carcinogenic Health Effects

Evidence from human and animal studies (UKDoE, 1995; Steer & Heiskanen, 1994) shows that exposure to SO_2 can reduce lung function. The studies have all shown reduced forced expiratory volumes (FEV1) and increased airway resistance (bronchoconstriction). In animals, interactions between SO_2, sulphuric acid with ozone or nitrogen dioxide have been demonstrated to cause further reductions in lung function.

Given the high solubility of SO_2 in water, it dissolves readily in epithelial fluids in the nasal area and upper respiratory system. Oxidation to sulphuric acid is followed by neutralisation and excretion as ammonium or other salts. Sulphuric acid aerosols can be deposited in the nose, throat, tracheal and bronchial regions or lung alveoli, according to their size. The deposition pattern in the lungs is affected by factors such as atmospheric loading and humidity. Conditions that generate highly acidic droplets, which can exceed the neutralising capacity of ammonia in the upper respiratory tract, lead to greater deposition of acidic aerosols into the lungs.

The irritant effect of SO_2 occurs when nerves in the lining of the nose, throat and the airways of the lungs are stimulated by sulphuric acid. This leads to a reflex cough, irritation and/or a feeling of chest tightness and may cause a narrowing of the airways. This latter effect is particularly evident in people suffering from asthma and chronic lung disease, whose airways are often inflamed and easily irritated.

Identification of Non-Carcinogenic Toxicity Reference Values

The dose-response values provide an estimate of exposure to the human population that is likely to be without an appreciable risk of deleterious effects during a lifetime. The oral exposure represents a daily value and the inhalation exposure represents continuous inhalation. These values are intended for use in risk assessments for health effects known or assumed to be produced through a nonlinear (presumed threshold) mode of action (USEPA, 2012). Available chronic dose-response values published by sources recognised and endorsed by NHMRC, WHO, NEPC and USEPA are summarised below.

Oral

The oral dose-response value is expressed in units of mg/kg/day. This value may be termed a Reference Dose (RfD), Tolerable Daily Intake (TDI), or Minimal Risk Level for oral exposure (MRL) depending on the agency of derivation.

ATSDR has evaluated the non-carcinogenic oral toxicity data for SO_2, but did not derive a chronic minimum risk level (MRL) because the data are insufficient and this route is not considered a clinically relevant route of exposure in humans.

Inhalation

The 10minute value presented by WHO (2005b) is based on controlled studies involving exercising asthmatics which indicated that a proportion of the individuals experienced changes in pulmonary function and respiratory symptoms after period of exposure to SO_2 as short as 10 minutes. Hence, it is recommended that SO_2 concentrations not exceed 500 μm/m^3 over averaging periods of 10 minutes duration.

For the 24 hour average value, WHO (2005b) adopted a '*prudent precautionary approach'* and reduced the SO_2 guideline value to 20μg/m^3 due to the uncertainty of SO_2 in causality, the practical difficulties of attaining levels that are certain to be associated with no effects and the need to provide a greater degree of protection than that provided by the previous WHO (2000) guideline value (i.e. an interim target of 125μg/m^3).

A summary of the published SO_2 air guideline values are presented in the table below.

Table 1 Published Air Guideline Values for Sulphur Dioxide

Agency	Air Guideline Value (mg/m^3)	Source	Target Endpoint	Test Animal	UF	Notes
NHMRC	0.7 (10 min) 0.57 (1 hr) 0.06 (1 yr)	enHealth, 1999	-	-	-	NHMRC, 1995. Ambient Air.
WHO	0.5 (10 minutes) 0.02 (24 hr average)	WHO, 2005b	Changes in lung function in asthmatics. Exacerbation of respiratory symptoms in sensitive individuals.	Human	2	WHO, 1999
NEPC	0.564 (1 hr) 0.226 (24 hr) 0.0564 (1 yr)	NEPM, 2003	-	-	-	Converted from 0.2 ppm (1 hr), 0.08 ppm (24 hr) and 0.02 ppm (1 yr).
USEPA	0.212 (1 hr) 1.41 (1 yr)	NAAQS	-	-	-	Converted from 75 ppb (1 hr) and 0.5 ppm (3 hr).

NHMRC - National Health and Medical Research Council
WHO – World Health Organisation
NEPC – National Environment Protection Council
USEPA – United States Environment Protection Authority
NAAQS – National Ambient Air Quality Standards

ATSDR and the USEPA have evaluated the non-carcinogenic inhalation toxicity data for SO_2. ATSDR did not derive a MRL for intermediate or chronic duration exposure because the data was insufficient. The USEPA has not derived a RfC for SO_2, and it is not included on the Integrated Risk Information System (IRIS) database.

Carcinogenicity and Genotoxicity

ATSDR and International Agency for Research on Cancer (IARC) have evaluated the carcinogenicity data for SO_2. IARC classifies SO_2 as not classifiable as to its carcinogenicity to humans (Group 3). There is inadequate evidence for the carcinogenicity in humans of SO_2 and limited evidence for the carcinogenicity in experimental animals. The IARC evaluation considers the evidence of carcinogenicity in humans and experimental animals, as well as other data relevant to the evaluation of carcinogenicity and its mechanisms. IARC does not generally develop risk values or other estimates of potency. ATSDR has published a Toxicological Profile for SO_2. Although ATSDR discusses the carcinogenicity data in its Toxicological Profiles, it does not currently assess cancer potency or perform cancer risk assessments.

Adopted Dose-Response Values

Threshold (Non-Carcinogenic)

For assessment of potential threshold effects associated with inhalation exposure to carbon monoxide, AECOM has adopted the WHO (2005b) guideline values.

References

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Antimony – Toxicological Profile

The majority of the following information has been sourced from ATSDR (1992), with other sources listed in the references.

Chemical Identification

CAS: 7440-36-0

Molecular Formula: Sb

Molecular Weight: 121.76 g/mol

Significance of Exposure Pathways and Background

The background intake of antimony is considered to be negligible and therefore, a background intake of 0% was adopted.

Adopted Dose-Response Values

Dose-response values for threshold and non-threshold effects associated with oral or inhalation exposure to antimony have not been published by Australian regulatory bodies.

Threshold (Non-Carcinogenic)

For assessment of potential threshold effects associated with oral exposure to antimony, AECOM has adopted the reference dose of **0.006 mg/kg/day** published by RIVM (RIVM, 2008).

As reference concentration data for antimony inhalation have not been published, the RfD (RVIM, 2008) has been converted to an RfC (RfC = (body weight x RfD)/ inhalation rate, where body weight is assumed to be 70 kgs and inhalation rate equal to 20 m3/day) and the RfC of **0.021 mg/m^3** accepted.

Non-Threshold (Carcinogenic)

To AECOM's knowledge, non-threshold dose-response criteria for oral and inhalation exposure to antimony have not been published by Australian or other regulatory bodies. Potential health effects associated with oral and inhalation exposure to antimony have therefore been assessed on the basis of threshold dose response criteria.

References

ASC NEPM, 2013. *National Environment Protection (Assessment of Site Contamination) Measure 1999* as amended May 2013. National Environment Protection Council (NEPC).

ATSDR, 1992. *Toxicological Profile for Antimony*. Agency for Toxic Substances and Disease Registry. September 1992.

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Arsenic (inorganic)

The majority of the following information has been sourced from NEPC (2013) and ATSDR (2007), with other sources listed in the references.

Chemical Identification

CAS: 7440-38-2

Molecular Formula: As

Molecular Weight: 74.92 g/mol

General

Arsenic is a metalloid that can exist in four valence states (-3, 0, +3 and +5) and forms a steel grey, brittle solid in elemental form. Under reducing conditions, arsenite (As III) is the dominant form and, in well oxygenated environments, arsenate (AsV) is the dominant form. It is the 20^{th} most commonly occurring element in the Earth's crust, occurring at an average concentration of 3.4 ppm.

Inorganic arsenic occurs naturally in soil and rocks especially in minerals and ores containing copper or lead. Presently, about 90% of all arsenic produced is used as a preservative (copper chromate arsenate) for wood to protect it from rotting and decay. In the past, inorganic arsenic compounds have been used as pesticides, primarily on cotton fields and in orchards however this is now prohibited.

Naturally occurring arsenic may enter the air, water, and land from wind-blown dust and may get into water from runoff and leaching. Arsenic may enter the environment during the mining and smelting and small amounts may be released into the atmosphere from coal-fired power plants and incinerators.

Arsenic readily dissolves in water and is detected in lakes, rivers, or underground water as well as in rain or snow and industrial waste discharges. Arsenic cannot be destroyed in the environment and ultimately ends up in soil or sediments.

Significance of Exposure Pathways and Background

Ingestion of soil and dust is considered the most significant pathway of exposure for inorganics in soil (NEPC, 2013). However, the bioavailability and inclusion of other exposure pathways should also be assessed e.g. inhalation of arsenic adsorbed to particulates.

A range of 25-75% bioavailability may be appropriate for the assessment of arsenic in soil (NEPC, 2013). The range of bioavailabilities considered would need to be based on suitable data in relation to source and site-specific bioavailability (where lower bioavailability values were considered appropriate).

NEPC (2013) reviewed the background intakes of arsenic from other sources, as a percentage of the toxicity reference values. Based on this review, a background intake of 50% was determined for oral and dermal pathways while a background intake of 0% was determined for the inhalation pathway.

Non-Carcinogenic Health Effects

Inorganic arsenic is responsible for most cases of arsenic induced toxicity in humans. Although there may be some differences in the potency of different chemical forms (e.g. arsenites tend to be somewhat more toxic than arsenates), these differences are usually minor. An exception would be arsine, which is highly toxic.

It is generally accepted that the arsenic-carbon bond is quite strong and most mammalian species do not have the capacity to break this bond; thus, inorganic arsenic is not formed during the metabolism of organic arsenicals. Inorganic As(V) is readily reduced to inorganic forms which are taken up by the cell, usually hepatocytes.

Studies have identified effects on virtually every organ or tissue evaluated, although some end points appear to be more sensitive than others. Available data from humans identify the skin as the most sensitive noncancer target following long-term oral arsenic exposure. Typical dermal effects include hyperkeratinization of the skin (especially on the palms and soles), formation of multiple hyperkeratinized corns or warts, and hyperpigmentation of the skin with interspersed spots of hypopigmentation. Oral exposure data from studies in humans indicate that these lesions typically begin to manifest at exposure levels of about 0.002–0.02 mg As/kg/day. At these exposure levels, peripheral vascular effects are also commonly noted, including cyanosis, gangrene and “Blackfoot Disease.” Other reported cardiovascular effects include increased incidences of high blood pressure and circulatory problems.

Nausea, vomiting, and diarrhea are very common symptoms in humans following oral exposure to inorganic arsenicals, both after acute high-dose exposure and after repeated exposure to lower doses; these effects are likely due to a direct irritation of the gastrointestinal mucosa. Acute, high-dose exposure can lead to encephalopathy, with clinical signs such as confusion, hallucinations, impaired memory, and emotional liability, while long-term exposure to lower levels can lead to the development of peripheral neuropathy characterized by a numbness in the hands and feet that may progress to a painful "pins and needles" sensation. Recent studies also have reported neurobehavioral alterations in arsenic-exposed children.

Chronic exposure in drinking water has been associated with excess incidence of miscarriages, stillbirths, preterm births, and infants with low birth weights. Animal data suggest that arsenic may cause changes to reproductive organs of both sexes, including decreased organ weight and increased inflammation of reproductive tissues, although these changes may be secondary effects. However, these changes do not result in a significant impact on reproductive ability.

A large number of studies in humans have reported cardiovascular effects after acute and long term oral exposure to inorganic arsenic compounds. Studies of workers exposed by inhalation report irritation of the mucous membranes of the nose and throat, which may lead to laryngitis, bronchitis, or rhinitis. Respiratory effects have also been reported following oral exposure to inorganic arsenic and include respiratory distress, hemorrhagic bronchitis, and pulmonary edema; however, it is not clear whether these are primary effects or are the result of damage to the pulmonary vascular system.

A common effect following both oral and inhalation exposure to inorganic arsenic is the development of peripheral neuropathy. Workers exposed at pesticide plants or smelters, have shown increased incidence of neurological changes including sensory and motor polyneuropathy.

Identification of Non-Carcinogenic Toxicity Reference Values

The dose-response values provide an estimate of exposure to the human population that is likely to be without an appreciable risk of deleterious effects during a lifetime. The oral exposure represents a daily value and the inhalation exposure represents continuous inhalation. These values are intended for use in risk assessments for health effects known or assumed to be produced through a nonlinear (presumed threshold) mode of action (USEPA, 2013). Available chronic dose-response values published by sources recognised and endorsed by enHealth (enHealth, 2012), NEPC (NEPC, 2013) and the USEPA and are summarised below.

Oral

The oral dose-response value is expressed in units of mg/kg/day. This value may be termed a Reference Dose (RfD), Tolerable Daily Intake (TDI), or Minimal Risk Level for oral exposure (MRL) depending on the agency of derivation.

Table 1 Published Threshold Dose-Response Values for Arsenic - Oral

Agency	Oral Dose-Response Value (mg/kg/day)	Source	Target Endpoint	Test Animal	UF	Notes
NEPC	0.002	NEPC (2013)	-	-	-	RfD. Based on Australian and International approaches.
NHMRC	0.0003	NHMRC (2011)	-	-	-	TDI. Calculated from guideline value of 0.01.
ATSDR	0.0003	ATSDR (2007)	Dermal effects	Human	3	Chronic MRL. Based on a number of studies.
IRIS	0.0003	USEPA (2013)	Dermal effects	Human	3	RfD. Based on Tseng, 1977 and Tseng et al., 1968.

Agency	Oral Dose-Response Value (mg/kg/day)	Source	Target Endpoint	Test Animal	UF	Notes
RIVM	0.001	Baars AJ et al. (2001)	Dermal effects	Human	2	TDI. Health Council of The Netherlands, 1993

NEPC – National Environment Protection Council
NHMRC – National Health and Medical Research Council
ATSDR – Agency for Toxic Substances and Disease Registry
IRIS – Integrated Risk Information System
RIVM – National Institute of Public Health and the Environment (Netherlands)
UF – Uncertainty Factor.

Inhalation

The inhalation dose-response value is expressed in units of mg/m^3. This value may be termed a Reference Concentration (RfC), Toxicity Reference Value (TRV), Tolerable Concentration (TC), or Minimal Risk Level for inhalation (MRL) depending on the agency of derivation.

Table 2 Published Threshold Dose-Response Values for Arsenic - Inhalation

Agency	Inhalation Dose-Response Value (mg/m^3)	Source	Target Endpoint	Test Animal	UF	Notes
NEPC	0.001	NEPC (2013)	Lung Cancer	Human	10	TRV. Based on RIVM (2001).
California EPA	0.000015	USEPA (2013)	-	-	-	RfC.
RIVM	0.001	RIVM (2001)	Lung Cancer	Human	10	RfC. Based on Blom et al., 1985 and Lagerkvist et al., 1984.

Carcinogenicity and Genotoxicity

The International Agency for Research on Cancer (IARC) has classified arsenic and inorganic arsenic compounds as Group 1 – carcinogenic to humans.

Arsenic is a known human carcinogen based on human epidemiological studies that show skin and internal cancers (in particular, bladder, liver and lung) associated with chronic exposures to arsenic in drinking water. There are limited animal studies is because arsenic has not been shown to cause cancer in rodents due to interspecies differences between rodents and humans.

A recent Australian review of available data (APVMA, 2005) on arsenic carcinogenicity and genotoxicity noted the following:

- The mechanisms behind tumour formation and chromosomal damage do not appear to involve mutagenesis.
- The epidemiological evidence from occupational exposure studies indicates that arsenic acts at a later stage in the development of cancer.

This supports the notion that arsenic appears to behave like a carcinogen which exhibits a threshold effect.

On the basis of the above and other studies identified in NEPC (2013), the use of threshold dose-response for the assessment of carcinogenic effects associated with arsenic exposure is considered appropriate.

Identification of Carcinogenic Toxicity Reference Values

Oral

The oral dose-response value is expressed in units of (mg/kg/day)$^{-1}$. This value may be termed a Cancer Slope Factor (CSF), a Cancer Risk (CR), Slope Factor (SF), Risk Specific Dose (RSD) or Toxic Dose (that corresponds to a 5% increase in mortality) (TD_{05}) depending on the agency of derivation. Some agencies present guideline values which may be converted to dose-response values.

Table 3 Published Non-Threshold Dose-Response Values for Arsenic – Oral

Agency	Oral Cancer Slope Factor $(mg/kg/day)^{-1}$	Notes	Source
IRIS	1.5	Slope factor. USEPA (2013)	Based on Tseng, 1977 and Tseng et al., 1968.
Health Canada	1.5	Slope factor converted from TD_{05}.	Health Canada (1993)

IRIS – Integrated Risk Information System.

Inhalation

The inhalation dose-response value is expressed in units of mg/m^3. This value may be termed a Unit Risk (UR), Cancer Risk (CR), Risk Specific Concentration (RSC), Toxic Dose (that corresponds to a 5% increase in mortality) (TD_{05}) or Tolerable Concentration in Air (TCA) depending on the agency of derivation.

Table 4 Published Non-Threshold Dose-Response Values for Arsenic - Inhalation

Agency	Inhalation Unit Risk Factor $(mg/m^3)^{-1}$	Notes	Source
WHO	0.0015	Unit risk.	WHO (2000)
IRIS	0.0043	Unit risk. USEPA (2013)	USEPA (2013)
Health Canada	0.0015	Unit risk converted from TD_{05}.	Health Canada (1993)
RIVM	0.001	TCA.	Based on Blom et al., 1985 and Lagerkvist et al., 1984.

IRIS – Integrated Risk Information System.
RIVM – National Institute of Public Health and the Environment (Netherlands)
WHO – World Health Organisation

Adopted Dose-Response Values

Threshold (Non-Carcinogenic)

For assessment of potential threshold effects associated with oral exposure to inorganic arsenic, AECOM has adopted an oral TRV of 0.002 mg/kg/day (NEPC, 2013).

For assessment of potential threshold effects associated with inhalation exposure to inorganic arsenic, AECOM has adopted the NEPC (2013) inhalation TRV of 0.001 mg/m^3.

Non-Threshold (Carcinogenic)

As noted above, a linear (non-threshold) dose-response is not supported for carcinogenic effects associated with arsenic exposure. The use of a threshold dose-response approach for the assessment of carcinogenic effects associated with arsenic exposure is therefore considered reasonable.

References

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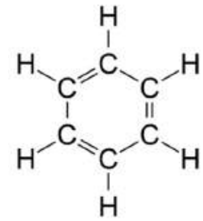

Benzene

The majority of the following information has been sourced from ATSDR (2007), with other sources listed in the references.

Chemical Identification

Synonyms: benzene, benzol

CAS: 71-43-2

Molecular Formula: C_6H_6

Molecular Weight: 78.11 g/mol

General

Although benzene occurs naturally and is emitted by volcanoes and forest fires, the greatest sources are associated with the manufacture of plastics, resins, and nylon and other synthetic fibres. Benzene is used to make some types of rubbers, lubricants, dyes, detergents, drugs, and pesticides and is a natural part of crude oil, gasoline, and cigarette smoke.

Significance of Exposure Pathways and Background

The most significant exposure pathway is inhalation of contaminated air and tobacco smoke from both active and passive smoking. Although benzene has been detected in certain foods, beverages and tap water, these do not constitute major sources of exposure for most people (ATSDR, 2007).

CRC CARE (Friebel, E. and Nadebaum, P., 2011) reviewed the air background levels in Australia for benzene and below is a summary of this review and the assumptions adopted during development of the health screening levels (HSLs):

- an allocation of 20% of the RfC was attributed to background benzene in air which was considered to be protective of the majority of residential properties in Sydney and Melbourne.

The adopted skin absorption factor was set at 8%, as adopted by CRC CARE during derivation of the benzene HSL (Friebel, E. and Nadebaum, P., 2011).

Non-Carcinogenic Health Effects

Damage to both the humoral and cellular components of the immune system has been known to occur in humans following inhalation exposure. This is manifested by decreased levels of antibodies and decreased levels of leukocytes in workers. Animal data support these findings.

The most characteristic systemic effect resulting from intermediate and chronic benzene exposure is arrested development of blood cells. Early biomarkers of exposure to relatively low levels of benzene include depressed numbers of one or more of the circulating blood cell types. A common clinical finding in benzene hematotoxicity is cytopenia, which is a decrease in various cellular elements of the circulating blood manifested as anemia, leukopenia, or thrombocytopenia in humans and in animals. Benzene associated cytopenias vary and may involve a reduction in one (unicellular cytopenias) to all three (pancytopenia) cellular elements of the blood.

Benzene causes a life-threatening disorder called aplastic anemia in humans and animals. This disorder is characterized by reduction of all cellular elements in the peripheral blood and in bone marrow, leading to fibrosis, an irreversible replacement of bone marrow. Benzene has also been associated with acute non-lymphocytic leukemia in humans, and aplastic anemia may be an early indicator of developing acute non-lymphocytic leukemia in some cases.

Limited information is available on other systemic effects reported in humans and is associated with high–level benzene exposure. Respiratory effects have been noted after acute exposure of humans to benzene vapors. Cardiovascular effects, particularly ventricular fibrillation, have been suggested as the cause of death in fatal exposures to benzene vapor. Gastrointestinal effects have been noted in humans after fatal inhalation exposure (congestive gastritis), and ingestion (toxic gastritis and pyloric stenosis), of benzene.

Myelofibrosis (a form of aplastic anemia) was reported by a gasoline station attendant who had been exposed to benzene by inhalation, and probably also through dermal contact. Myalgia was also reported in steel plant workers exposed to benzene vapors. Reports of renal effects in humans after benzene exposure consist of kidney congestion after fatal inhalation exposure. Dermal and ocular effects including skin irritation and burns, and eye irritation have been reported after exposure to benzene vapors. Swelling and edema have been reported to occur in a human who swallowed benzene. Studies in animals show systemic effects after inhalation exposure, including cardiovascular effects. Oral administration of benzene to animals has yielded information concerning hepatic effects. A study conducted in rabbits lends support to the finding that benzene is irritating and damaging to the skin and also shows that it is irritating and damaging to the eyes following dermal or ocular application.

Identification of Non-Carcinogenic Toxicity Reference Values

The dose-response values provide an estimate of exposure to the human population that is likely to be without an appreciable risk of deleterious effects during a lifetime. The oral exposure represents a daily value and the inhalation exposure represents continuous inhalation. These values are intended for use in risk assessments for health effects known or assumed to be produced through a nonlinear (presumed threshold) mode of action (USEPA, 2012). Available chronic dose-response values published by sources recognised and endorsed by enHealth (enHealth, 2004), NEPC (NEPC, 1999) and the USEPA and are summarised below.

Oral

The oral dose-response value is expressed in units of mg/kg/day. This value may be termed a Reference Dose (RfD), Tolerable Daily Intake (TDI), or Minimal Risk Level for oral exposure (MRL) depending on the agency of derivation.

Table 1 Published Threshold Dose-Response Values for Benzene - Oral

Agency	Oral Dose-Response Value (mg/kg/day)	Source	Target Endpoint	Test Animal	UF	Notes
ATSDR	0.0005	ATSDR (2007)	Decreased lymphocyte count	Human	30	Chronic MRL. Based on study by Lan et al., 2004
IRIS	0.004	USEPA (2003)	Decreased lymphocyte count	Human	300	RfD. Based on Study by Rothman et al., 1996

ATSDR – Agency for Toxic Substances and Disease Registry

IRIS – Integrated Risk Information System.

UF – Uncertainty Factor.

Inhalation

The inhalation dose-response value is expressed in units of mg/m^3. This value may be termed a Reference Concentration (RfC), Tolerable Concentration (TC), or Minimal Risk Level for inhalation (MRL) depending on the agency of derivation.

Table 2 Published Threshold Dose-Response Values for Benzene - Inhalation

Agency	Inhalation Dose-Response Value (mg/m^3)	Source	Target Endpoint	Test Animal	UF	Notes
ATSDR	0.0096*	ATSDR (2007)	Decreased lymphocyte count	Human	10	Chronic MRL. Based on study by Lan et al., 2004
IRIS	0.03	USEPA (2003)	Decreased lymphocyte count	Human	300	RfC. Based on Study by Rothman et al., 1996

*Converted from 0.003ppm to mg/m^3 using the molecular weight of 78.11 and assuming 25ºC and 760 mm Hg

Carcinogenicity and Genotoxicity

The carcinogenicity of benzene is well documented in exposed workers. Epidemiological studies and case reports provide clear evidence of a causal relationship between occupational exposure to benzene and benzene-containing solvents and the occurrence of acute myelogenous leukemia (AML). The epidemiological studies are generally limited by confounding chemical exposures and methodological problems, including inadequate or lack of exposure monitoring and low statistical power, but a consistent excess risk of leukemia across studies indicates that benzene is the causal factor. The IARC have classified benzene as a Group 1 agent (carcinogenic).

In vivo and *in vitro* data from both humans and animals indicate that benzene and/or its metabolites are genotoxic. Chromosomal aberrations (hypo- and hyperdiploidy, deletions, breaks, and gaps) in peripheral lymphocytes and bone marrow cells are the predominant effects seen in humans.

Identification of Carcinogenic Toxicity Reference Values

Oral

The oral dose-response value is expressed in units of $(mg/kg/day)^{-1}$. This value may be termed a Cancer Slope Factor (CSF), a Cancer Risk (CR), Slope Factor (SF), or Risk Specific Dose (RSD) depending on the agency of derivation. Some agencies present guideline values which may be converted to dose-response values.

Table 3 Published Non-Threshold Dose-Response Values for Benzene – Oral

Agency	Oral Cancer Slope Factor $(mg/kg/day)^{-1}$	Notes	Source
NHMRC	0.035	GV. Converted from unit risk of 1 x 10^{-6} per 0.001 mg/L, assuming 2 L/day water ingestion rate and 70 kg body weight	NHMRC (2011)
WHO	0.035	GV. Converted from unit risk of 1 x 10^{-5} per 0.01 mg/L, assuming 2 L/day water ingestion rate and 70 kg body weight	WHO (2011)
RIVM	0.00033	CR (provisional). The oral slope factor is derived by route-to-route extrapolation from the inhalation limit value. Converted from risk level of 1 x 10^{-4} to risk level of 1 x 10^{-5} by dividing by 10	RIVM (2001)
IRIS	0.015 – 0.055	Range of slope factors provided.	USEPA (2000)

IRIS – Integrated Risk Information System.

NHMRC – National Health and Medical Research Council

RIVM – National Institute of Public Health and the Environment (Netherlands)

WHO – World Health Organisation

Inhalation

The inhalation dose-response value is expressed in units of mg/m^3. This value may be termed a Unit Risk (UR), Cancer Risk (CR), Risk Specific Concentration (RSC) or Toxic Dose (that corresponds to a 5% increase in mortality) ($TD_{0.05}$) depending on the agency of derivation.

Table 4 Published Non-Threshold Dose-Response Values for Benzene - Inhalation

Agency	Inhalation Unit Risk Factor $(mg/m^3)^{-1}$	Notes	Source
WHO	6 x 10^{-6}	Average UR converted to SF. Geometric mean of the range of estimates of the lifetime risk (4.4-7.5 x 10^{-6})	WHO (2010)
Health Canada	0.003	$TC_{0.05}$. Based on study by Rinsky et al., 1987. Converted from based on risk level of 1 x 10^{-5}	Health Canada (1993)
RIVM	0.002	CR_{inhal}. Converted to risk level of 1 x 10^{-5}	RIVM (2001)
IRIS	2.2×10^{-6} – 7.8×10^{-6}	Range of inhalation unit risk values provided. Average value: 5.0×10^{-6}	USEPA (2000)

IRIS – Integrated Risk Information System.

NHMRC – National Health and Medical Research Council

RIVM – National Institute of Public Health and the Environment (Netherlands)

WHO – World Health Organisation

Adopted Dose-Response Values

Dose-response values for threshold and non-threshold effects associated with oral or inhalation exposure to benzene have not been published by Australian regulatory bodies.

Threshold (Non-Carcinogenic)

For assessment of potential threshold effects associated with oral exposure to benzene, AECOM has adopted the reference dose of **0.004 mg/kg/day** published by IRIS (USEPA, 2003).

For assessment of potential threshold effects associated with inhalation exposure to benzene, AECOM has adopted the inhalation reference concentration of **0.03 mg/m^3** published by IRIS (USEPA, 2003).

Non-Threshold (Carcinogenic)

For assessment of potential non-threshold effects associated with oral exposure to benzene, AECOM has adopted the Oral Slope Factor of **0.035 $(mg/kg/day)^{-1}$** published by NHMRC (NHMRC, 2011).

For assessment of potential non-threshold effects associated with inhalation exposure to benzene, AECOM has adopted the inhalation unit risk value of **6.0×10^{-6} $(\mu g/m^3)^{-1}$** published by WHO (WHO, 2010).

References

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RIVM, 2001. *Re-evaluation of Human Toxicological Maximum Permissible Risk Levels*. RIVM Report 711701 025. National Institute of Public Health and the Environment. March 2001.

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WHO, 2010. *WHO Guidelines for Indoor Air Quality, Selected Pollutants*. Geneva 2010.

WHO, 2011. *Guidelines for Drinking-water Quality*. Fourth Edition. World Health Organisation. 2011.

Beryllium– Toxicological Profile

The majority of the following information has been sourced from ATSDR (2002) and ASC NEPM (2015), with other sources listed in the references.

Chemical Identification

CAS: 7440-41-7

Molecular Formula: Be

Molecular Weight: 9.012 g/mol

Significance of Exposure Pathways and Background

In accordance with the ASC NEPM (2013), background intakes from other sources (as a % of the TRV):

Bio = 30% for oral and dermal intakes

Bli = 0% for inhalation

Adopted Dose-Response Values

Dose-response values for threshold and non-threshold effects associated with oral or inhalation exposure to beryllium have not been published by Australian regulatory bodies.

Threshold (Non-Carcinogenic)

For assessment of potential threshold effects associated with oral exposure to beryllium, AECOM has adopted the reference dose of **0.002 mg/kg/day** published by WHO (WHO, 2001).

For assessment of potential threshold effects associated with inhalation exposure to beryllium, AECOM has adopted the reference dose of **0.00002 mg/m^3** published by WHO (WHO, 2001).

Non-Threshold (Carcinogenic)

To AECOM's knowledge, non-threshold dose-response criteria for oral and inhalation exposure to beryllium have not been published by Australian or other regulatory bodies. Potential health effects associated with oral and inhalation exposure to beryllium have therefore been assessed on the basis of threshold dose response criteria.

References

ASC NEPM, 2013. *National Environment Protection (Assessment of Site Contamination) Measure 1999* as amended May 2013. National Environment Protection Council (NEPC).

ATSDR, 2002. *Toxicological Profile for Beryllium*. Agency for Toxic Substances and Disease Registry. September 2002.

Friebel and Nadebaum, 2011. *Health screening levels for petroleum hydrocarbons in soil and groundwater. Part 1: Technical development document.* CRC Care Technical Report no. 10, CRC for Contamination Assessment and Remediation of the Environment, Adelaide, Australia. September 2011.

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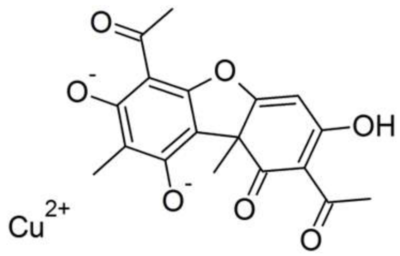

Copper – Toxicological Profile

The following information has been taken from ATSDR (2004):

General

Copper is a reddish metal that occurs naturally in rock, soil, water, sediment, and at low levels in air. It occurs naturally in all plants and animals and is an essential element, at low levels, for all living organisms. At much higher levels, toxic effects can occur.

Metallic copper can be easily molded or shaped and is commonly used for electrical wiring, water pipes and as part of alloys such as brass and bronze. The most commonly used compound of copper is copper sulfate which has the typical blue-green color and is used widely in agriculture and for the preservation of wood, leather and fabrics.

Copper is widespread in the environment and can enter the environment through releases from the mining and industry. It can also enter through waste dumps, domestic waste water, combustion of fossil fuels and wastes, wood production, phosphate fertilizer production, and natural. When copper is released into soil, it can become strongly attached to the organic material and other components (e.g., clay, sand, etc.) in the top layers of soil and may not move very far when it is released. Upon release into water, dissolved copper can be carried in surface waters. Even though copper binds strongly to suspended particles and sediments, there is evidence to suggest that some water-soluble copper compounds do enter groundwater. Copper that enters water eventually collects in the sediments of rivers, lakes, and estuaries. Copper is carried on particles emitted from smelters and ore processing plants, and is then carried back to earth through gravity or in rain or snow. Copper is also carried into the air on windblown metallurgical dust. Indoor release of copper comes mainly from combustion processes Elemental copper does not break down in the environment.

Significance of Exposure Pathways and Background

RIVM (2001) calculated that the total background intake of copper by an adult would be 30 µg/kg/day. Based on data from Australian and New Zealand for infants and young children, background intakes may comprise approximately 0.08 mg/kg/day, which is 70% of the recommended oral TRV. Therefore, a background intake of 70% was recommended in the ASC NEPM (2013).

Non-carcinogenic Health Effects

Copper is an essential nutrient that is incorporated into a number of metalloenzymes involved in hemoglobin formation, drug/xenobiotic metabolism, carbohydrate metabolism, catecholamine biosynthesis, the cross-linking of collagen, elastin, and hair keratin, and the antioxidant defense mechanism. Copper-dependent enzymes, such as cytochrome c oxidase, superoxide dismutase, ferroxidases, monoamine oxidase, and dopamine β-monooxygenase, function to reduce activated oxygen species or molecular oxygen.

Copper is readily absorbed from the stomach and small intestine. Excess copper, not required form nutritional needs, is absorbed into gastrointestinal mucosal cells where it binds to the metal binding protein metallothionein or is stored in the liver. In both cases it is eventually lost from the body in feces (sloughed intestinal cells or with bile).

While the body can adapt to some level of copper excess, higher levels are associated with copper toxicity which can result in liver and kidney damage, anemia, immunotoxicity, and developmental toxicity. Gastrointestinal effects are the most commonly reported and include nausea, vomiting, abdominal pain usually as a result of drinking copper sulfate or beverages stored in copper or brass containers. Copper is a respiratory tract irritant and causes coughing, sneezing, runny nose, pulmonary fibrosis, and increased vascularity of the nasal mucosa. Effects on the liver are marked with the development of necrosis, fibrosis and abnormal biomarkers. Inflammation, necrosis, and altered serum markers of liver damage have been observed in rats fed diets with copper sulfate levels that are at least 100 times higher than the nutritional requirement. There is some evidence from animal studies to suggest that exposure to airborne copper or high levels of copper in drinking water can damage the immune system.

Carcinogenicity and Genotoxicity

The carcinogenicity of copper has not been adequately studied. The IARC has classified copper in Group 4 in relation to its potential carcinogenicity.

In-vivo and in-vitro studies do not indicate copper has genotoxic properties.

Published Dose-Response Values

Available chronic dose-response values published by sources recognised and endorsed by NEPC (2013) and enHealth (2012) are summarised in the following table.

Table 1: Published Dose-Response Values for Copper

Route of Exposure	Type	Threshold or Non-Threshold	Value	Source	Notes
Oral	ADI	Threshold	0.5 mg/kg/day	NHMRC (2004)	Provisional maximum tolerable daily intake
Oral	Minimum Risk Level (MRL)	Threshold	0.001 mg/kg/day	ATSDR (2010)	Intermediate duration oral MRL divided by safety factor to convert to chronic MRL
Oral	Reference Dose (RfD)	Threshold	0.04 mg/kg/day	USEPA (RSL)	RfD adopted by USEPA from HEAST
Oral	Reference Dose (RfD)	Threshold	0.14 mg/kg/day	WHO (2011)	-

Adopted Threshold Dose-Response Values

The WHO (2011) value of 0.14 mg/kg/day has been adopted as the reference dose (RfD) for oral intake of copper. As dose response data for copper inhalation have not been published the RfD has been converted to RfC (where body weight is assumed to be 70 kgs and inhalation rate equal to 20 m^3/day) and 0.49 mg/m^3 has been adopted by AECOM.

Adopted Non-Threshold (Carcinogenic) Dose-Response Values

To AECOM's knowledge, non-threshold dose-response criteria for oral and inhalation exposure to copper have not been published by Australian or other regulatory bodies. Potential health effects associated with oral and inhalation exposure to copper have therefore been assessed on the basis of threshold dose response criteria.

References

ATSDR, 2010. *Toxicological Profile for Copper*. Agency for Toxic Substances and Disease Registry. September 2004.

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USEPA, 2009. *Regional Screening Levels for Chemical Contaminants at Superfund Sites.* Available on-line at: http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm. Tables accessed last updated March 2010.

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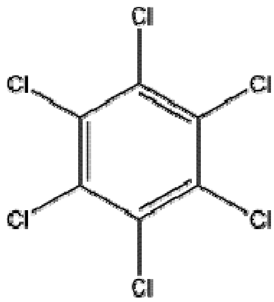

Hexachlorobenzene – Toxicological Profile

The majority of the following information has been sourced from ATSDR (2015) and ASC NEPM (2013), with other sources listed in the references.

Chemical Identification

Synonyms: perchlorobenzene, HCB, pentachlorophenyl chloride

CAS: 118-74-1

Molecular Formula: C_6Cl_6

Molecular Weight: 284.78 g/mol

General

Hexachlorobenzene (HCB) is a white crystalline solid that has negligible solubility in water. It does not occur naturally in the environment. It is formed as a by-product while making other chemicals, in the waste streams of chloralkali and wood-preserving plants, and when burning municipal waste. Hexachlorobenzene was widely used as a pesticide to protect the seeds of onions and sorghum, wheat, and other grains against fungus until 1965. It was also used to make fireworks, ammunition, and synthetic rubber (International Agency for Research on Cancer, 2002). Occupational exposure to hexachlorobenzene has occurred during its production and use in industry and agriculture. Hexachlorobenzene has been detected in many foodstuffs, but dietary intake has probably decreased in recent years. (International Agency for Research on Cancer, 1987).

Significance of Exposure Pathways and Background

HCB is typically found in treated and background soils, sediment and oceans. It is also found in air, surface water and groundwater due to anthropogenic use and disposal of HCB products as a by-product of other processes. HCB is known to accumulate up through the food chain and has been detected in break milk. HCB is usually detected in air at low concentrations and incineration of chlorinated materials (e.g. burning of municipal waste) in a key source of HCB into the atmosphere (ATSDR, 2015). The most significant exposure pathway is ingestion from food e.g. fatty fish.

WHO (1997) calculated that the total background intake of HCB by an adult would be between 0.0004 and 0.003 ug/kg/ bw/day, mostly from dietary intakes. Therefore, the intake is considered to be negligible compared to the recommended oral TRV. Therefore, a background intake of 0% was recommended in the ASC NEPM (2013).

Non-carcinogenic Health Effects

The International Programme on Chemical Safety (WHO-IPCS, 1997) evaluated hexachlorobenzene in the Environmental Health Criteria 195. The principle non-cancer effect of interest is the interruption of haem biosynthesis in the liver. IPCS also concluded that animal studies have shown that hexachlorobenzene affects a wide range of organ systems, including the liver, lungs, kidneys, thyroid, reproductive tissues, nervous and immune system.

Identification of Non-Carcinogenic Toxicity Reference Values

The dose-response values provide an estimate of exposure to the human population that is likely to be without an appreciable risk of deleterious effects during a lifetime. The oral exposure represents a daily value and the inhalation exposure represents continuous inhalation. These values are intended for use in risk assessments for health effects known or assumed to be produced through a nonlinear (presumed threshold) mode of action (USEPA, 2012). Available chronic dose-response values published by sources recognised and endorsed by enHealth (enHealth 2012a), NEPC (NEPC, 2013) and the USEPA and are summarised below.

Oral

The oral dose-response value is expressed in units of mg/kg/day. This value may be termed a Reference Dose (RfD), Tolerable Daily Intake (TDI), or Minimal Risk Level for oral exposure (MRL) depending on the agency of derivation.

Table 1 Published Threshold Dose-Response Values for Hexachlorobenzene - Oral

Agency	Oral Dose-Response Value (mg/kg/day)	Source	Target Endpoint	Test Animal	UF	Notes
WHO	0.0006	WHO (2011)	-	-	-	Derived on the basis of a linear multi-stage low-dose extrapolation model or a TDI of 0.00016 mg/kg/day.
WHO	0.00016	WHO (1997)	Non-neoplastic and neoplastic effects in liver.	Rats	5000	Based on tumorigenic dose.
ATSDR	0.00007	ATSDR (2015)	Hepatic effects	Rats	300	Chronic MRL. LOAEL of 0.022 mg/kg/day.
IRIS	0.0008	USEPA (2012)	Liver effects	Rats	100	RfD. NOAEL of 0.08 mg/kg/day.

ATSDR – Agency for Toxic Substances and Disease Registry
IRIS – Integrated Risk Information System
WHO – World Health Organisation
UF – Uncertainty Factor.

Carcinogenicity and Genotoxicity

HCB has little capability to induce directly gene mutation, chromosomal damage and DNA repair. It exhibited weak mutagenic activity in a small number of the available studies on bacteria and yeast, although it should be noted that each of these studies has limitations. There is also some evidence of low-level binding to DNA in vitro and in vivo, but at levels well below those expected for genotoxic carcinogens.

On the basis of the available evidence (WHO, 1997 and Woodward-Clyde, 1996) HCB can be considered to be non-genotoxic.

No association has been found between HCB levels in humans and the incidence of breast or other cancers. Several animal studies have demonstrated an increase in the incidence of tumour formation following oral exposure to HCB. Evidence of carcinogenicity is strongest in the liver (hyperplasia, benign tumours and malignant tumours). In addition, HCB has been shown to induce renal metaplasia, adenomas and renal cell carcinomas; lymphosarcomas; adrenal hyperplasia; parathyroid adenomas and hemangioendothelioma and thyroid tumours.

On the basis of available metabolic and toxicological information the WHO considered that a TDI approach was appropriate for the assessment of non-neoplastic effects and neoplastic effects.

HCB has been classified as a "probable" human carcinogen (Category B2) by the USEPA on the basis of the induction of tumours in the liver, tyroid and kidney in three rodent species following oral exposure.

IARC (2001) has classified HCB in Group 2B (possibly carcinogenic to humans) based on inadequate evidence in humans and limited evidence in experimental animals for carcinogenicity.

Safe Work Australia not evaluated HCB. NICNAS has classified not classified HCB.

Identification of Carcinogenic Toxicity Reference Values

To AECOM's knowledge, non-threshold dose-response criteria for oral and inhalation exposure to hexachlorobenzene have not been published by Australian or other regulatory bodies. Potential health effects associated with oral and inhalation exposure to hexachlorobenzene have therefore been assessed on the basis of threshold dose response criteria.

Adopted Dose-Response Values

Dose-response values for threshold and non-threshold effects associated with oral or inhalation exposure to hexachlorobenzene have not been published by Australian regulatory bodies.

Threshold (Non-Carcinogenic)

For assessment of potential threshold effects associated with oral exposure to benzene, AECOM has adopted the reference dose of **0.00016 mg/kg/day** published by WHO (WHO, 1997).

References

ASC NEPM, 2013. *Schedule B(4) Guideline on Site-Specific Health Risk Assessment Methodology.* In: *National Environment Protection (Assessment of Site Contamination) Measure 1999* as amended May 2013. National Environment Protection Council (NEPC).

ATSDR, 2015. *Toxicological Profile for Hexachlorobenzene*. Agency for Toxic Substances and Disease Registry. August, 2015.

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Lead

The majority of the following information has been sourced from NEPC (2013), ATSDR (2007) and WHO (2000), with other sources listed in the references.

General

Lead is a naturally occurring element found in the Earth's crust at an average concentration of approximately 15 to 20 mg/kg. Lead is used principally in the production of batteries, metal alloys, X-ray shielding materials, ammunition, chemical resistant linings and pigments. It has also been used historically as an additive in petrol and also in many paints.

Owing to the decreasing use of lead containing additives in petrol and of lead-containing solder in the food processing industry, concentrations in air and food are declining, and intake from drinking-water constitutes a greater proportion of total intake. Lead is rarely present in tap water as a result of its dissolution from natural sources; rather, its presence is primarily from household plumbing systems containing lead in pipes, solder, fittings or the service connections to homes. The amount of lead dissolved from the plumbing system depends on several factors, including pH, temperature, water hardness and standing time of the water, with soft, acidic water being the most plumbosolvent.

Significance of Exposure Pathways and Background

The most significant exposure pathway for lead is the ingestion of soil and dust. Although lead has been detected in certain foods, beverages, air and tap water, these do not constitute major sources of exposure for most people.

Consistent with the approach adopted by NEPC (2013), no background adjustment factors have been applied to the Rfd or RfC.

Non-Carcinogenic Health Effects

Most of the information gathered about lead toxicity comes from studies of workers from a variety of industries and from studies of adults and children in the general population. The most sensitive targets for lead toxicity are the developing nervous system, the hematological and cardiovascular systems, and the kidney. However, leads multi-mode action in biological systems has the potential to affect any system or organ in the body.

Studies of lead workers suggest that long-term exposure to lead may be associated with increased mortality due to cerebrovascular disease. Population studies suggest that there is a significant association between bone-lead levels and elevated blood pressure and blood lead levels also have been associated with small elevations in blood pressure. At low levels lead negatively affects kidney function by reducing glomerular filtration rates. Lead inhibits haem synthesis, shortens erythrocyte lifespan and can induce inappropriate production of the hormone erythropoietin leading to inadequate maturation of red cell progenitors, which can contribute to the anemia.

A recent study in children 8–10 years of age suggested that lead accelerates skeletal maturation, which might be a predisposing factor to the development of osteoporosis in later life. Lead also has been associated with increased occurrence of dental caries in children and periodontal bone loss.

Hormonal changes in thyroid levels and reproductive hormones have been observed, as have decreased levels of circulating vitamin D, required for maintenance of calcium homeostasis.

Altered immune parameters have been described in lead workers with changes in some T-cell subpopulations, response to T-cell mitogens, and reduced chemotaxis of polymorphonuclear leukocytes being observed. Some studies have indicated that increased in lead exposure in children may be associated with increases in serum IgE, a primary mediate for type-1 hypersensitivity involved in allergic diseases such as asthma.

Prolonged exposure to high amounts of lead induces symptoms of encephalopathy; dullness, irritability, poor attention span, epigastric pain, constipation, vomiting, convulsions, coma, and death.

Lead poisoning in children can leave residual cognitive deficits that can be still detected in adulthood such as malaise, forgetfulness, irritability, lethargy, headache, fatigue, impotence, decreased libido, dizziness, weakness, and paresthesia. Studies of older populations reported associations between lead and/or bone lead and poorer performance in neurobehavioral tests. Lead also has been shown to affect nerve conduction velocity and postural balance in workers.

Identification of Non-Carcinogenic Toxicity Reference Values

The dose-response values provide an estimate of exposure to the human population that is likely to be without an appreciable risk of deleterious effects during a lifetime. The oral exposure represents a daily value and the inhalation exposure represents continuous inhalation. These values are intended for use in risk assessments for health effects known or assumed to be produced through a nonlinear (presumed threshold) mode of action (USEPA, 2014). Available chronic dose-response values published by sources recognised and endorsed by enHealth (enHealth, 2012) and NEPC (NEPC, 2013) and are summarised below.

Oral

The oral dose-response value is expressed in units of mg/kg/day. This value may be termed a Reference Dose (RfD), Acceptable Daily Intake (ADI), Tolerable Daily Intake (TDI), or Minimal Risk Level for oral exposure (MRL) depending on the agency of derivation.

Table 1 Published Threshold Dose-Response Values for Lead - Oral

Agency	Oral Dose-Response Value (mg/kg/day)	Source	Target Endpoint	Test Animal	UF	Notes
NEPC	<10 µg/dL	NEPC (2013)	-	-	-	Target Blood Lead Concentration.
NHMRC	0.0035	NHMRC (2013)	Lead retention in infants	Human	-	ADI. Based on study by Ziegler et al., 1978 and Ryu et al., 1983.
RIVM	0.025	RIVM (2001)	Brain and CNS	Human	-	PTWI. Cited in FAO/WHO, 1993 and IPCS, 1995.

NEPC – National Environment Protection Council

NHMRC – National Health and Medical Research Council

RIVM – National Institute of Public Health and the Environment (Netherlands)

UF – Uncertainty Factor.

Inhalation

The inhalation dose-response value is expressed in units of mg/m^3. This value may be termed a Reference Concentration (RfC), Tolerable Concentration (TC), or Minimal Risk Level for inhalation (MRL) depending on the agency of derivation.

Table 2 Published Threshold Dose-Response Values for Lead - Inhalation

Agency	Inhalation Dose-Response Value (mg/m^3)	Source	Target Endpoint	Test Animal	UF	Notes
WHO	0.0005	WHO (2000)	Critical level of Pb in blood	Human	-	RfC. Averaging time: 1 year

Carcinogenicity and Genotoxicity

The International Agency for Research on Cancer (IARC) has determined that inorganic lead and lead compounds are probably carcinogenic (class 2B agent) based on sufficient evidence from studies in animals and limited evidence in humans.

Renal tumours have been induced in experimental animals exposed to high concentrations of lead compounds in the diet, and IARC has classified lead and inorganic lead compounds in Group 2B (possible human carcinogen). However, there is evidence from studies in humans that adverse neurotoxic effects other than cancer may occur at very low concentrations of lead and that a guideline value derived on this basis would also be protective for carcinogenic effects.

Lead is a clastogenic agent, as shown by the induction of chromosomal aberrations, micronuclei, and sister chromatid exchanges in peripheral blood cells from lead workers. *In vitro* mutagenicity studies in microorganisms have yielded mostly negative results for lead. Tests using mammalian cells have been inconclusive, with some studies reporting negative results and some reporting chromosome damage.

Identification of Carcinogenic Toxicity Reference Values

To AECOM's knowledge, non-threshold dose-response criteria for oral and inhalation exposure to lead have not been published by Australian or other regulatory bodies. Potential health effects associated with oral and inhalation exposure to lead have therefore been assessed on the basis of threshold dose response criteria.

Adopted Dose-Response Values

Threshold (Non-Carcinogenic)

Based on the approach adopted within the National Environment Protection (Assessment of Site Contamination) Measure 1999 as amended in April 2013 (NEPC, 2013) a target blood lead concentration of <10 µg/dL was adopted for assessment of blood lead exposures via all pathways

References

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NEPC, 2013. National Environment Protection (Assessment of Site Contamination) Measure 1999. Amended April 2013. National Environment Protection Council.

NEPC, 2013. *Schedule B(4) Guideline on Site-Specific Health Risk Assessment Methodology.* In: National Environment Protection (Assessment of Site Contamination) Measure as amended April 2013. National Environment Protection Council.

NHMRC 2013, *Australian Drinking Water Guidelines (ADWG)*. National Health and Medical Research Council, 2011.

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WHO, 2000. *Air Quality Guidelines for Europe*. Second Edition. WHO Regional Publications. European Series No. 91. World Health Organisation. Regional Office for Europe Copenhagen. 2000.

WHO, 2011. *Guidelines for Drinking-water Quality. First and Second Addenda to the Third-Edition. Volume 1. Recommendations.* World Health Organization.

Ziegler E, Edwards B, Jensen R, Mahaffey K, Fomon S, 1978. *Absorption and retention of lead by infants*. Pediatric Research, 12:29-34.

Mercury – Toxicological Profile

The following information has been taken from ATSDR (1999):

General

Mercury occurs naturally in the environment and exists in several forms; metallic mercury, inorganic mercury and organic mercury. Metallic mercury is a shiny, silver white metal liquid at room temperature and is familiar as the liquid in metal thermometers. At room temperature metallic mercury will evaporate and form mercury vapours which are colorless and odorless Metallic mercury is often found at hazardous waste sites.

Inorganic mercury occurs when mercury combines with elements such as chlorine, sulfur or oxygen. These compounds are called mercury salts and are white powders or crystals, except for mercuric sulfide which is red. Some inorganic mercury compounds are used as fungicides, skin lightening creams, antiseptic and disinfecting agents, tattoo dyes and color paints.

When mercury combines with carbon, organic mercury compounds are formed. There are a large number of organic mercury compounds in the environment but methyl mercury is the most common. In the past, methyl-mercury and dimethyl-mercury have been used for commercial purposes. In the environment, methyl mercury is produced primarily by microorganisms rather than by human activity.

Several forms of mercury occur naturally in the environment; metallic mercury, mercuric sulfide, mercuric chloride and methyl mercury. Some micro-organisms can change the mercury in the environment from one form to another. The most common organic mercy compound that microorganisms and natural processes generate from other forms is methyl mercury. Methyl mercury is of particular concern because it can accumulate in freshwater and salt water marine mammals.

Mercury enters the environment as a result of normal breakdown of minerals and rocks from exposure to wind, water and volcanic activity. The levels of mercury in the atmosphere are very very low and do not pose a health risk. The amounts of mercury present in any one place are usually low however at hazardous waste sites levels 200,000 times the natural background levels can be present.

Mercury enters the air as a result of mining deposits, emissions from coal fired power plants or burning municipal and medical waste. Mercury vapour can be carried long distances, can be changed into other forms of mercury and transported to water or soil in rain or snow. Microorganisms convert inorganic mercury to methyl mercury which can enter the water or soil. Mercury usually stays on the surface of sediments or soil and does not move through the soil to underground water. If mercury enters the water in any form, it is likely to settle to the bottom where it can remain for a long time.

Mercury, in the form of methyl mercury, can accumulate in the food chain in particular in larger older fish such as sharks and swordfish. Plants such as corn, wheat and peas have very low levels of mercury, even if grown in soil containing significant levels of mercury. Mushrooms on the other hand have the capacity to accumulate mercury.

Significance of Exposure Pathways and Background

In accordance with the ASC NEPM (2013), background intakes from other sources (as a % of the TRV):

Bio = 40% for oral and dermal intakes

Bli = 10% for inhalation

Non-carcinogenic Health Effects

The nervous system is very sensitive to mercury with incidents of poisoning from ingestions of contaminated fish or seeds leading to brain and kidney damage. Metallic mercury vapours or organic mercury may affect different areas of the brain. Symptoms of damage include personality changes (irritability, shyness, and nervousness), tremors, changes in vision, deafness, muscle un-coordination, loss of sensation and memory difficulties. The varying effects on the nervous system are attributed to the way the different forms of mercury move through the body. When metallic mercury vapours are inhaled they easily enter the bloodstream and are carried through the body to the brain. Breathing or swallowing large amounts of methyl mercury results in some of the mercury moving into the brain and affecting the nervous system. Inorganic mercury salts, such as mercuric chloride, do not enter the brain as readily ad methyl mercury or metallic mercury vapour.

The kidneys are sensitive to the effects of mercury because it accumulates in the kidneys and causes higher exposures to these tissues. All forms of mercury can cause kidney damage if large enough amounts enter the body however if the damage is not too great, the kidneys are likely to recover once the body clears itself of the contamination.

Short term exposure (hours) to high levels of metallic mercury vapour in the air can damage the lining of the mouth and irritate the lungs and airways causing tightness of breath, a burning sensation in the lungs, and coughing. Other effects from exposure to mercury vapour include nausea, vomiting, diarrhea, increases in blood pressure or heart rate, skin rashes and eye irritation. Damage to the lining of the mouth and lungs can also occur from exposure to lower levels of mercury vapour over longer periods

Most studies of humans who breathed metallic mercury for a long time indicate that mercury from this type of exposure does not affect the ability to have children. Dermal contact with metallic mercury has been shown to cause an allergic skin reaction in some people.

In addition to kidney effected, inorganic mercury damages the stomach and intestines producing symptoms of nausea, diarrhea or severe ulcers if swallowed in large amounts. Cardiac effects have been observed in children who have accidentally swallowed mercuric chloride. Symptoms include rapid heart rate and increased blood pressure.

Carcinogenicity and Genotoxicity

Studies in workers exposed to metallic mercury vapours has not shown any mercury related increase in cancer while animal studies investigating the effects of long term mercury ingestion were not conclusive with regard to mercury's carcinogenicity. The International Agency for Research on Cancer (IARC) have not classified mercury as to its human carcinogenicity (Group 3 agent).

In-vivo and in-vitro studies indicate mercury has genotoxic properties.

Published Dose-Response Values

Available chronic dose-response values published by sources recognised and endorsed by NEPC (2013) and enHealth (2012a) are summarised in the following table.

Table 1: Published Dose-Response Values for Mercury

Route of Exposure	Type	Threshold or Non-Threshold	Value	Source	Notes
Oral	ADI	Threshold	0.00047 mg/kg/day	NHMRC (2015)	Based on WHO 1988 maximum tolerable daily intake at which no adverse effects will occur (elemental mercury).
Oral	Minimum Risk Level (MRL)	Threshold	0.0002 mg/kg/day	ATSDR (2010)	Intermediate duration MRL derived for inorganic mercury divided by safety factor to convert to chronic MRL (elemental mercury).
Oral	Reference Dose (RfD)	Threshold	0.00016 mg/kg/day	USEPA (IRIS)	RfD adopted from CalEPA (elemental mercury).
Inhalation	Reference Concentration (RfC)	Threshold	0.001 mg/m^3	WHO (2000a)	Annual average guideline for inorganic mercury vapour in air (elemental mercury).

Route of Exposure	Type	Threshold or Non-Threshold	Value	Source	Notes
Inhalation	Reference Concentration (RfC)	Threshold	0.001 mg/m^3	WHO (2000b)	Guideline value (TC) for mercury (inorganic). Averaging time 1 year (elemental mercury).
Inhalation	Reference Concentration (RfC)	Threshold	0.0002 mg/m^3	WHO (2003)	TRV.
Inhalation	Minimum Risk Level (MRL)	Threshold	0.0002 mg/m^3	ATSDR (2009)	Chronic duration inhalation exposure to metallic mercury vapour (elemental mercury).
Inhalation	Reference Concentration (RfC)	Threshold	0.0003 mg/m^3	USEPA (IRIS)	(elemental mercury)
Oral	ADI	Threshold	0.00047 mg/kg/day	NHMRC (2004)	Based on WHO 1988 maximum tolerable daily intake at which no adverse effects will occur (elemental mercury).
Oral	Minimum Risk Level (MRL)	Threshold	0.0002 mg/kg/day	ATSDR (2010)	Intermediate duration MRL derived for inorganic mercury divided by safety factor to convert to chronic MRL (elemental mercury).
Oral	Reference Dose (RfD)	Threshold	0.00016 mg/kg/day	USEPA (IRIS)	RfD adopted from CalEPA (elemental mercury).
Oral	Reference Dose (RfD)	Threshold	0.0006 mg/kg/day	WHO (2011)	Oral TRV.

Adopted Threshold Dose-Response Values

The WHO (2011) value of 0.0006 mg/kg/day has been adopted as the reference dose (RfD) for oral intake of mercury. The WHO (2003) reference concentration (RfC) of 0.0002 mg/m^3 has been adopted as the threshold value for inhalation.

Adopted Non-Threshold (Carcinogenic) Dose-Response Values

To AECOM's knowledge, non-threshold dose-response criteria for oral and inhalation exposure to mercury have not been published by Australian or other regulatory bodies. Potential health effects associated with oral and inhalation exposure to mercury have therefore been assessed on the basis of threshold dose response criteria.

References

ATSDR, 1999. *Toxicological Profile for Mercury*. Agency for Toxic Substances and Disease Registry. March 1999.

enHealth, 2012. *Environmental Health Risk Assessment*, *Guidelines for Assessing Human Health Risks from Environmental Hazards.*

NHMRC,2015. *Australian Drinking Water Guidelines*. National Health and Medical Research Council. 2015.

NEPC, 2013. *Schedule B(4) Guideline on Site-Specific Health Risk Assessment Methodology.* In: *National Environment Protection (Assessment of Site Contamination) Measure 1999* as amended May 2013. National Environment Protection Council.

USEPA, 2009. *Regional Screening Levels for Chemical Contaminants at Superfund Sites.* Available on-line at: http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm. Tables accessed last updated March 2010.

USEPA, 2015. *Integrated Risk Information System (IRIS).* Electronic database maintained by the United States Environmental Protection Agency National Center for Environmental Assessment, Office of Research and Development. Accessed October 2015.

WHO, 2000a. *Air Water Guidelines for Europe.* World Health Organisation, Geneva.

WHO, 2000b. *Air Water Guidelines Global.* World Health Organisation, Geneva.

WHO, 2003. Concise International Chemical Assessment Document 50 (CICAD 50), Elemental Mercury and Inorganic Mercury Compounds: Human Health Aspects. World Health Organisation, Geneva.

WHO, 2011. Evaluation of certain contaminants in food, seventy-second report of the Joint FAO/WHO Expert Committee on Food Additives (JECFA), WHO technical report series no. 959.

Molybdenum – Toxicological Profile

The majority of the following information has been sourced from the ADWG (NHMRC/ARMCANZ, 2016), with other sources listed in the references.

Chemical Identification

CAS: 7439-98-7

Molecular Formula: Mo

Molecular Weight: 95.94 g/mol

Significance of Exposure Pathways and Background

Molybdenum is an essential trace element, with an estimated daily requirement between 0.15 mg//day and 0.5 mg/day for adults.

The background intake of molybdenum through inhalation pathways is considered to be negligible; therefore a background intake of 0% was adopted.

Adopted Dose-Response Values

The following dose-response values for threshold and non-threshold effects associated with oral or inhalation exposure to molybdenum have been published by Australian and international regulatory bodies.

Threshold (Non-Carcinogenic)

For assessment of potential threshold effects associated with oral exposure to molybdenum, AECOM has adopted the reference dose of **0.007 mg/kg/day** published by the ADWG (NHMRC/ARMCANZ, 2016).

For assessment of potential threshold effects associated with inhalation exposure to molybdenum, AECOM has adopted the reference concentration of **12 µg/m^3** published by RIVM (RIVM, 2000).

Non-Threshold (Carcinogenic)

In accordance with ADWG (NHMRC/ARMCANZ, 2016), no relevant data are available on the carcinogenicity of molybdenum. Tests for mutagenicity with bacteria have been inconclusive.

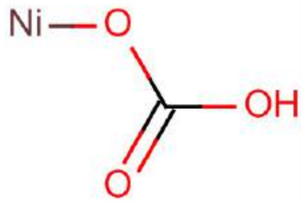
Potential health effects associated with oral and inhalation exposure to molybdenum have therefore been assessed on the basis of threshold dose response criteria.

References

ASC NEPM, 2013. *National Environment Protection (Assessment of Site Contamination) Measure 1999* as amended May 2013. National Environment Protection Council (NEPC).

NHMRC/ARMCANZ, 2016. Australian Drinking Water Guidelines (ADWG). National Health and Medical Research Council,

RIVM, 2000. Circular on target values and intervention values for soil remediation. Dutch Ministry of Housing, Spatial Planning and Environment



Nickel – Toxicological Profile

The following information has been taken from ATSDR (2005):

General

Nickel is found naturally in the environment and can also be released into the environment from industrial furnaces, power plants or rubbish incinerators.

In the environment, it is primarily found combined with oxygen or sulfur as oxides or sulfides. Nickel is released into the atmosphere during nickel mining and by industries that make or use nickel, nickel alloys, or nickel compounds. These industries also might discharge nickel in waste water. Nickel is also released into the atmosphere by oil-burning power plants, coal-burning power plants, and trash incinerators.

Food is the major source of exposure to nickel. You may also be exposed to nickel by breathing air, drinking water, or smoking tobacco containing nickel. Skin contact with soil, bath or shower water, or metals containing nickel, as well as, metals plated with nickel can also result in exposure. Stainless steel and coins contain nickel. Some jewelry is plated with nickel or made from nickel alloys. Patients may be exposed to nickel in artificial body parts made from nickel-containing alloys and it can be transferred from mother to infant during breastfeeding.

The concentration of nickel in air, rivers and lakes is generally very low and is barely detectable however you may be exposed to higher-than-average levels of nickel if you live near industries that process or use nickel.

Significance of Exposure Pathways and Background

In accordance with the ASC NEPM (2013), background intakes from other sources (as a % of the TRV):

Bio = 60% for oral and dermal intakes

Bli = 20% of inhalation

Non-carcinogenic Health Effects

The general population can be exposed to nickel via inhalation, oral, and dermal routes of exposure. Based on occupational exposure studies, reports of allergic contact dermatitis, and animal exposure studies, the primary targets of toxicity appear to be the respiratory tract following inhalation exposure, the immune system following inhalation, oral, or dermal exposure, and possibly the reproductive system and the developing organism following oral exposure.

Contact dermatitis is the result of an allergic reaction to nickel that has been reported in the general population and workers exposed via dermal contact with airborne nickel, liquid nickel solution, or prolonged contact with metal items such as jewelry and prosthetic devices that contain nickel. Once an individual becomes sensitized to nickel, dermal contact with only a small amount of nickel can result in dermatitis. Approximately 10–20% of the general population is sensitized to nickel.

Both noncancerous and cancerous respiratory effects have been observed in humans and animals exposed to airborne nickel compounds. Chronic bronchitis, emphysema, pulmonary fibrosis, and impaired lung function have been observed in nickel welders and foundry workers. These effects were not consistently seen across studies, and co-exposure to other toxic metals such as uranium, iron, lead, and chromium confounds the interpretation of the results. Studies examining the risk of death from nonmalignant respiratory disease among nickel workers have not found significant increases; however, many studies found that the number of observed deaths was significantly lower than expected, suggesting a healthy worker effect.

Adverse respiratory effects have been reported in humans and animals exposed to nickel compounds at concentrations much higher than typically found in the environment. The available data on noncancerous respiratory effects in humans are limited. In nickel workers, exposure to nickel did not result in increases in the risk of death from nonmalignant respiratory system disease. Studies examining potential nonlethal respiratory effects have not found consistent results. Animal data provide strong evidence that nickel is a respiratory toxicant; lung inflammation is the predominant effect. Evidence of lung inflammation has been observed following acute-, intermediate-, and chronic-duration exposure of rats to nickel sulfate, nickel subsulfide, or nickel oxide. Human and animal data provide strong evidence that inhalation exposure to some nickel compounds can induce lung cancer.

The potential for nickel compounds to induce reproductive effects has not been firmly established in either humans or animals. A significant increase in human leukocyte antigen (HLA)-DRw6 antigens were found among individuals with nickel contact dermatitis compared to individuals with no history of atopy or contact dermatitis. Nickel sensitization typically involves initial prolonged contact with nickel or exposure to a very large nickel dose. In the general population, the initial nickel contact often comes from body piercing with jewelry that releases large amount of nickel ions. The resulting dermatitis, which is an inflammatory reaction mediated by type IV hypersensitivity, typically occurs beneath the metal object.

Carcinogenicity and Genotoxicity

The carcinogenicity of nickel via the inhalation pathway has been well documented in occupationally-exposed individuals. Significant increases in the risk of mortality from lung or nasal cancers were observed in several cohorts of nickel refinery workers. Studies of workers in other nickel industries, including nickel mining and smelting, nickel alloy production, stainless steel production, or stainless steel welding, which typically involve exposure to lower concentrations of nickel, have not found significant increases in cancer risks.

No studies were located regarding cancer in humans after oral exposure to nickel, and nickel acetate was found to be noncarcinogenic in lifetime drinking water studies in rats and mice.

The Department of Health and Human Services has determined that metallic nickel may reasonably be anticipated to be a human carcinogen and nickel compounds are known to be human carcinogens. IARC classified metallic nickel in group 2B (possibly carcinogenic to humans) and nickel compounds in group 1 (carcinogenic to humans). USEPA has classified nickel refinery dust and nickel sulfide in Group A (human carcinogen). Other nickel compounds have not been classified by the EPA. These classifications are based on evidence of carcinogenicity via the inhalation, rather than oral, pathway.

Both *in vitro* and *in vivo* studies in mammals indicate that nickel is genotoxic

Published Dose-Response Values

Available chronic dose-response values published by sources recognised and endorsed by NEPC (2013) and enHealth (2012) are summarised in the following table.

Table 1: Published Dose-Response Values for Nickel

Route of Exposure	Type	Threshold or Non-Threshold	Value	Source	Notes
Oral	Tolerable Daily Intake (TDI)	Threshold	0.012 mg/kg/day	NEPC (2013)	Based on WHO (2011) toxicity reference value.
Oral	Acceptable Daily Intake (ADI)	Threshold	0.005 mg/kg/day	NHMRC (2011)	Safety factor does not include that for carcinogenicity as effects have only been observed upon inhalation
Oral	Tolerable Daily Intake (TDI)	Threshold	0.012 mg/kg/day	WHO (2011)	
Oral	Reference Dose (RfD)	Threshold	0.02 mg/kg/day	USEPA (2010)	
Inhalation	Toxicity Reference Value (TRV)	Threshold	0.00002	NEPC (2013)	Based on the TRV published by EA (2009)
Inhalation	Minimal Risk Level (MRL)	Threshold	0.00009 mg/m^3	ATSDR (2005)	Chronic duration
Inhalation	Unit Risk	Non - threshold	0.0004 $(ug/m^3)^{-1}$	WHO (2000a)	

Route of Exposure	Type	Threshold or Non-Threshold	Value	Source	Notes
Inhalation	Unit Risk	Non - threshold	0.00038 $(ug/m^3)^{-1}$	WHO (2000b)	

Adopted Threshold Dose-Response Values

For assessment of potential threshold effects associated with oral exposure to nickel, AECOM has adopted the TDI of 0.012 mg/kg/day used by NEPC (2013) for derivation of the health investigation level.

For assessment of potential threshold effects associated with inhalation exposure to nickel, AECOM has adopted the TRV of 0.00002 mg/m^3 used by NEPC (2013) for derivation of the health investigation level.

Adopted Non-Threshold (Carcinogenic) Dose-Response Values

Non-threshold dose-response criteria for oral exposure to nickel have not been published, and nickel is not considered to be carcinogenic via the oral exposure route.

Nickel is not considered to be carcinogenic via the inhalation exposure route, therefore no inhalation reference concentration has been adopted.

References

ATSDR, 2005. *Toxicological Profile for Nickel*. Agency for Toxic Substances and Disease Registry. August, 2005.

EA, 2009. Contaminants of soil: updated collation of toxicological data and intake values for humans, Nickel, Science report: SC050021/TOX8, May 2009.

enHealth, 2012. *Environmental Health Risk Assessment*, *Guidelines for Assessing Human Health Risks from Environmental Hazards.* June 2012.

NEPC, 2013. *Schedule B(4) Guideline on Health Risk Assessment Methodology.* In: National Environment Protection (Assessment of Site Contamination) Measure 1999 as amended May 2013. National Environment Protection Council.

USEPA, 2013. *Integrated Risk Information System (IRIS).* Electronic database maintained by the United States Environmental Protection Agency National Center for Environmental Assessment, Office of Research and Development. Accessed October 2013.

NHMRC, 2011, *Australian Drinking Water Guidelines (ADWG)*. National Health and Medical Research Council , 2011.

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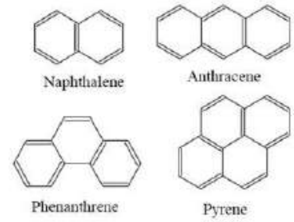

Polycyclic Aromatic Hydrocarbons (PAHs)

General

Polycyclic aromatic hydrocarbons (PAHs) occur ubiquitously in the environment from both synthetic and natural sources. PAHs occur in the atmosphere most commonly in the products of incomplete combustion. These products include fossil fuels; cigarette smoke; industrial processes (such as coke production and refinement of crude oil); and exhaust emissions from gasoline engines, oil-fired heating, and burnt coals. PAHs are present in groundwater, surface water, drinking water, waste water, and sludge. They are found in foods, particularly charbroiled, broiled, or pickled food items, and refined fats and oils. Individuals living in the vicinity of hazardous waste sites where PAHs have been detected at levels above background may experience exposure to these chemicals via inhalation of contaminated air or ingestion of contaminated food, soil, or water.

Within Australia, the following 16 PAHs are typically analysed for and considered as a group in contaminated site assessment work:

- acenaphthene
- acenaphthylene
- anthracene
- benz[a]anthracene
- benzo[a]pyrene
- benzo[b]fluoranthene
- benzo[g,h,i]perylene
- benzo[k]fluoranthene
- chrysene
- dibenz[a,h]anthracene
- fluoranthene
- fluorene
- naphthalene
- indeno[1,2,3-c,d]pyrene
- phenanthrene
- pyrene

These PAHs are the most commonly assessed based on the following considerations:

- More information is available on them than other PAHs.
- They are suspected to be more harmful than other PAHs, and they exhibit harmful effects that are representative of the PAHs.
- There is considered to be a greater chance of exposure to these PAHs than to the others.

The above PAHs with the exception of naphthalene are considered in this toxicity profile. The toxicity of naphthalene (if considered in this risk assessment) is discussed separately.

Significance of Exposure Pathways and Background

The most significant exposure pathways are inhalation of contaminated air and ingestion of certain foods, beverages and tap water (ATSDR, 1995).

Background levels of some representative PAHs in the air are reported to be 0.02-1.2 nanograms per cubic meter (ng/m^3) in rural areas and 0.15-19.3 ng/m^3 in urban areas (ATSDR, 1995).

As summarised in **Table 1** below, estimated chemical intakes from background exposure to PAHs in soil, drinking water, food and air are less than 1% of the lowest TDI adopted in this assessment. Background exposure was therefore not considered to be significant in comparison to the adopted dose-response criteria and TDIs were not corrected for background exposure.

Table 1 Estimated Background Exposure to PAHs

Concentration of Intake	Estimated Intake (mg/kg/day)	Notes
Drinking Water		
623 ng/L	1.78×10^{-5}	Water concentration is the maximum reported individual PAH concentration for a range of drinking water sources monitored in the USA, United Kingdom and Europe (ATSDR, 1995). Use of this value is considered conservative given that PAHs have not been reported in Australian drinking water supplies (NHMRC, 2011). Intake has been estimated for a 70 kg adult, assuming that 2 L of water per day is ingested.
Food		
10 µg/day	1.4×10^{-4}	Food intake is the maximum reported for individual PAHs based on a range of studies in the USA, United Kingdom and Europe (ATSDR, 1995). Intake has been calculated assuming a 70 kg body weight.
Air		
10.9 ng/m^3	3.1×10^{-5}	Air concentration is maximum annual average of any individual PAH reported in Australian cities by Environmental Australia (DEH, 1999). Intake has been calculated assuming a 70 kg adult respires 20 m^3 of air per day.
Total Intake		0.00019 mg/kg/day
Minimum TDI[1]		0.02 mg/kg/day
Fraction of TDI Due to Background Exposure		0.0096 (<1%)

Notes
[1]Value is minimum TDI of those adopted for PAHs assessed on the basis of threshold dose-response criteria. TDIs ranged from 0.02 mg/kg/day (naphthalene) to 0.3 mg/kg/day (anthracene).

It is noted that the PAH background exposure analysis presented in this report has not explicitly considered background exposure to PAH by smokers. However, ATSDR (1995) report that concentrations of individual PAHs in cigarette smoke range from less than 1 µg per 100 cigarettes to 62 µg per 100 cigarettes. For a 70 kg individual who smokes one pack (20 cigarettes) per day, the maximum expected intake of any individual PAH is therefore estimated to be 0.00018 mg/kg/day. This additional intake due to smoking also represents less than 1% of the lowest PAH TDI considered in this assessment (0.02 mg/kg/day for naphthalene).

Background exposure is not considered in the assessment of carcinogenic (non-threshold) risks, as non-threshold risks are estimated *incremental* lifetime cancer risks. However, it should be noted that the maximum background intake estimated for individual PAHs, if assumed to apply to benzo(a)pyrene or benzo(a)pyrene toxic equivalents, would result in an estimated incremental lifetime cancer risk of approximately 9 in 100,000, which is greater than the acceptable incremental cancer risk of 1 in 100,000 adopted for this assessment . However, this cancer risk estimate should not be interpreted as an indication that exposure to background levels of PAH may cause a significant increase in cancer rates above baseline levels as the baseline lifetime risk of cancer is reported to be approximately 50% (one in two; NRC, 2006). Thus the adopted acceptable incremental cancer risk of 1 in 100,000 and the estimated cancer risk due to background concentrations of PAHs in the environment are still very low in comparison to baseline lifetime cancer risks for the population as a whole.

Non-Carcinogenic Health Effects

Noncancer adverse health effects associated with PAH exposure have been observed in animals but generally not in humans (with the exception of adverse hematological and dermal effects). Animal studies demonstrate that PAHs tend to affect proliferating tissues such as bone marrow, lymphoid organs, gonads, and intestinal epithelium.

Identification of Non-Carcinogenic Toxicity Reference Values

The dose-response values provide an estimate of exposure to the human population that is likely to be without an appreciable risk of deleterious effects during a lifetime. The oral exposure represents a daily value and the inhalation exposure represents continuous inhalation. These values are intended for use in risk assessments for health effects known or assumed to be produced through a nonlinear (presumed threshold) mode of action (USEPA, 2012). Available chronic dose-response values published by sources recognised and endorsed by enHealth (enHealth, 2012), NEPC (NEPC, 1999) and the USEPA and are summarised below.

Oral

The oral dose-response value is expressed in units of mg/kg/day. This value may be termed a Reference Dose (RfD), Tolerable Daily Intake (TDI), or Minimal Risk Level for oral exposure (MRL) depending on the agency of derivation.

Table 1 Published Threshold Dose-Response Values for PAHs - Oral

PAH	Agency	Oral Dose-Response Value (mg/kg/day)	Source	Target Endpoint	Test Animal	UF	Notes
Acenaphthene	IRIS	0.06	USEPA, 1994	Hepatotoxicity	Mice	3000	RfD. USEPA, data last reviewed in 1994
	ATSDR	0.6	ATSDR, 1995	Liver weight	Mice	300	MRL for intermediate duration exposure. USEPA, 1989
Anthracene	RIVM	0.04	RIVM, 2000	-	-	-	TDI based on the RIVM TDI for TPH >C9-C16. Baars et.al., 2001.
	IRIS	0.3	USEPA, 1993	No observed effects	Mice	3000	RfD. USEPA, data last reviewed in 1993
	ATSDR	10	ATSDR, 1995	Liver effects.	Mice	100	MRL for intermediate duration exposure. USEPA, 1989
Fluoranthene	IRIS	0.04	USEPA, 1993	Nephropathy, increased liver weights, hematological alterations, and clinical effects	Mice	3000	RfD. USEPA, data last reviewed in 1993.
	ATSDR	0.4	ATSDR, 1995	Liver weight	Mice	300	MRL for intermediate duration exposure. USEPA, 1988
Fluorene	RIVM	0.04	RIVM, 2000	-	-	-	TDI based on the RIVM TDI for TPH >C9-C16. Baars et.al., 2001.

PAH	Agency	Oral Dose-Response Value (mg/kg/day)	Source	Target Endpoint	Test Animal	UF	Notes
	IRIS	0.04	USEPA, 1990	Decreased red blood cells, packed cell volume and hemoglobin	Mice	3000	RfD. USEPA, data last reviewed in 1990.
	ATSDR	0.4	ATSDR, 1995	Liver weight	Mice	300	MRL for intermediate duration exposure. USEPA, 1989
Phenanthrene	RIVM	0.04	RIVM, 2000	-	-	-	TDI based on the RIVM TDI for TPH >C9-C16. Baars et.al., 2001.
Pyrene	IRIS	0.03	USEPA, 1993	Kidney effects	Mice	3000	RfD USEPA, data last reviewed in 1993.

ATSDR – Agency for Toxic Substances and Disease Registry
IRIS – Integrated Risk Information System.
RIVM – National Institute of Public Health and the Environment (Netherlands)
UF – Uncertainty Factor.

Inhalation

US EPA and other agencies have not published dose-response values for assessment of threshold health effects associated with inhalation exposure to PAHs. Cancer health effects of PAHs were considered to be the primary risk driver via the inhalation pathway, and will be assessed assuming carcinogenic health effects (see below).

Carcinogenicity and Genotoxicity

Carcinogenicity

Evidence exists to indicate that mixtures of PAHs are carcinogenic in humans. The evidence in humans comes primarily from occupational studies of workers exposed to mixtures containing PAHs as a result of their involvement in such processes as coke production, roofing, oil refining, or coal gasification (e.g., coal tar, roofing tar, soot, coke oven emissions, soot, crude oil) (Hammond et al. 1976; Lloyd 1971; Maclure and MacMahon 1980; Mazumdar et al. 1975; Redmond et al. 1976; Wynder and Hoffmann 1967). PAHs, however, have not been clearly identified as the causative agent. Cancer associated with exposure to PAH-containing mixtures in humans occurs predominantly in the lung and skin following inhalation and dermal exposure, respectively. Some ingestion of PAHs is likely because of swallowing of particles containing PAHs subsequent to mucocilliary clearance of these particulates from the lung.

Certain PAHs are carcinogenic to animals by the oral route (e.g., benz[a]anthracene, benzo[a]pyrene, and dibenz[a,h]anthracene). The results of dermal studies indicate that benz[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[j]fluoranthene, benzo[k]fluoranthene, chrysene, dibenz[a,h]anthracene, and indeno[l,2,3-c,d]pyrene are tumorigenic in mice following dermal exposure. The sensitivity of mouse skin to PAH tumorigenesis forms the basis for the extensive studies performed using dermal administration. This tumorigenicity can be enhanced or modified with concomitant exposure to more than one PAH, long straight-chain hydrocarbons (i.e., dodecane), or similar organic compounds commonly found at hazardous waste sites. Thus, humans exposed to PAHs in combination with these substances could be at risk for developing skin cancer.

For many of the carcinogenic PAHs, it appears that the site of tumor induction is influenced by the route of administration and site of absorption, i.e., forestomach tumors are observed following ingestion, lung tumors following inhalation, and skin tumors following dermal exposure. However, the observations that (1) mammary tumors are induced following intravenous injection in Sprague-Dawley rats, (2) the susceptibility to tumor development on the skin after dermal application is not similar in rats and mice, and (3) oral cavity tumors are not observed when benzo[a]pyrene is administered in the diet, suggest that the point of first contact may not always be the site of PAH-induced tumors.

Genotoxicity

Benzo[a]pyrene has been thoroughly studied in genetic toxicology test systems, and has been found to induce genetic damage in prokaryotes, eukaryotes, and mammalian cells in vitro, and to produce a wide range of genotoxic effects (gene mutations in somatic cells, chromosome damage in germinal and somatic cells, DNA adduct formation, UDS, sister chromatid exchange, and neoplastic cell transformation). In cultured human cells, benzo[a]pyrene binds to DNA and causes gene mutations, chromosome aberrations, sister chromatid exchange, and UDS.

The results of in vivo studies indicate that many of the same types of adverse effects observed in vitro were seen in mice, rats, and hamsters exposed to benzo[a]pyrene via the oral, dermal, or intraperitoneal routes. The available data also indicate that benzo[a]pyrene is genotoxic in both somatic and germinal cells of intact animals. The only study that was found regarding genotoxic effects in humans following exposure to benzo[a]pyrene reported no correlation between aluminium plant workers' exposure to PAHs, including benzo[a]pyrene, and sister chromatid exchange frequency. The findings from assays using human cells as the target, in conjunction with the data from whole animal experiments, suggest that benzo[a]pyrene would probably have similar deleterious effects on human genetic material.

Because the genotoxic activity of benzo[a]pyrene is well established, it is frequently used as a positive control to demonstrate the sensitivity of various test systems to detect the genotoxic action of unknown compounds. It also serves as the model compound for PAHs, and the available information on the formation of metabolites and structure of benzo[a]pyrene can theoretically be used to predict potential genotoxicity/carcinogenicity of other PAHs that have not been as extensively studied.

Epoxidation is thought to be the major pathway for benzo[a]pyrene metabolism pertinent to macromolecular interaction. The metabolic attack consists of the cytochrome P-450/P-448-dependent MFO system converting the benzo[a]pyrene molecule into an epoxide; the epoxide is acted upon by epoxide hydrolase to form a dihydrodiol, and a second cytochrome MFO reaction gives rise to the ultimate mutagenic/carcinogenic form, benzo[a]pyrene 7,8-diol-9,10-epoxide. One of the unique structural features of the diol epoxide is that it appears to form in the area of the PAH molecule referred to as the bay region (i.e., a deep-pocketed area formed when a single benzo ring is joined to the remainder of the multiple ring system to form a phenanthrene nucleus).

Analysis of the bay region diol epoxides and their contribution to the DNA binding, genotoxicity, and carcinogenicity of various PAHs has provided the basis for the bay region hypothesis. For example, DNA adducts formed with non-bay region diol epoxides of benzo[a]pyrene have low mutagenic potential. The hypothesis further predicts that structures with more reactive bay regions would probably be more genotoxic and more carcinogenic. The body of evidence on the mutagenic and tumorigenic activity of the PAHs that form bay region diol epoxides (benzo[a]pyrene, benz[a]anthracene, chrysene, dibenz[a,h]anthracene; benzo[b]fluoranthene, benzo[j]fluoranthene, benzo[k]fluoranthene, and indeno[1,2,3-c,d]pyrene) supports this hypothesis.

In summary, several general conclusions can be reached for the unsubstituted PAHs evaluated in this profile. The formation of diol epoxides that covalently bind to DNA appears to be the primary mechanism of action for both genotoxicity and carcinogenicity of several of the unsubstituted PAHs that are genotoxins (benzo[a]pyrene, benz[a]anthracene, dibenz[a,h]anthracene, chrysene, benzo[b]fluoranthene, benzo[j]fluoranthene). There was insufficient evidence to draw meaningful conclusions regarding the genotoxic potential of benzo[g,h,i]perylene, although some evidence does exist.

With regard to the unsubstituted PAHs that either lack a bay region configuration (acenaphthene, acenaphthylene, anthracene, fluorene, and pyrene) or appear to have a weakly reactive bay region (phenanthrene), there is no compelling evidence to suggest that they interact with or damage DNA.

The five PAHs that appear to be exceptions to the bay region diol epoxide hypothesis are fluoranthene, benzo[k]fluoranthene, benzo[j]fluoranthene, and indeno[1,2,3-cd]pyrene (no bay region), and benzo[e]pyrene (two bay regions). The evidence does suggest, however, that fluoranthene possesses genotoxic properties while benzo[e]pyrene is either weakly mutagenic or nonmutagenic.

Identification of Carcinogenic Toxicity Reference Values

Oral

The oral dose-response value is expressed in units of $(mg/kg/day)^{-1}$. This value may be termed a Cancer Slope Factor (CSF), a Cancer Risk (CR), Slope Factor (SF), or Risk Specific Dose (RSD) depending on the agency of derivation. Some agencies present guideline values which may be converted to dose-response values. Breath

Table 2 Published Non-Threshold Dose-Response Values for Benzo(a)pyrene – Oral

Agency	Oral Cancer Slope Factor $(mg/kg/day)^{-1}$	Source	Target Endpoint	Test Animal	Notes
NHMRC	0.43	NHMRC, 2011	Weight change	Mouse	Derived from drinking water unit risk of $1x10^{-6}$ per 0.00007 mg/L, assuming 70 kg body weight and 2 L/day water ingestion rate.
WHO	0.5	WHO, 2008	Oral carcinogenicity	Mouse	Derived from drinking water unit risk of 1 x 10-5 per 0.0007 mg/L.
IRIS	7.3	USEPA (last reviewed in 1994)	Forestomach, squamous cell papillomas and carcinomas	Mouse and rat	RSD. Neal and Rigdon, 1967; Rabstein et al., 1973; Brune et al., 1981.
CCME	2.3	CCME (2008)	Forestomach, squamous cell papillomas and carcinomas	Mouse and rat	RSD. Neal and Rigdon, 1967; Rabstein et al., 1973; Brune et al., 1981.
RIVM	0.2	RIVM, 2001	Tumor development	rat	Kroese et al., 1999 and Kalberlah et al., 1995

IRIS – Integrated Risk Information System.
RIVM – National Institute of Public Health and the Environment (Netherlands)

In order to assess potential oral health effects associated with exposure to potentially carcinogenic PAHs other than benzo(a)pyrene, toxic equivalency factors (TEFs) have been adopted. It is noted that enHealth (2012) state "*At this time, no one set of PAH TEFs has been recommended for use in Australia, although it is likely that the Canadian set* [CCME, 2010] *is becoming more widely used, based on the fact that it is the most recent compilation of such values*" (p149). The TEFs presented below were adopted from the relative potency scheme recommended by the WHO (1998) based on a detailed critical review by CCME of more than a dozen sets of TEF numbers published over the last twenty years (CCME, 2010). These TEFs represent one of the most recent reviews of relative PAH potency undertaken by an international regulatory agency. It was noted by CCME (2010) that more than a dozen sets of equivalency numbers have been proposed over the past two decades and cautions that there can only be limited confidence in the derived potency estimates (enHealth, 2012).

TEFs were adopted, where available, for carcinogenic PAHs considered to be genotoxic carcinogens (benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(g,h,i)perylene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene; see genotoxicity discussion above). The adopted TEFs are shown in **Table 3** below.

Table 3 Toxic Equivalency Factors Used to Derive Oral Dose-Response Criteria for Carcinogenic PAHs Relative to Benzo(a)pyrene (CCME, 2010)

PAH	Toxic Equivalency Factor (TEF)
Benzo(a)pyrene (index compound)	1.0
Benz(a)anthracene	0.1
Benzo(b)fluoranthene	0.1
Benzo(g,h,i)perylene	0.01
Benzo(k)fluoranthene	0.1
Chrysene	0.01
Dibenzo(a,h)anthracene	1
Indeno(1,2,3-c,d)pyrene	0.1

Inhalation

The inhalation dose-response value is expressed in units of mg/m^3. This value may be termed a Unit Risk (UR), Cancer Risk (CR), Risk Specific Concentration (RSC), Toxic Dose (that corresponds to a 5% increase in mortality) ($TD_{0.05}$) or Tumourigenic Concentration 5% (TC05) depending on the agency of derivation.

The WHO (2000) inhalation unit risk (IUR) is based on observations in coke oven workers to mixtures of PAHs. It is noted that the composition of PAHs to which coke oven workers are exposed to may differ from that present in ambient air, or derived from soil contamination. It is noted that an inhalation unit risk is in the same order of magnitude as that derived using a linear multistage model associated with lung tumours in a rat inhalation study from coal tar/pitch condensation aerosols.

Table 4 Published Non-Threshold Dose-Response Values for PAHs - Inhalation

PAH	Agency	Inhalation Unit Risk Factor $(\mu g/m^3)^{-1}$	Source	Target Endpoint	Test Animal	UF	Notes
Benzo[a]pyrene	WHO	8.7×10^{-2}	WHO 2000a, WHO 2010	Lung cancer	Human	-	WHO, 1999

WHO – World Health Organisation

Adopted Dose-Response Values

The adopted toxicological data were chosen in accordance with the enHealth (2012) hierarchical guidance for selection of toxicological data (Section 5.12). It is noted that this guidance states that "….*it may be assumed that Australian guidance values accorded Level 1 status should take precedence over other sources, provided they are reasonably current. Other Level 1 sources may be more useful where it can be established that they are based on more contemporary risk assessment methodologies*".

Threshold (Non-Carcinogenic)

Table 5 Adopted Dose-Response Values for Threshold (Non-Carcinogenic) PAHs

PAHs	Dose-Response Value (mg/kg/day)	Published By
Oral		
Acenaphthene	0.06	USEPA, 1994 (IRIS database)
Anthracene	0.3	USEPA,1993 (IRIS database)
Fluoranthene	0.04	US EPA, 1993 (IRIS database)
Fluorene	0.04	USEPA, 1990 (IRIS database)
Phenanthrene	0.04	RIVM, 2000
Pyrene	0.03	USEPA, 1993

Inhalation

US EPA and other agencies have not published dose-response values for assessment of threshold health effects associated with inhalation exposure to PAHs. Cancer health effects of PAHs were considered to be the primary risk driver via the inhalation pathway, and will be assessed assuming carcinogenic health effects (see below).

Non-Threshold (Carcinogenic)

Table 6 Adopted Dose-Response Values for Non-Threshold (Carcinogenic) PAHs

PAHs	Dose-Response Value	Published By
Oral $(mg/kg/day)^{-1}$		
Benzo[a]pyrene	0.43	NHMRC, 2011
Inhalation Unit Risk $(\mu g/m^3)^{-1}$		
Benzo[a]pyrene	8.7×10^{-2}	WHO 2000a, WHO 2010

In order to assess potential oral and inhalation health effects associated with exposure to potentially carcinogenic PAHs other than benzo(a)pyrene, the TEFs presented in **Table 3** were adopted. TEFs were adopted only for carcinogenic PAHs considered to be genotoxic carcinogens, i.e. benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene, chrysene, dibenzo(a,h)anthracene and indeno(1,2,3-cd)pyrene.

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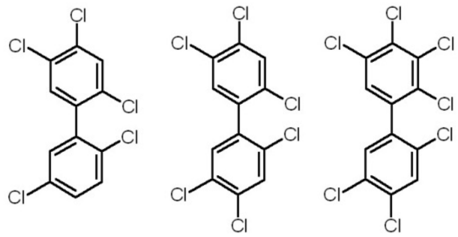

Polychlorinated Biphenyls (PCBs) – Toxicological Profile

The majority of the following information has been sourced from ATSDR (2000), with other sources listed in the references.

Chemical Identification

Synonyms: PCB-1016, PCB-1221, PCB-1232, PCB-1242, PCB-1248, PCB-1254, PCB-1260, PCB-1262, PCB-1268,

CAS: Various

Molecular Formula: Various

Molecular Weight: Between 200.7 and 453 g/mol

Significance of Exposure Pathways and Background

Intakes estimated by WHO (2003) for air and water are considered to be representative of background intakes in Australia (ASC NEPM, 2013). The estimate comprised approximately 0.5 ng/kg/day, which is approximately 2.5% of the recommended oral TRV. This intake is considered to be negligible and therefore, a background intake of 0% was recommended in the ASC NEPM (2013).

Adopted Dose-Response Values

Dose-response values for threshold and non-threshold effects associated with oral or inhalation exposure to PCBs have not been published by Australian regulatory bodies.

Threshold (Non-Carcinogenic)

For assessment of potential threshold effects associated with oral exposure to PCBs, AECOM has adopted the reference dose of **0.00002 mg/kg/day** published by WHO (WHO, 2003).

For assessment of potential threshold effects associated with inhalation exposure to PCBs, AECOM has adopted the reference dose of **0.0005 mg/m^3** published by RIVM (RIVM, 2001).

Non-Threshold (Carcinogenic)

To AECOM's knowledge, non-threshold dose-response criteria for oral and inhalation exposure to PCBs have not been published by Australian or other regulatory bodies. Potential health effects associated with oral and inhalation exposure to PCBs have therefore been assessed on the basis of threshold dose response criteria.

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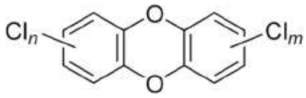

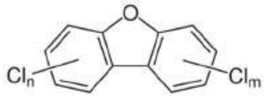

PCDDs and PCDFs

The majority of the following information has been sourced from DEH (2005), with other sources listed in the references.

General

Polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) are chlorinated tricyclic aromatic hydrocarbons made up of two benzene rings joined by either two oxygen atoms at adjacent carbons on each of the benzene rings (PCDDs) or by one oxygen atom and one carbon-carbon bond (PCDFs). In total, there are 75 possible PCDD congeners and 135 possible PCDF congeners. Congeners containing three or fewer chlorine atoms are considered to be of no toxicological significance. However, 17 congeners with chlorine atoms substituted in the 2, 3, 7 and 8 positions (i.e. in the lateral positions of the aromatic rings) are thought to pose a risk to human health and the environment.

PCDDs and PCDFs are typically considered together with dioxin-like polychlorinated biphenyls (PCBs) as 'dioxin-like compounds.' In general, dioxin-like compounds have very low water solubility, high octanol-water partition coefficients, low vapour pressure and adsorb strongly to particles and surfaces (high K_{OC}) and are resistant to chemical degradation under normal environmental conditions. Thus, they are persistent in the environment and their high fat solubility results in their bioconcentration into biota and biomagnification up the food chain.

PCDDs and PCDFs are not manufactured intentionally; instead they are by-products of combustion, including industrial processes such as waste incineration, bleached kraft pulp mills and the synthesis of certain chemicals. Other sources of dioxin-like chemicals can include contaminated stockfeed (for cattle, chicken and farmed fish), improper application of sewage sludge to agricultural land, flooding of pastures, waste effluents and certain types of food processing. PCDDs and PCDFs are also associated with pesticides such as pentachlorophenol (PCP) and 2,4,5-trichlorophenoxyacetic acid (2,4,5-T), however these chemicals are no longer approved for use in Australia.

PCDDs and PCDFs are formed naturally by volcanoes and forest fires. It has been estimated that bushfires may contribute at least 20-30% of the total release of dioxin-like compounds to the Australian environment.

Atmospheric transport represents the primary route for transport of dioxins into the environment.

Significance of Exposure Pathways and Background

For the general population, over 95% of exposure to dioxin-like compounds is through the diet, with foods of animal origin such as meat, dairy products and fish being the main sources (particularly foods high in animal fats). Cigarette smokers are likely to have somewhat higher intakes of dioxins than non-smokers. Because of the ubiquitous presence of various dioxin-like compounds in human tissues, as well as in the milk of mothers worldwide, infants can be exposed to these compounds both prenatally and during breast feeding.

Exposure to dioxin like compounds may also be through other routes such as breathing in air contaminated by dioxins in smoke (from bushfires, domestic wood heaters and cigarettes), factory or incinerator emissions, motor vehicle exhaust fumes, or from uncontrolled hazardous waste sites containing dioxins.

Since dioxins are fat soluble, chemically stable and poorly metabolised, they can concentrate in body fat and build up under conditions of long-term exposure, both in animals and humans, and accumulate as they move through the food chain. The congeners that make up the dioxins have half-lives that vary from 3.7 years for the least persistent type to 50 years for the most persistent, with an average half-life of approximately 7 years.

In Australia, concentrations of dioxin-like compounds in breast milk have fallen significantly (about 45%) within the past decade, an observation consistently noted in monitoring programs from a large number of other countries. This reflects a world-wide trend over recent decades of declining levels of dioxin-like compounds in the environment and in human tissues.

The average intake of dietary dioxins (per unit bodyweight) in the general Australian population was calculated to be between 10-54% of the tolerable monthly intake (TMI), and somewhat higher in infants and toddlers.

Ambient levels of dioxins in Australian soils measured during the National Dioxins Program ranged from below the limit of detection (about 0.05 pg/g dry weight) to 43 pg/g dry weight, with upper bound means of total dioxins based on land use ranging from 0.38 TEQ pg/g dry weight (remote area) to 6.4 pg/g dry weight (urban area).

The intake of dioxins from ingestion of water is considered to be negligible as dioxins have very low water solubility. Studies have found that estimated intakes from water were one thousandth or less of the estimated overall intake for dioxins.

WHO (2000c) assumed an ambient air toxic equivalent level of PCDDs and PCDFs of about 0.1 pg/m^3, however certain industrial and urban areas may have up to 20 times higher air concentrations. Intake from inhalation exposure was on average 1% of the dietary intake.

A background intake of dioxins and furans was calculated based on a blood serum study presented in DEH (2004). The mean average lifetime daily exposure (ALDE) was estimated as 1.3 TEQ pg/kg bw/day. The mean ALDE was converted to months (i.e. 40.15 TEQ pg/kg bw/day), which is 57% of the published tolerable monthly intake (TMI) of 70 pg TEQ/kg body weight/month. Therefore, a background percentage of 57% has been adopted.

Non-Carcinogenic Health Effects

The most widely studied of all the dioxin-like compounds is 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD, or TCDD). It has been shown to affect a wide range of organ systems in many animal species and can induce a wide range of adverse biological responses including immunotoxicity, endometriosis in Rhesus monkeys, developmental, behavioural effects in offspring of treated Rhesus monkeys, and developmental and reproductive effects in rats. Studies in animals indicate that the immune system is a sensitive target of TCDD toxicity, with inhibition of immunoglobulin secretion and decreased resistance to bacterial, viral, and parasitic infections.

Available epidemiological data indicate that dioxin-like compounds produce a variety of biochemical responses in humans, some of which occur at relatively low exposure levels. Induction of hepatic enzymes, changes in hormone levels and reduced glucose tolerance are examples of subtle changes that may occur at comparatively low exposures. However, these effects are of unknown clinical significance.

The most widely recognised and consistently observed effect in humans following high dose exposure to TCDD is chloracne. The condition can disappear after termination of exposure or can persist for many years. Other effects on the skin include hyperpigmentation and hirsutism.

There is some suggestive evidence of dioxin exposure toxicity to the cardiovascular system, including hyperlipidemia, increased frequency of ischaemic heart disease, valvular heart disease and retinopathy.

Neurological symptoms observed in TCDD-exposed workers include lassitude, weakness of the lower limbs, muscular pains, increased perspiration, loss of appetite, headaches, nervousness, anxiety, irritability, and loss of libido.

TCDD has also been associated with temporary enlargement of the liver, increased levels of hepatic enzymes and alterations in the lipid profile in humans. Data from several epidemiological studies suggest that significant exposure to TCDD increases the risk of diabetes mellitus resulting from decreased cellular glucose uptake. TCDD exposure has additionally been associated with changes in thyroid function.

Acute exposure to high concentrations of TCDD has been associated with effects on the respiratory system, including upper respiratory tract irritation, conjunctivitis, and inflamed eyelids (blepharitis).

Identification of Non-Carcinogenic Toxicity Reference Values

The dose-response values provide an estimate of exposure to the human population that is likely to be without an appreciable risk of deleterious effects during a lifetime. The oral exposure represents a daily value and the inhalation exposure represents continuous inhalation. These values are intended for use in risk assessments for health effects known or assumed to be produced through a nonlinear (presumed threshold) mode of action (USEPA, 2012). Available chronic dose-response values published by sources recognised and endorsed by enHealth (enHealth, 2004), NEPC (NEPC, 1999) and the USEPA and are summarised below.

Due to their bioaccumulative nature, it is noted that the biochemical and toxicological effects of dioxin-like compounds relate more closely to their concentration in the target tissue than to the daily dose. Numerous agencies therefore adopted values based on body burden.

<u>Oral</u>

The oral dose-response value is expressed in units of mg/kg/day. This value may be termed a Reference Dose (RfD), Tolerable Daily Intake (TDI), or Minimal Risk Level for oral exposure (MRL) depending on the agency of derivation.

Table 1 Published Threshold Dose-Response Values for Dioxin-like Compounds - Oral

Agency	Dioxin	Oral Dose-Response Value	Source	Target Endpoint	Test Animal	UF	Notes
WHO (JECFA)	Dioxin-like compounds	2.3 pg TEQ/ kg bw/day	FAO/ WHO (2005)	Reproductive toxicity	Rats	3.2-9.6	Provisional TMI of 70 pg TEQ/kg bw based on body burden. Mid-point of range in Oshako et al., 2001 and Faqi et al., 1998.
WHO	Dioxin-like compounds	1-4 pg TEQ/ kg bw/day	WHO (2000)	Hormonal, reproductive and developmental effects	Rats; monkeys	10	TDI based on body burden. Based on study by Van Leeuwen & Younes, 1998. Adopted in France, Germany, Netherlands and New Zealand (NZ: 30 pg /kg/month)
US EPA	TCDD	0.7 pg/kg/day	IRIS (2012)	Decreased sperm count and mobility; increased TSH in utero	Humans	30	RfD. Based on study by Mocarelli et al., 2008 and Baccarelli et al., 2008.
EC-SCF	Dioxin-like compounds	2 pg TEQ/ kg bw/day	EC-SCF (2001)	Developing reproductive systems of male rats exposed in utero	Rats	9.6	TWI of 14 pg/kg bw/week for TCDD. Based on study by Faqi et al., 1998. Adopted in the UK.
ATSDR	TCDD	1 pg TEQ/kg bw/day	ATSDR (1998)	Neuro-behavioural developmental changes	Monkeys	90	MRL. Based on study by Schantz et al., 1992. Intended to also serve as guidance for total TEQs of dioxin-like compounds.
ATSDR	2,3,4,7,8-PnCDF	0.00003 µg/kg/day	ATSDR (1994)	Hepatic effects (increased serum bilirubin, decreased serum triglycerides)	Rats	3000	Intermediate oral MRL (15-364 days). Based on Pluess et al, 1988 and Poiger et al, 1989.

JECFA - Joint FAO/WHO Expert Committee on Food Additives
ATSDR – Agency for Toxic Substances and Disease Registry

EC-SCF – European Commission Scientific Committee on Food
COT – Committee on the Toxicity of Chemicals in Food
IRIS – Integrated Risk Information System.
UF – Uncertainty Factor
TMI – Tolerable monthly intake

NHMRC adopted the TMI of 70 pg TEQ/kg bw in *Dioxins: Recommendation for a Tolerable Monthly Intake for Australians* (October 2012), however this document was rescinded in 2013.

In order to assess potential oral health effects associated with exposure to potentially carcinogenic dioxin-like compounds other than 2,3,7,8-TCDD, Toxic Equivalence Factors (TEFs) have been adopted. It may be inferred that biochemical, cellular and tissue-level effects that are elicited by exposure to TCDD are also induced by other chemicals that have a similar structure and that also bind to the Ah receptor. The TEFs are used to estimate the potency of dioxin-like compounds relative to TCDD, applying the concept of additivity for the PCDDs, PCDFs and dioxin-like PCBs to provide total Toxic Equivalence Quotient (TEQ) estimates. The adopted TEFs are shown in **Table 2** below.

Table 2 TEFs Used to Derive Oral Dose-Response Criteria for Carcinogenic Dioxin-like Compounds Relative to 2,3,7,8-TCDD (WHO, 2005)

Dioxin-like Compounds	Toxic Equivalency Factor (TEF)
PCDDs	
2,3,7,8-TCDD	1
1,2,3,7,8-PnCDD	1
1,2,3,4,7,8-HxCDD	0.1
1,2,3,6,7,8-HxCDD	0.1
1,2,3,7,8,9-HxCDD	0.1
1,2,3,4,6,7,8-HpCDD	0.01
OCDD	0.0003
PCDFs	
2,3,7,8-TCDF	0.1
1,2,3,7,8-PnCDF	0.03
2,3,4,7,8-PnCDF	0.3
1,2,3,4,7,8-HxCDF	0.1
1,2,3,6,7,8-HxCDF	0.1
1,2,3,7,8,9-HxCDF	0.1
2,3,4,6,7,8-HxCDF	0.1
1,2,3,4,6,7,8-HpCDF	0.01
1,2,3,4,7,8,9-HpCDF	0.01
OCDF	0.0003
PCBs	
WHO TEF Values include PCB 77, PCB 81, PCB 126, PCB 169, PCB 105, PCB 114, PCB 118, PCB 123, PCB 156, PCB 157, PCB 167 and PCB 189 (outside the scope of this ToxProfile).	

However, it is noted that estimates of population exposures suggest that a significant proportion of the total intake of dioxin-like compounds (measured as TEQs) is from congeners other than TCDD.

Inhalation

No information available. WHO (200a) stated that an air quality guideline for PCDDs and PCDFs was not proposed because direct inhalation exposures constitute only a small proportion of the total exposure, generally less than 5% of the daily intake from food (and 1% on average).

Carcinogenicity and Genotoxicity

Most data on the health effects of PCDDs and PCDFs have been obtained using the most toxic congener, TCDD. Experimental studies demonstrate that TCDD is carcinogenic in all species and strains of laboratory animals tested. It has been characterised as a multi-site carcinogen. However, short-term studies have shown a lack of direct DNA-damaging effects, indicating that TCDD is not an initiator of carcinogenesis, but is a potent tumour promoter. Although the mechanisms of carcinogenicity are not fully known, the ability of TCDD to enhance proliferation and inhibit apoptotic processes in focal hepatic lesions supports an indirect mechanism of carcinogenicity.

The results of a two-year carcinogenesis bioassay conducted by Kociba *et al* (1978) have been the most often utilised for cancer risk assessment of TCDD. Sprague Dawley rats of both genders were given TCDD (99% pure) in the feed to achieve intakes of 0, 1, 10 and 100 ng/kg bw/day. Results indicated that at 100 ng/kg bw/day, TCDD caused an increase in the incidence of hepatocellular hyperplastic nodules and carcinomas in female (but not in male) rats. At this dose, statistically significant increases in squamous cell carcinomas of the lungs (females) and tongue and nasal palate/nasal turbinates (males) were also reported. However, this does of TCDD was also associated with a significant reduction in the incidence of some tumours.

Epidemiological evidence from the most highly exposed occupational cohorts studied produces the strongest evidence in humans of an increased cancer risk from exposure to dioxins, when the data are considered for all cancers combined.

From the occupational studies, and an understanding of biological plausibility as shown by animal studies, the International Agency for Research on Cancer (IARC) has concluded that TCDD is carcinogenic to humans (Group 1). The IARC determined that other PCDDs and PCDFs are not classifiable as to their carcinogenicity to humans (Group 3).

No experimental data in animals on the cancer risks from inhalation exposure to dioxins was presented in the sources reviewed, and human health inhalation associated with cigarettes are confounded by their other carcinogenic compounds.

Dioxin-like compounds are not considered to be genotoxic carcinogens. It is considered that the mechanism of carcinogenesis, involving the Ah receptor, means that there is a threshold for carcinogenicity. Tolerable intake guidance based on non-cancer end-points is considered protective for carcinogenicity (WHO, 2010).

Identification of Carcinogenic Toxicity Reference Values

Oral

The oral dose-response value is expressed in units of $(mg/kg/day)^{-1}$. This value may be termed a Cancer Slope Factor (CSF), a Cancer Risk (CR), Slope Factor (SF), or Risk Specific Dose (RSD) depending on the agency of derivation. Some agencies present guideline values which may be converted to dose-response values.

Table 3 Published Non-Threshold Dose-Response Values for Dioxin-like Compounds – Oral

Agency	Oral Cancer Slope Factor $(mg/kg/day)^{-1}$	Notes	Source
IRIS	6.2×10^{3}	HxCDD (mixture of 1,2,3,6,7,8-HxCDD and 1,2,3,7,8,9-HxCDD). Hepatic tumours in mice and rats by gavage. Geometric mean of slope factors for mice and rats. Drinking water unit risk of 0.18 µg/L.	USEPA, 1987

IRIS – Integrated Risk Information System.

FAO/WHO (2005) noted that the establishment of a tolerable intake based on non-cancer effects would also address any carcinogenic risk. Similarly, the EC-SCF (2001) noted that the most sensitive endpoints in animal studies were developmental and reproductive effects and that the TWI they established would adequately protect against the carcinogenic effects of TCDD, which require substantially higher body burdens, and for which a threshold approach is applicable due to its non-genotoxic nature. As such, separate carcinogenic toxicity reference values were not derived by these or other bodies reviewed.

Inhalation

The inhalation dose-response value is expressed in units of mg/m^3. This value may be termed a Unit Risk (UR), Cancer Risk (CR), Risk Specific Concentration (RSC) or Toxic Dose (that corresponds to a 5% increase in mortality) ($TD_{0.05}$) depending on the agency of derivation.

Table 4 Published Non-Threshold Dose-Response Values for Dioxin-like Compounds - Inhalation

Agency	Inhalation Unit Risk Factor $(mg/m^3)^{-1}$	Notes	Source
IRIS	0.0013	HxCDD (mixture of 1,2,3,6,7,8-HxCDD and 1,2,3,7,8,9-HxCDD). Air concentration of 8 x 10^{-6} $(\mu g/m^3)^{-1}$ based on 10^{-5} risk level.	USEPA, 1987

IRIS – Integrated Risk Information System.

Adopted Dose-Response Values

Dose-response values for threshold and non-threshold effects associated with oral or inhalation exposure to dioxin-like compounds (or individual PCDDs or PCDFs) have not been published by Australian regulatory bodies.

Threshold (Non-Carcinogenic)

For assessment of potential threshold effects associated with oral exposure to dioxin-like compounds (PCDDs, PCDFs and dioxin-like PCBs), AECOM has adopted the reference dose of **2.3 pg TEQ/kg bw/day** published by FAO/ WHO (2005).

An inhalation reference concentration was not adopted by AECOM due to the limited information available, as direct inhalation exposures constitute only a small proportion of the total exposure, on average 1% of the daily intake from food.

Non-Threshold (Carcinogenic)

Dioxin-like compounds are considered to be threshold carcinogens, and as such, non-threshold dose-response values were not adopted by AECOM. As noted by FAO/WHO (2005), the establishment of a tolerable intake based on non-cancer effects would also address any carcinogenic risk as the most sensitive endpoints are not carcinogenic in nature.

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Silver – Toxicological Profile

The majority of the following information has been sourced from ATSDR (1990), with other sources listed in the references.

Chemical Identification

CAS: 7440-22-4

Molecular Formula: Ag

Molecular Weight: 107.87 g/mol

Significance of Exposure Pathways and Background

The background intake of silver is considered to be negligible and therefore, a background intake of 0% was adopted.

Adopted Dose-Response Values

Dose-response values for threshold and non-threshold effects associated with oral or inhalation exposure to silver have not been published by Australian regulatory bodies.

Threshold (Non-Carcinogenic)

For assessment of potential threshold effects associated with oral exposure to silver, AECOM has adopted the reference dose of **0.005 mg/kg/day** published by IRIS (US EPA, 2015).

As reference concentration data for silver inhalation have not been published the RfD has been converted to RfC (RfC = (body weight x RfD)/ inhalation rate, where body weight is assumed to be 70 kgs and inhalation rate equal to 20 m3/day) and the RfC of **0.0175 mg/m^3** accepted.

Non-Threshold (Carcinogenic)

To AECOM's knowledge, non-threshold dose-response criteria for oral and inhalation exposure to silver have not been published by Australian or other regulatory bodies. Potential health effects associated with oral and inhalation exposure to silver have therefore been assessed on the basis of threshold dose response criteria.

References

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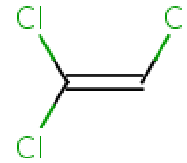

Trichloroethylene (TCE)

The majority of the following information has been sourced from Agency for Toxic Substances and Disease Registry (ATSDR) (1997), with other sources listed in the references.

Chemical Identification

Synonyms: Acetylene trichloride, 1-chloro-2,2-dichloroethylene, 1,1-dichloro-2-chloroethylene, ethylene trichloride, trichloride, TCE, 1,1,2-trichlo-ethylene, trichloroethene.

CAS: 79-01-6

Molecular Formula: C_2HCl_3

Molecular Weight: 131.40 g/mol

General

Trichloroethylene (TCE) is a non-flammable, colourless liquid with a slightly sweet odour. It is an industrial solvent used primarily in metal degreasing. It has also been used as an ingredient in adhesives, paint removers, liquid paper and spot removers.

TCE primarily enters the environment by evaporation from factories and chemical waste sites. It has also been found in groundwater and many surface waters as a result of the manufacture, use, and disposal of the chemical.

It is found in some foods and is believed to originate from contamination of the water used in food processing, or from food processing equipment cleaned with TCE. While there is no indication of bioaccumulation in fish, low levels have been detected. It is not anticipated that TCE would bioaccumulate in humans.

Significance of Exposure Pathways and Background

The most significant exposure pathway is inhalation of contaminated air, with vapours released from paints, glues, and other products, or by release from industrial sites that manufacture TCE. Although TCE has been detected in certain foods, beverages, water and soil, these do not constitute major sources of exposure for most people (ATSDR, 1997).

Data for concentrations of TCE in air in industrial, urban and regional areas are available in Australia. Detected concentrations reported by NEPC (2013) ranged from approximately 0.0002 mg/m^3 in an industrial area of Brisbane, up to a maximum of 0.019 mg/m^3 in Sydney CBD. WHO (2011) estimated background intakes (primarily via inhalation) to be approximately 0.04 ug/kg/day for children and 0.01 ug/kg/day for adults. Based on these data NEPC (2013) determined a background intake for TCE of approximately 10% of the recommended inhalation TRVs for non-carcinogenic effects. This value has been adopted in the risk assessment.

In absence of sufficient compound-specific absorption data for the oral, inhalation and dermal routes, the absorption for volatile COPC has been set at 1 (100%) for oral and inhalation exposure and 0.03 (3%) for dermal exposure in accordance with NEPC (2013).

Non-Carcinogenic Health Effects

Historically, TCE has been used as a human anesthetic or inhaled intentionally for its narcotic purposes; most of the information regarding the effects of TCE in humans therefore comes from case studies and experiments describing effects of TCE after inhalation exposure.

The recent USEPA review of TCE (USEPA, 2011) considers TCE poses a potential human health hazard for non-cancer toxicity to the central nervous system, kidney, liver, immune system, male reproductive system, and the developing foetus. NEPC (2013) noted that noncarcinogenic end points may be more sensitive for oral intakes.

Effects of TCE exposure include headache, vertigo, fatigue, short-term memory loss, decreased word associations, central nervous system depression, and anesthesia.

Liver damage has been reported in people occupationally exposed to high concentrations.

Identification of Non-Carcinogenic Toxicity Reference Values

The dose-response values provide an estimate of exposure to the human population that is likely to be without an appreciable risk of deleterious effects during a lifetime. The oral exposure represents a daily value and the inhalation exposure represents continuous inhalation. These values are intended for use in risk assessments for health effects known or assumed to be produced through a nonlinear (presumed threshold) mode of action (USEPA, 2014). Available chronic dose-response values published by sources recognised and endorsed by enHealth (enHealth, 2012), NEPC (NEPC, 2013) and the USEPA and are summarised below.

Oral

The oral dose-response value is expressed in units of mg/kg/day. This value may be termed a Reference Dose (RfD), Tolerable Daily Intake (TDI), or Minimal Risk Level for oral exposure (MRL) depending on the agency of derivation.

Table 1 Published Threshold Dose-Response Values for Trichloroethylene - Oral

Agency	Oral Dose-Response Value (mg/kg/day)	Source	Target Endpoint	Test Animal	UF	Notes
WHO	0.00146	WHO (2011)	Foetal heart malformations	Rat	100	TDI. Based on WHO, 2005.
RIVM	0.05	RIVM (1999)	Multiple effects.	Mice and Rats	1000	TDI (provisional). Based on a review of multiple studies.
IRIS	0.0005	USEPA (2014)	Heart malformations and immunological effects	Mice and Rats	10-1000	RfD. Based on studies by Keil et al., 2009; Peden-Adams et al., 2006 and Johnson et al., 2003.
CCME	0.00146	CCME (2007)	Development effects.	Rat	-	TDI. Based on a study by Dawson et al., 1993.

WHO – World Health Organisation
ATSDR – Agency for Toxic Substances and Disease Registry
RIVM – National Institute of Public Health and the Environment (Netherlands)
IRIS – Integrated Risk Information System.
CCME – Canadian Council of Ministers of the Environment
UF – Uncertainty Factor.

Inhalation

The inhalation dose-response value is expressed in units of mg/m^3. This value may be termed a Reference Concentration (RfC), Tolerable Concentration (TC), Tolerable Concentration in Air (TCA) or Minimal Risk Level for inhalation (MRL) depending on the agency of derivation.

Table 2 Published Threshold Dose-Response Values for Trichloroethylene - Inhalation

Agency	Inhalation Dose-Response Value (mg/m^3)	Source	Target Endpoint	Test Animal	UF	Notes
RIVM	0.2	RIVM (1999)	Liver, kidney, CNS effects.	Multiple	1000	TCA (provisional). Based on a review of multiple studies.
IRIS	0.002	USEPA (2014)	Heart malformations and immunological effects	Mice and Rats	10-100	RfC. Based on studies by Keil et al., 2009 and Johnson et al., 2003.

Agency	Inhalation Dose-Response Value (mg/m^3)	Source	Target Endpoint	Test Animal	UF	Notes
CCME	0.04	CCME (2007)	Liver, kidney, CNS effects, endocrine system.	Rats	1000	RfC. Based on studies by Rasmussen et al. 1993, Ruitjen et al. 1991, Vandervort et al. 1973, Okawa and Bodner 1973 and Arito et al., 1994.

ATSDR – Agency for Toxic Substances and Disease Registry
RIVM – National Institute of Public Health and the Environment (Netherlands)
IRIS – Integrated Risk Information System.
CCME – Canadian Council of Ministers of the Environment
UF – Uncertainty Factor.
*Converted from ppm to mg/m^3 using the molecular weight of 131.40 and assuming 25ºC and 760 mm Hg.

Carcinogenicity and Genotoxicity

Studies of high levels of chronic TCE exposure in humans in drinking water or in workplace air have found evidence of increased cancer. There is some evidence that TCE induces liver and lung tumours in mice. The International Agency for Research on Cancer (IARC) has determined that trichloroethylene is “probably carcinogenic to humans” (Group 2A).

TCE is characterized as ―*carcinogenic in humans by all routes of exposure* within the Guidelines for Carcinogen Risk Assessment (USEPA, 2005). This conclusion is based on convincing evidence of a causal association between TCE exposure in humans and kidney cancer. The human evidence of carcinogenicity from epidemiologic studies of TCE exposure is strong for non-Hodgkin Lymphoma but less convincing than for kidney cancer, and more limited for liver and biliary tract cancer.

In vitro and in vivo studies regarding the genotoxicity of suggest TCE operates through a mutagenic mode of action for kidney tumours**.** Uncertainties with regard to the characterization of TCE genotoxicity remain, particularly because not all TCE metabolites have been sufficiently tested in the standard genotoxicity screening battery to derive a comprehensive conclusion.

Identification of Carcinogenic Toxicity Reference Values

Oral

The oral dose-response value is expressed in units of (mg/kg/day)$^{-1}$. This value may be termed a Cancer Slope Factor (CSF), a Cancer Risk (CR), Unit Risk (UR), Slope Factor (SF), or Risk Specific Dose (RSD) depending on the agency of derivation. Some agencies present guideline values which may be converted to dose-response values.

Table 3 Published Non-Threshold Dose-Response Values for Trichloroethylene – Oral

Agency	Oral Cancer Slope Factor (mg/kg/day)$^{-1}$	Source	Notes
WHO	7.8 x 10^{-4}	WHO (2011)	UR. Combined tubular cell adenomas and adenocarcinomas of the kidneys in male rats.
Health Canada	8.11x 10^{-4}	Health Canada (2005)	Oral slope factor derived on the basis of the same study noted in the WHO Drinking Water Guidelines; however, a slightly different value is quoted.
IRIS	0.046	USEPA (2014)	SF. PBPK model-based route-to-route extrapolation of the inhalation unit risk estimate for kidney cancer with a factor of 5 applied to include non-Hodgkin's lymphoma (NHL) and liver cancer risks, combined risk.

Agency	Oral Cancer Slope Factor $(mg/kg/day)^{-1}$	Source	Notes
CCME	8.11×10^{-4}	CCME (2007)	UR, human equivalence value. Based on NTP, 1988, 1990.

WHO – World Health Organisation

IRIS – Integrated Risk Information System.

CCME – Canadian Council of Ministers of the Environment

Inhalation

The inhalation dose-response value is expressed in units of $\mu g/m^3$. This value may be termed a Unit Risk (UR), Cancer Risk (CR), Risk Specific Concentration (RSC) or Toxic Dose (that corresponds to a 5% increase in mortality) ($TD_{0.05}$) depending on the agency of derivation.

Table 4 Published Non-Threshold Dose-Response Values for Trichloroethylene - Inhalation

Agency	Inhalation Unit Risk Factor $(\mu g/m^3)^{-1}$	Source	Notes
WHO	4.3×10^{-7}	WHO (2010)	UR. Cell tumours in testes of rats. Converted to risk level of 1×10^{-5}
Health Canada	1.2×10^{-7}	Health Canada (2005)	Based on renal adenocarcinomas in rats following inhalation exposures for 104 weeks in males.
IRIS	4.1×10^{-6}	USEPA (2014)	UR. Renal cell carcinoma, non-Hodgkin's lymphoma, and liver tumors
CCME	6.4×10^{-7}	CCME (2007)	Based on older evaluation from Health Canada where a $TC_{0.5}$ of $0.082 mg/m^3$ and extrapolation based on an excess lifetime cancer risk of 10^{-6}.

WHO – World Health Organisation

IRIS – Integrated Risk Information System.

CCME – Canadian Council of Ministers of the Environment

Adopted Dose-Response Values

Dose-response values for threshold and non-threshold effects associated with oral or inhalation exposure to benzene have not been published by Australian regulatory bodies.

Threshold (Non-Carcinogenic)

For assessment of potential threshold effects associated with oral exposure to trichloroethylene, AECOM has adopted the reference dose of **0.00146 mg/kg/day** published by WHO (WHO, 2011).

For assessment of potential threshold effects associated with inhalation exposure to trichloroethylene, AECOM has adopted the inhalation reference concentration of **0.002 mg/m^3** published by IRIS (USEPA, 2014).

Non-Threshold (Carcinogenic)

For assessment of potential non-threshold effects associated with oral exposure to trichloroethylene, AECOM has adopted the Oral Slope Factor of **7.8×10^{-4} $(mg/kg/day)^{-1}$** published by WHO (WHO, 2011).

For assessment of potential non-threshold effects associated with inhalation exposure to trichloroethylene, AECOM has adopted the inhalation unit risk value of **4.0×10^{-6} $(\mu g/m^3)^{-1}$** published by IRIS (USEPA, 2014).

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Tin – Toxicological Profile

The majority of the following information has been sourced from ATSDR (2005), with other sources listed in the references.

Chemical Identification

CAS: 7440-31-5

Molecular Formula: Sn

Molecular Weight: 118.71 g/mol

Significance of Exposure Pathways and Background

The background intake of tin is considered to be negligible and therefore, a background intake of 0% was adopted.

Adopted Dose-Response Values

Dose-response values for threshold and non-threshold effects associated with oral or inhalation exposure to tin have not been published by Australian regulatory bodies.

Threshold (Non-Carcinogenic)

For assessment of potential threshold effects associated with oral exposure to tin, AECOM has adopted the reference dose of **0.2 mg/kg/day** published by RIVM (RIVM, 2008).

As reference concentration data for tin inhalation have not been published, the above RfD (RIVM, 2008) has been converted to RfC (RfC = (body weight x RfD)/ inhalation rate, where body weight is assumed to be 70 kgs and inhalation rate equal to 20 m3/day) and the RfC of **0.7 mg/m^3** accepted.

Non-Threshold (Carcinogenic)

To AECOM's knowledge, non-threshold dose-response criteria for oral and inhalation exposure to tin have not been published by Australian or other regulatory bodies. Potential health effects associated with oral and inhalation exposure to tin have therefore been assessed on the basis of threshold dose response criteria.

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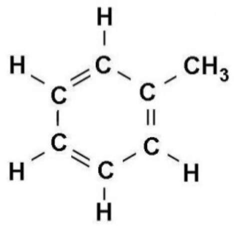

Toluene

The majority of the following information has been sourced from ATSDR (2000), with other sources listed in the references.

Chemical Identification

Synonyms: toluene, methylbenzene, phenylmethane

CAS: 108-88-3

Molecular Formula: C_7H_8

Molecular Weight: 92.14 g mol^{-1}

General

Toluene is a clear, colourless liquid with a distinctive smell. Toluene occurs naturally in crude oil and in the tolu tree as well as being produced in the process of making gasoline and other fuels, in making coke from coal and as a by-product in the manufacture of styrene.

Toluene is used in the manufacture of paints, paint thinners, fingernail polish, lacquers, adhesives, and rubber and in some printing and leather tanning processes. It enters the environment largely as a result of solvent and petroleum spills at petrol stations on in manufacturing environments. It readily volatilizes into air and readily dissolves into groundwater and surface water bodies. Toluene is broken down by soil microorganisms and evaporates from soil and water surfaces if exposed to oxygen.

Significance of Exposure Pathways and Background

The most likely pathway by which people may be exposed to toluene is inhalation of contaminated air and from smoking. Intake from food and water may contribute substantially smaller amounts.

CRC CARE (Friebel, E. and Nadebaum, P., 2011) reviewed the air background levels in Australia for toluene and below is a summary of this review and the assumptions adopted during development of the HSLs:

- Toluene is less than 1% of the threshold toxicity criteria in the worst reported areas. It may be concluded that the inclusion of background ambient air concentration does not contribute significantly to the total allowable exposure.

The adopted skin absorption factor was set at 12%, as adopted in CRC CARE (Friebel, E. and Nadebaum, P., 2011).

Non-Carcinogenic Health Effects

Adverse effects on the nervous system are the critical effects of concern from acute, intermediate, or chronic exposure to toluene. Acute exposure is associated with reversible neurological symptoms progressing from fatigue, headaches, and decreased manual dexterity to narcosis with increasing exposure levels. Reversible neurological impairment from acute exposure likely involves the direct interaction of toluene with nervous system membranes. Degenerative changes in white matter regions of the brain have been correlated with the severity of persistent neurological impairment in individuals who abused solvents and have repeatedly inhaled toluene at high exposure levels (4,000–12,000 ppm). Results from studies of groups of occupationally exposed workers suggest that chronic exposure to toluene at lower exposure levels (from about 50 to 200 ppm) can produce subtle changes in neurological functions including cognitive and neuromuscular performance, hearing, and color discrimination. Supporting data come from studies of toluene-exposed animals showing changes in behaviour, hearing loss, and subtle changes in brain structure, electrophysiology, and levels of neurotransmitters. Case reports of birth defects in children of mothers who abused toluene during pregnancy suggest that exposure to high levels of toluene may be toxic to the developing fetus. However, results from animal studies indicate that toluene is not a teratogenic agent, but can retard fetal growth and skeletal development and adversely influence behavior of offspring at exposure levels that overwhelm maternal mechanisms protecting the developing fetus from exposure. Other adverse health effects, including cancer or effects on reproductive performance, do not appear to be of concern for persons who may experience low exposures to toluene by living or working near hazardous waste sites containing toluene.

Identification of Non-Carcinogenic Toxicity Reference Values

The dose-response values provide an estimate of exposure to the human population that is likely to be without an appreciable risk of deleterious effects during a lifetime. The oral exposure represents a daily value and the inhalation exposure represents continuous inhalation. These values are intended for use in risk assessments for health effects known or assumed to be produced through a nonlinear (presumed threshold) mode of action (USEPA, 2013). Available chronic dose-response values published by sources recognised and endorsed by enHealth (enHealth, 2012), NEPC (NEPC, 1999) and the USEPA and are summarised below.

Oral

The oral dose-response value is expressed in units of mg/kg/day. This value may be termed a Reference Dose (RfD), Tolerable Daily Intake (TDI), or Minimal Risk Level for oral exposure (MRL) depending on the agency of derivation.

Table 1 Published Threshold Dose-Response Values for Toluene - Oral

Agency	Oral Dose-Response Value (mg/kg/day)	Source	Target Endpoint	Test Animal	UF	Notes
NHMRC	0.223	NHMRC (2011)	Liver	Rats and Mice	1000	TDI. Based on NTP study, 1990.
WHO	0.223	WHO (2011)	Hepatotoxic effects	Mice	1000	TDI. Based on NTP study, 1990.
ATSDR	0.02	ATSDR (2000)	Neurological Effects	Mice	1000	MRL. Intermediate duration. Based on study by Hsieh et.al., 1990
Health Canada	0.22	Health Canada (1991)	Liver, Kidney	Rat	1000	TDI. Based on NTP study, 1990.
RIVM	0.223	RIVM (2001)	Liver	Mice	1000	TDI. Based on NTP study, 1990.
IRIS	0.8	USEPA (2013)	Kidney	Rat	3000	RfD. Based on NTP study, 1990. Published 2005.

ATSDR – Agency for Toxic Substances and Disease Registry
CRC CARE – Cooperative Research Centre for Contamination Assessment and Remediation of the Environment
IRIS – Integrated Risk Information System.
NHMRC – National Health and Medical Research Council
RIVM – National Institute of Public Health and the Environment (Netherlands)
WHO – World Health Organisation
UF – Uncertainty Factor.

Inhalation

The inhalation dose-response value is expressed in units of mg/m^3. This value may be termed a Reference Concentration (RfC), Tolerable Concentration (TC), Tolerable Concentration in Air (TCA) or Minimal Risk Level for inhalation (MRL) depending on the agency of derivation.

Table 2 Published Threshold Dose-Response Values for Toluene - Inhalation

Agency	Inhalation Dose-Response Value (mg/m^3)	Source	Target Endpoint	Test Animal	UF	Notes
WHO	0.26	WHO (2000)	Central Nervous System	Human	300	RfC.

Agency	Inhalation Dose-Response Value (mg/m^3)	Source	Target Endpoint	Test Animal	UF	Notes
ATSDR	0.3 *	ATSDR (2000)	Vision Impairment	Human	100	MRL. Chronic duration. Based on studies by Zavalic et al., 1998.
Health Canada	3.75	Health Canada (1991)	Neurological function	Human	10	TC. Based on study by Andersen et al., 1983.
RIVM	0.4	RIVM (2001)	Central Nervous System	Human	300	TCA. Based on study by Foo et al., 1990.
IRIS	5	USEPA (2005)	Neurological	Human	10	RfC. Based on multiple studies (1990 – 2001). Published 2005.

*Converted from 8.0ppm to mg/m^3 using the molecular weight of 92.14 and assuming 25ºC and 760 mm Hg

Carcinogenicity and Genotoxicity

Human and animal studies generally do not support a concern for the carcinogenicity of toluene. The only available human epidemiological studies were negative but inconclusive due to limitations in design. The validated animal inhalation bioassays were negative; however, one available oral study showed a nondose-related increase in a variety of tumors. Thus, the data do not support a firm conclusion regarding the carcinogenicity of toluene. The IARC have not classified toluene for carcinogenic effects.

Results of *in vivo* studies of exposed humans and *in vitro* microbial assays and other *in vitro* systems generally indicate that toluene is nonmutagenic and nongenotoxic.

Adopted Dose-Response Values

Threshold (Non-Carcinogenic)

For assessment of potential threshold effects associated with oral exposure to toluene, AECOM has adopted the reference dose of **0.223 mg/kg/day** published by NHMRC (NHMRC, 2011). It should be noted that IRIS (based on an assessment undertaken in 2005) derived a slightly lower RfD of 0.08 mg/kg/day based on data from the same principle study as that used by WHO and NHMRC (NTP, 1990). The difference in the derived values results primarily from the application of an additional three-fold safety factor by IRIS (USEPA, 2013) to account for deficiencies in the toluene database. While the USEPA evaluation is therefore slightly more conservative than the WHO (2011) and NHMRC (2011) evaluations, the difference between recommended RfDs/TDIs is not significant, and AECOM has adopted the NHMRC (2011) and WHO (2011) value in accordance with the hierarchy of toxicological information sources recommended by NEPC (1999) and enHealth (2004).

For assessment of potential threshold effects associated with inhalation exposure to toluene, AECOM has adopted the inhalation reference concentration of **5 mg/m^3** published by IRIS (USEPA, 2013). This value was derived in 2005 based on a more comprehensive and recent review of available published toxicity studies than those undertaken by WHO (2000) and ATSDR (2000), and is therefore considered to be more suitable for quantitative dose-response assessment than the older WHO and ATSDR values.

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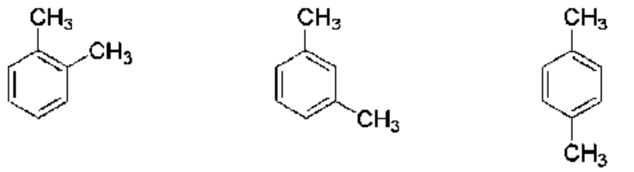

ortho-xylene *meta*-xylene *para*-xylene

Xylenes

The majority of the following information has been sourced from ATSDR (2007), with other sources listed in the references.

Chemical Identification

Synonyms: xylene, dimethylbenzene, methyltoluene

CAS: 1330-20-7 (total), 95-47-6 (ortho), 108-38-3 (meta), 106-42-3 (para)

Molecular Formula: C_8H_{10}

Molecular Weight: 106.16 g mol^{-1}

General

Xylene is primarily a synthetic chemical composed of three isomers; *meta (m)*, *ortho (o)* and *para (p).* It is primarily used as a solvent (a liquid that can dissolve other substances) in the printing, rubber, and leather industries. Along with other solvents, xylene is also widely used as a cleaning agent, a thinner for paint, and in varnishes. Xylene is found in small amounts in airplane fuel and gasoline.

Significance of Exposure Pathways and Background

Inhalation appears to be the major route of exposure to xylene.

During exposures to xylene vapour, a small amount of dermal absorption also occurs, ≤2% of the amount inhaled. Humans may also be exposed to xylene through smoking, consumption of xylene-contaminated foods, and dermal contact with consumer products containing xylene. Since xylene has a low affinity for adsorption onto soil and dust particles and a high volatilisation rate, the risk of exposure from ingesting soil or dust is likely to be low.

CRC CARE (Friebel and Nadebaum, 2011) reviewed the air background levels in Australia for xylenes and identified that background concentrations for xylene are less than 3% of the threshold toxicity criteria in the worst reported areas and less than 1% in typical residential areas. It was concluded that the inclusion of background ambient air concentration does not contribute significantly to the total allowable exposure and therefore background exposure was not considered during development of the health screening levels (HSLs).

A skin absorption factor for xylene of 12%, was adopted by CRC CARE during derivation of the HSLs (Friebel and Nadebaum, 2011).

Non-Carcinogenic Health Effects

Xylenes are lipophilic and are rapidly absorbed into the body by all routes of exposure. In humans, absorption has been estimated as >50% through the lungs following inhalation exposure and <50% through the gastrointestinal system and around 2% of the absorbed dose may be absorbed through the skin (via the air).

The major pathway for metabolism involves mixed function oxidases in the liver, resulting in the formation of isomers of methylhippuric acid that are eliminated in the urine. Xylenes tend not to accumulate in the body, but they may be sequestered briefly in fat tissues due to their lipophilicity; elimination of xylene is slower in individuals with a greater percentage of body fat. The primary effects of xylene exposure involve the nervous system by all routes of exposure, the respiratory tract by inhalation exposure, and, at higher oral exposure levels, hepatic, renal, and body weight effects. No adverse health effects have been associated with the background levels of xylene to which the general population is typically exposed. Isomers of xylene have similar toxicokinetic properties and elicit similar toxicological effects, with no single isomer consistently exhibiting the greatest potency, depending on the end point.

At acute-duration inhalation concentrations as low as 50 ppm, xylenes produce irritant effects on the eyes, skin, and mucous membranes; impaired respiratory function; and mild central nervous system effects, including headache and dizziness. Increases in subjective reports of eye irritation, sore throat, and neurological effects (anxiety, forgetfulness, inability to concentrate, and a sensation of intoxication) were noted following chronic-duration occupational exposure at 14 ppm. Irritation of the eye may occur from contact with xylene vapour or from direct contact with xylene liquid, in which case photophobia, redness of the conjunctiva, and partial loss of the conjunctival and corneal epithelia have been reported. Acute exposure to an estimated 10,000 ppm xylenes elicited tremors, mental confusion, and depressant effects (narcosis) on the central nervous system that caused at least one fatality due to respiratory failure. All of these effects are related to the lipophilic properties of xylenes, which interfere with the integrity of cell membranes and alter neuronal function. In addition to neurological and respiratory effects, an increase in the reporting of nausea was noted following controlled exposure to *m*-xylene at 50 ppm. Symptoms of nausea and vomiting have also been noted in workers exposed to xylene vapours.

Other effects of xylene exposure involve the liver and kidney in humans and animals and body weight effects in laboratory animals. Hepatic effects (elevated serum transaminases and hepatocellular vacuolation) were observed in a limited number of case reports describing effects of acute exposure to an estimated 700-10,000 ppm mixed xylene, but were not observed in workers with chronic occupational exposure at 14 ppm. Hepatic effects in laboratory animals exposed orally at ≥750 mg/kg/day or by inhalation at ≥300 ppm include increases in liver weight, serum enzyme levels, and cytochrome P-450 levels, but no histopathology. However, a number of authors characterized the hepatic effects in animals as adaptive rather than adverse. Information on renal effects (distal renal tubular acidemia and abnormal clinical chemistry values) of xylene in acutely exposed humans is confounded by exposure to other compounds or uncertainties as to the duration of exposure. No alterations in renal serum biochemistry values were observed in workers exposed to 14 ppm mixed xylene for several years. Renal effects in repeatedly exposed laboratory animals include increases in renal enzyme activity, cytochrome P-450 content, and increased kidney-to-body-weight ratios following inhalation exposure at 50-2,000 ppm or oral exposure and increased chronic nephropathy in rats exposed at ≥750 mg/kg/day. However, no renal effects were observed in rats exposed via inhalation to 810 ppm mixed xylenes for 13 weeks, gavage doses of 1,000 mg/kg/day 5 days/week for 13 weeks, or gavage doses of 800 mg/kg/day to *m*-or *p*-xylene for 90 consecutive days. It is not known whether the variability in induction of renal effects from mixed xylene is related to variations in the relative amounts of *o*-xylene or ethylbenzene or variations in the strains of rats tested. Decreased body weight gain has been observed in laboratory animals repeatedly exposed by inhalation at ≥700 ppm or by oral dosing or at ≥700 mg/kg/day; a 5–8% reduction in body weight gain observed in male rats exposed at 500 mg/kg during the last year of a 2-year study is not considered biologically significant. Dermal exposure of humans to xylene causes skin irritation, dryness and scaling of the skin, and vasodilation. In addition, one case report demonstrated the possibility that contact urticaria can develop after several months of occupational exposure to 100 ppm xylene vapours. Dermal effects of *m*-xylene, *o*-xylene, or mixed xylenes in laboratory animal studies included skin irritation (erythema and edema) at topical doses as low as 2.3 mg/kg and more serious effects (eschar formation in some animals and epidermal thickening) at topical doses of ≥114 mg/kg. Rat skin that developed moderate erythema after treatment with *m*-or *o*-xylene exhibited increases in transepidermal water loss and increases in pro-inflammatory cytokines (interleukin 1-alpha and tumour necrosis factor-alpha).

Available studies of developmental or reproductive toxicity from occupational exposure to xylenes are not definitive because of the small number of subjects and/or concurrent exposure to other chemicals. In general, developmental studies in animals reported adverse fetal effects only at concentrations that caused maternal toxicity. Developmental effects in laboratory animals exposed to ≥350 ppm xylenes by inhalation include delayed ossification of the skeleton at maternally toxic concentrations and reduced fetal body weight, which is also influenced by maternal body weight effects. Postnatal neurobehavioral deficits (decreased rotarod performance) have been observed in rats gestationally exposed to *m*-xylene at 500 ppm. Oral exposure to 2,060 mg/kg/day of mixed xylene has been associated with cleft plate and decreased foetal weight. Dermal exposure of rats to xylene has been associated with biochemical changes in foetal and maternal brain tissue. No reproductive effects were found in rats following inhalation of 500 ppm xylene before mating and during gestation and lactation. Histopathological examination following intermediate and chronic oral bioassays revealed no adverse effects on the reproductive organs of rats and mice dosed with mixed xylene 5 days/week at 800 and 1,000 mg/kg/day, respectively.

Identification of Non-Carcinogenic Toxicity Reference Values

The dose-response values provide an estimate of exposure to the human population that is likely to be without an appreciable risk of deleterious effects during a lifetime. The oral exposure represents a daily value and the inhalation exposure represents continuous inhalation. These values are intended for use in risk assessments for health effects known or assumed to be produced through a nonlinear (presumed threshold) mode of action (USEPA, 2012). Available chronic dose-response values published by sources recognised and endorsed by enHealth (enHealth, 2012), NEPC (NEPC, 2013) and the USEPA and are summarised below.

Oral

The oral dose-response value is expressed in units of mg/kg/day. This value may be termed a Reference Dose (RfD), Tolerable Daily Intake (TDI), or Minimal Risk Level for oral exposure (MRL) depending on the agency of derivation.

Table 1 Published Threshold Dose-Response Values for Xylene - Oral

Agency	Oral Dose-Response Value (mg/kg/day)	Source	Target Endpoint	Test Animal	UF	Notes
NHMRC	0.179	NHMRC (2011)	Decreased body weight	Rats and Mice	1000	TDI. Based on NTP study, 1986.
WHO	0.179	WHO (2011)	Decreased body weight	Rat	1000	TDI. Based on WHO, 2003.
ATSDR	0.2	ATSDR (2007)	Decreased survival	Rat	100	MRL. Chronic duration. Based on NTP study, 1986.
Health Canada	1.5	Health Canada (1993)	Liver	Rat	100	TDI. Based on Condie *et al.*, 1988.
RIVM	0.15	RIVM (2001)	Kidney	Rat	1000	TDI. Based on Condie *et al.*, 1988.
IRIS	0.2	USEPA (2003)	Decreased body weight, increased mortality.	Rat	1000	RfD. Based on NTP study, 1986.

ATSDR – Agency for Toxic Substances and Disease Registry
IRIS – Integrated Risk Information System.
NHMRC – National Health and Medical Research Council
RIVM – National Institute of Public Health and the Environment (Netherlands)
WHO – World Health Organisation
UF – Uncertainty Factor.

Inhalation

The inhalation dose-response value is expressed in units of mg/m^3. This value may be termed a Reference Concentration (RfC), Tolerable Concentration (TC), Tolerable Concentration in Air (TCA) or Minimal Risk Level for inhalation (MRL) depending on the agency of derivation.

Table 2 Published Threshold Dose-Response Values for Xylene - Inhalation

Agency	Inhalation Dose-Response Value (mg/m^3)	Source	Target Endpoint	Test Animal	UF	Notes
WHO	4.8 0.87	WHO (2000)	Central Nervous System Neurotoxicity	Human Rat	60 1000	Target concentration. WHO, 1997.

Agency	Inhalation Dose-Response Value (mg/m^3)	Source	Target Endpoint	Test Animal	UF	Notes
ATSDR	0.2*	ATSDR (2007)	Respiratory and Neurological	Human	100	MRL. Chronic duration for mixed xylenes. Based on studies by Uchida *et.al*., 1993
Health Canada	0.18	Health Canada (1991)	Fetal	Rat	1000	TC. Based on study by Ungvary and Tatrai, 1985.
RIVM	0.87	RIVM (2001)	Development toxicity	Rat	1000	TCA. Based on study by Hass and Jakobsen, 1993.
IRIS	0.1	USEPA (2003)	Impaired motor coordination	Rat	300	RfC. Based on Korsak *et.al*., 1994.

*Converted from 0.05 ppm to mg/m^3 using the molecular weight of 106.16 g/mol and assuming 25ºC and 760 mm Hg

Carcinogenicity and Genotoxicity

There is no definitive evidence for carcinogenic effects of xylene in humans. Epidemiological studies looking for associations with xylene exposure and specific cancers either reported no cases or a limited number of cases exposed to xylene and/or reported concurrent exposure to multiple solvents. Two-year cancer bioassays in rats and mice exposed by oral gavage provided no evidence for carcinogenicity of mixed xylene. Both the IARC and USEPA have determined that xylene is not classifiable as to its carcinogenicity in humans, due to inadequate evidence for the carcinogenicity of xylenes in humans and animals.

The preponderance of data from testing *in vivo* and *in vitro* indicates that xylenes are not mutagenic and do not induce chromosomal anomalies.

Adopted Dose-Response Values

Threshold (Non-Carcinogenic)

For assessment of potential threshold effects associated with oral exposure to xylenes, AECOM has adopted the acceptable daily intake (ADI) of **0.179 mg/kg/day** adopted by WHO (2011) and NHMRC (2011) for derivation of drinking water guideline values.

For assessment of potential threshold effects associated with inhalation exposure to xylenes, AECOM has adopted the inhalation dose response value of **0.87 mg/m^3** published by WHO (2000) because it is based on human toxicity studies and relevant for xylene mixtures.

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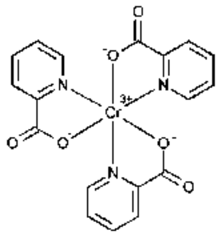

Chromium – Toxicological profile

The following information has been taken from ATSDR (2008):

General

Chromium is a naturally-occurring element found widely in the environment in the form of chromium (0), chromium (III), and chromium (VI). It is widely used in manufacturing processes and found in many products such as wood treated with copper dichromate, leather tanned with chromic sulfate and stainless steel cookware.

Chromium can be found in air, soil, and water after release from manufacture, use and disposal of chromium-based products, and during the manufacturing process. Chromium does not usually remain in the atmosphere, but is deposited into the soil and water. It can change from one form to another in water and soil depending on the conditions present and does is eventually deposited in soil and water.

Significance of Exposure Pathways and Background

In accordance with the ASC NEPM (2013), background intakes from other sources (as a % of the TRV):

Bio = 10% for oral and dermal intakes

Bli = 0% for inhalation

Non-carcinogenic Health Effects

In general, chromium (VI) compounds are more toxic than chromium (III) compounds.

Chromium (III) and chromium(VI) can penetrate human skin to some extent, especially if the skin is damaged. Absorbed chromium distributes to nearly all tissues, with the highest concentrations found in kidney and liver. Bone is also a major depot and may contribute to long-term retention kinetics or chromium. Chromium (VI) is reduced to chromium (III) via the intermediate forms of chromium (V), chromium (IV).

Chromium (VI) in blood is taken up into red blood cells, where it undergoes reduction and forms stable complexes with hemoglobin and other intracellular proteins, which are retained for a substantial fraction of the red blood cell lifetime. Absorbed chromium can be transferred to fetuses through the placenta and to infants via breast milk.

Most quantitative studies of the gastrointestinal absorption of chromium in humans have estimated the absorption fraction to be <10% of the ingested dose with more soluble forms being more rapidly absorbed than insoluble compounds. Absorption is also affected by nutritional status; the absorption fraction is higher when dietary intakes are lower.

Chromium (VI)

The primary effects associated with exposure to chromium(VI) compounds are respiratory, gastrointestinal, immunological, hematological, reproductive, and developmental. In addition, dermal and ocular irritation may occur from direct contact. Based on available dose-response data in humans and animals, the most sensitive noncancer effects of chromium(VI) compounds are respiratory (nasal and lung irritation, altered pulmonary function), gastrointestinal (irritation, ulceration and nonneoplastic lesions of the stomach and small intestine), hematological (microcytic, hypochromic anemia), and reproductive (effects on male reproductive organs, including decreased sperm count and histopathological change to the epididymis). Respiratory and gastrointestinal effects appear to be portal-of-entry effects for inhalation and oral exposure, respectively. Similarly, chromium sensitization, the major immunological effect of chromium(VI), typically presents as allergic contact dermatitis resulting from dermal exposures in sensitized individuals, although respiratory effects of sensitization (asthma) may also occur. Accidental or intentional ingestion of extremely high doses of chromium(VI) compounds by humans has resulted in severe respiratory, cardiovascular, gastrointestinal, hematological, hepatic, renal, and neurological effects as part of the sequelae leading to death or in patients who survived because of medical treatment.

Chromium (III)

Although much less information is available on the health effects of chromium (III) and chromium (III) compounds, they appear to be much less toxic than chromium (VI) compounds and are vital for normal metabolic activity. Health effects associated with exposure to chromium (III) compounds have been reported in studies of occupationally exposed populations and individuals; however, interpretation of study results is complicated by concomitant exposures to chromium (VI) or other compounds that can induce adverse health effects. Similarly, interpretation of findings in case reports of exposures to dietary supplements containing high-dose chromium(III) are also complicated, since most supplements contain numerous chemicals; thus, the most reliable information on adverse health effects of chromium(III) is obtained from studies in animals.

The primary effects of chromium (III) compounds are on the respiratory and immunological systems. Respiratory effects appear to be portal-of-entry effects for inhalation exposure. Similarly, chromium allergic dermatitis, the major immunological effect of chromium (III), is typically elicited by dermal contact in sensitized individuals; however, initial sensitization may result from inhalation, oral, or dermal exposure or from a combination of these exposure routes. Conflicting results of studies in animals have been reported in developmental and reproductive studies of chromium (III) compounds; however, results provide evidence of adverse effects on the developing and adult reproductive system. Evidence of developmental or reproductive effects of chromium (III) in humans has not been identified. Based on results of chronic-duration oral studies in animals, chromium (III) compounds (chromium acetate, chromium chloride, chromium nicotinate, chromium oxide, chromium picolinate) do not appear to produce gastrointestinal, hematological, hepatic, renal, cardiovascular, endocrine, or musculoskeletal effects. This is in contrast to chromium (VI) compounds which produce effects in the gastrointestinal, hematological, hepatic and renal systems.

Carcinogenicity and Genotoxicity

Occupational exposure (via inhalation) to chromium (VI) compounds (calcium chromate, chromium trioxide, lead chromate, strontium chromate, and zinc chromate) in various industries has been associated with increased risk of respiratory system cancers, primarily bronchogenic and nasal. Environmental exposure of humans to chromium (VI) in drinking water resulted in statistically significant increases in stomach cancer.

No studies evaluating the carcinogenic activity of chromium (III) compounds in humans were identified and animal studies were inconclusive.

The International Agency for Research on Cancer (IARC) classified chromium (VI) as *carcinogenic to humans (Group 1)* and metallic chromium and chromium (III) compounds as *not classifiable as to their carcinogenicity to humans (Group 3)*.

In-vivo and in-vitro studies indicate chromium (VI) has genotoxic properties however there is no indication that chromium (III) exhibits genotoxic potential.

Published Dose-Response Values

Available chronic dose-response values published by sources recognised and endorsed by NEPC (1999) and enHealth (2004) are summarised in the following table.

Table 1: Published Dose-Response Values for Chromium (VI) and Chromium (III)

Route of Exposure	Type	Threshold or Non-Threshold	Value	Source	Notes
Chromium (VI)					
Oral	Acceptable Daily Intake (ADI)	Threshold	0.0014 mg/kg/day	NHMRC (2004)	
Oral	Acceptable Daily Intake (ADI)	Threshold	0.0014 mg/kg/day	WHO (2008)	
Oral	Minimal Risk Level (MRL)	Threshold	0.001 mg/kg/day	ATSDR (2008)	
Oral	Reference Dose (RfD)	Threshold	0.003 mg/kg/day	USEPA (2011)	

Route of Exposure	Type	Threshold or Non-Threshold	Value	Source	Notes
Inhalation	Minimal Risk Level (MRL)	Threshold	0.000005 mg/m^3	ATSDR (2008)	For chromium (VI) as chromium trioxide mist and other hexavalent chromium aerosols and mists. Not considered relevant to assessment of exposure to chromium (VI) particulates derived from contaminated soil.
Inhalation	Reference Concentration (RfC)	Threshold	0.0001 mg/m^3	USEPA (2011)	Chromium (VI) particulates
Inhalation	Unit Risk	Non threshold	0.04 $(ug/m^3)^{-1}$	WHO (2000a)	
Inhalation	Unit Risk	Non threshold	0.011-0.13 $(ug/m^3)^{-1}$	WHO (2000b)	
Inhalation	Unit Risk	Non threshold	0.012 $(ug/m^3)^{-1}$	USEPA (2011)	
Chromium (III)					
Oral	Reference Dose (RfD)	Threshold	1.5 mg/kg/day	USEPA (2011)	
Oral	Reference Dose (RfD)	Threshold	1.5 mg/kg/day	USEPA (2010)	
Inhalation	Minimal Risk Level (MRL)	Threshold	0.0001 mg/m^3	ATSDR (2008)	Intermediate duration inhalation exposure to soluble trivalent chromium particulate compounds

Adopted Threshold Dose-Response Values

Chromium (VI)

For assessment of potential threshold effects associated with oral exposure to chromium (VI), AECOM has adopted the minimal risk level (MRL) of **0.001 mg/kg/day** adopted by ATSDR (2008).

For assessment of potential threshold effects associated with inhalation exposure to chromium (VI), AECOM has adopted the RfC of **0.0001 mg/m^3** published by USEPA (2010) for chromium (VI) particulates. Note that the ATSDR MRL of 0.000005 mg/m^3 for hexavalent chromium aerosols and mists was not considered relevant to assessment of exposure to chromium (VI) particulates derived from contaminated soil.

Chromium (III)

For assessment of potential threshold effects associated with oral exposure to chromium (III), AECOM has adopted the USEPA (2010) reference dose (RfD) of **1.5 mg/kg/day**.

For assessment of potential threshold effects associated with inhalation exposure to chromium (III), AECOM has adopted the ATSDR (2008) intermediate duration MRL of **0.0001 mg/m^3**. While this value was derived for intermediate exposure duration, it is considered likely to be suitably protective for assessment of chromium (III) given that:

- The ATSDR MRL is identical to the USEPA (2010) RfC for chromium (VI); and

- chromium (III) compounds appear to be much less toxic than chromium (VI) compounds.

Adopted Non-Threshold (Carcinogenic) Dose-Response Values

Chromium (VI)

To AECOM's knowledge, non-threshold dose-response criteria for oral exposure to chromium (VI) have not been published by Australian or other regulatory bodies. Potential health effects associated with oral exposure to chromium (VI) have therefore been assessed on the basis of threshold dose response criteria.

For assessment of potential non-threshold effects associated with inhalation exposure to chromium (IV), AECOM has adopted the unit risk of **0.04 (ug/m3)$^{-1}$** published by WHO (2000a).

Chromium (III)

To AECOM's knowledge, non-threshold dose-response criteria for oral and inhalation exposure to chromium (III) have not been published by Australian or other regulatory bodies. Potential health effects associated with oral or inhalation exposure to chromium (III) have therefore been assessed on the basis of threshold dose response criteria.

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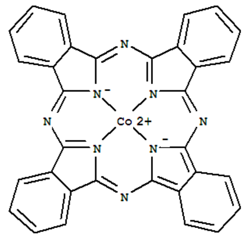

Cobalt – Toxicological profile

The following information has been taken from ATSDR (2004):

General

Cobalt and its alloys are used in a number of military and industrial applications such as the manufacture of aircraft engines, magnets, and grinding and cutting tools as well as artificial hip and knee joints.

Soils near ore deposits, phosphate rocks, or ore smelting facilities, and soils contaminated by airport traffic, highway traffic, or other industrial pollution may contain high concentrations of cobalt. Small amounts of cobalt may be released into the atmosphere from coal-fired power plants and incinerators, vehicular exhaust, industrial activities relating to the mining and processing of cobalt-containing ores, and the production and use of cobalt alloys and chemicals.

Cobalt released into water may stick to particles in the water column or to the sediment at the bottom of the body of water into which it was released, or remain in the water column in ionic form. The specific fate of cobalt will depend on many factors such as the chemistry of the water and sediment at a site as well as the cobalt concentration and water flow. Cobalt deposited on soil is often strongly attached to soil particles and therefore would not travel very far into the ground. However, the form of the cobalt and the nature of the soil at a particular site will affect how far cobalt will penetrate into the soil. Both in soil and sediment, the amount of cobalt that is mobile will increase under more acidic conditions. Ultimately, most cobalt ends up in the soil or sediment.

Significance of Exposure Pathways and Background

In accordance with the ASC NEPM (2013), background intakes from other sources (as a % of the TRV):

Bio = 20% for oral and dermal intakes

Bli = 0% for inhalation

Non-carcinogenic Health Effects

Following inhalation exposure to cobalt-containing particles, the primary target of exposure is the respiratory tract. Occupational exposure of humans to cobalt metal or cobalt-containing hard metal have reported primarily respiratory effects, including decreased pulmonary function, asthma, interstitial lung disease, wheezing, and dyspnea. Many of the respiratory tract effects are believed to be the result of the generation of oxidants and free radicals by the cobalt ion. In particular, hard metal (a tungsten carbide/cobalt alloy) is a potent generator of free electrons, resulting in the generation of active oxygen species. However, some of the respiratory effects, such as cobalt-induced asthma, are likely the result of immunosensitization to cobalt. Other sensitive targets of cobalt inhalation in humans include effects on the thyroid and allergic dermatitis, manifesting as eczema and erythema; it is believed that the allergic dermatitis is due, at least in part, to concurrent dermal exposure and the development of immunosensitization to cobalt.

Adequate chronic studies of the oral toxicity of cobalt or cobalt compounds in humans and animals are not presently available. The most sensitive endpoint following oral exposure to cobalt in humans appears to be an increase in erythrocyte numbers (polycythemia).

Following dermal exposure, the most commonly observed effect is dermatitis which is likely caused by an allergic reaction to cobalt with the cobalt ion functioning as a hapten.

Carcinogenicity and Genotoxicity

Studies in animals have indicated a lifetime inhalation of cobalt sulfate resulted in increased tumor incidences in animals however human data were not available. Oral data on the carcinogenic effects of cobalt and cobalt compounds are not available. IARC has classified cobalt and cobalt compounds as possibly carcinogenic to humans (Group 2B).

In-vivo and in-vitro studies indicate cobalt has genotoxic properties.

Published Dose-Response Values

Available chronic dose-response values published by sources recognised and endorsed by NEPC (1999) and enHealth (2004) are summarised in the following table.

Table 1: Published Dose-Response Values for Cobalt

Route of Exposure	Type	Threshold or Non-Threshold	Value	Source	Notes
Oral	Minimal Risk Level (MRL)	Threshold	0.01 mg/kg/day	ATSDR (2004)	Intermediate duration
Oral	Reference Dose (RfD)	Threshold	0.0003 mg/kg/day	USEPA (2010)	PPRTV value
Oral	Reference Dose (RfD)	Threshold	0.0014 mg/kg/day	RIVM (2001)	Oral TRV.
Inhalation	Minimal Risk Level (MRL)	Threshold	0.0001 mg/m^3	ATSDR (2004)	Chronic duration
Inhalation	Reference Concentration (RfC)	Threshold	0.000006 mg/m^3	ATSDR (2004)	PPRTV value
Inhalation	Reference Concentration (RfC)	Threshold	0.0001 mg/m^3	WHO (2006)	Inhalation TRV.

PPRTV- peer reviewed toxicity value

Adopted Threshold Dose-Response Values

For assessment of potential threshold effects associated with oral exposure to cobalt, AECOM has adopted an RfD of 0.0014 mg/kg/day (RIVM, 2001).

For assessment of potential threshold effects associated with inhalation exposure to cobalt, AECOM has adopted the minimal risk level (MRL) value for chronic duration exposure of 0.0001 mg/m^3 published by WHO (2006).

Adopted Non-Threshold (Carcinogenic) Dose-Response Values

To AECOM's knowledge, non-threshold dose-response criteria for oral and inhalation exposure to cobalt have not been published by Australian or other regulatory bodies. Potential health effects associated with oral and inhalation exposure to cobalt have therefore been assessed on the basis of threshold dose response criteria.

References

ATSDR, 2004. *Toxicological Profile for Cobalt*. Agency for Toxic Substances and Disease Registry. April 2004.

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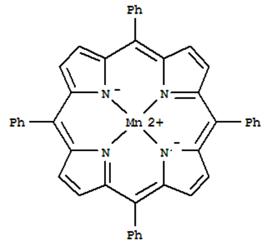

Manganese – Toxicological profile

The following information has been taken from ATSDR (2008):

General

Manganese is a normal constituent of air, soil, water, and food and may also be released into the environment as a result of manufacturing activities. As with other elements, manganese cannot break down in the environment. It can only change its form or become attached or separated from particles. The chemical state of manganese and the type of soil determine how fast it moves through the soil and how much is retained in the soil. In water, most of the manganese tends to attach to particles in the water or settle into the sediment. The manganese-containing gasoline additive may degrade in the environment quickly when exposed to sunlight, releasing manganese.

The primary exposure to manganese occurs by ingestion of foods or nutritional supplements containing manganese. Vegetarians consuming foods rich in manganese such as grains, beans, nuts as well as heavy tea drinkers may have a higher intake of manganese than average.

Certain occupations like welding and steel factory work may increase your chances of exposure to high levels of manganese. Because manganese is a natural component of the environment, you are always exposed to low levels of it in water, air, soil and food. Drinking or swimming in water containing manganese may expose you to low levels of this chemical. Air contains low levels of manganese from industry and car exhaust.

Significance of Exposure Pathways and Background

In accordance with the ASC NEPM (2013), background intakes from other sources (as a % of the TRV):

Bio = 50% for oral and dermal intakes

Bli = 20% for inhalation

Non-carcinogenic Health Effects

While low levels of manganese are required for human health, exposure to high manganese levels is toxic and reports indicate the primary sources of human exposure are in occupational settings.

Inhaled manganese is transported to the brain before it is metabolized by the liver. The symptoms of manganese toxicity may appear slowly over months and years and include the development of manganism, a permanent neurological disorder with symptoms that include tremors, difficulty walking, and facial muscle spasms. These symptoms are often preceded by other lesser symptoms, including irritability, aggressiveness, and hallucinations.

Acute or intermediate exposure to excess manganese also affects the respiratory system. Inhalation exposure to high concentrations of manganese dusts can cause an inflammatory response in the lung, which can result in impaired lung function. Lung toxicity is manifested as an increased susceptibility to infections such as bronchitis and can result in manganic pneumonia.

Many reports indicate that oral exposure to manganese, especially from contaminated water sources, can produce significant health effects. These effects are most prominent in children and are similar to those observed from inhalation exposure. Children are also potentially more sensitive to manganese toxicity than adults.

There is indirect evidence that reproductive outcomes might be affected. Developmental data in humans exposed to manganese by inhalation are limited and consist mostly of reports of adverse pulmonary effects from inhaling airborne manganese dust and adverse neurological effects in offspring following ingestion exposure. Some studies in children suggest that routine exposures to high levels of manganese from contaminated drinking water may ultimately impair intellectual performance and behavior.

The few available inhalation and oral studies in humans and animals indicate that inorganic manganese exposure does not cause significant injury to the heart, stomach, blood, muscle, bone, liver, kidney, skin, or eyes. However, if manganese is in the (VII) oxidation state (as in potassium permanganate), then ingestion may lead to severe corrosion at the point of contact.

Carcinogenicity and Genotoxicity

There is no evidence that manganese causes cancer in humans. Although no firm conclusions can be drawn from the mixed results in animal studies, there are little data to suggest that inorganic manganese is carcinogenic. Manganese has been classified by the USEPA as a group D agent (not classifiable as to human carcinogenicity).

In-vivo and in-vitro studies have not reported genotoxic properties associate with manganese exposure.

Published Dose-Response Values

Available chronic dose-response values published by sources recognised and endorsed by NEPC (1999) and enHealth (2004) are summarised in the following table.

Table 1: Published Dose-Response Values for Manganese

Route of Exposure	Type	Threshold or Non-Threshold	Value	Source	Notes
Oral	Acceptable Daily Intake (ADI)	Threshold	0.143 mg/kg/day	NHMRC (2004)	Safe consumption level of 10 mg/day was converted to an ADI assuming a 70 kg bodyweight
Oral	Tolerable Daily Intake (TDI)	Threshold	0.06 mg/kg/day	WHO (2008)	
Oral	Reference Dose (RfD)	Threshold	0.14 mg/kg/day	USEPA (2011)	
Inhalation	Health based Guideline Value	Threshold	0.00015 mg/m^3	WHO (2000)	
Inhalation	Minimal Risk Level (MRL)	Threshold	0.0003 mg/m^3	ATSDR (2008)	Chronic duration MRL for manganese in inspirable dust
Inhalation	Reference Concentration (RfC)	Threshold	0.00005 mg/m^3	USEPA (2011)	

Adopted Threshold Dose-Response Values

For assessment of potential non-threshold effects associated with oral exposure to manganese, AECOM has adopted an RfD of **0.16 mg/kg/day** based on the safe consumption level adopted by ATSDR (2008) for derivation the drinking water guideline.

For assessment of potential non-threshold effects associated with inhalation exposure to manganese, AECOM has adopted the WHO (2000) guideline value of **0.00015 mg/m^3**.

Adopted Non-Threshold (Carcinogenic) Dose-Response Values

To AECOM's knowledge, non-threshold dose-response criteria for oral and inhalation exposure to manganese have not been published by Australian or other regulatory bodies. Potential health effects associated with oral and inhalation exposure to manganese have therefore been assessed on the basis of threshold dose response criteria.

References

ATSDR, 2008. *Toxicological Profile for Manganese*. Agency for Toxic Substances and Disease Registry. September 2008.

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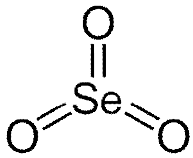


Selenium – Toxicological profile

The following information has been taken from ATSDR (2003):

General

Selenium is naturally occurring in the environment and is an essential micronutrient for humans and animals. The principal source of selenium in the environment is from the combustion of coal (and rubber manufacturing and metal industry) however natural sources are the result of weathering of selenium containing rocks, soils and from volcanic eruptions. Selenium is found in most rocks and soils and is naturally occurring at low concentrations in surface and groundwater.

The general public is exposed to selenium primarily by ingestion of the naturally occurring inorganic and organic forms. Selenium exposure can also occur via exposure to contaminated air and water.

Significance of Exposure Pathways and Background

In accordance with the ASC NEPM (2013), background intakes from other sources (as a % of the TRV):

Bio = 60% for oral and dermal intakes

Bli = 60% for inhalation

Non-carcinogenic Health Effects

Relatively little information is available on the health effects of excessive inhalation of selenium. The primary target organ in humans and laboratory animals exposed to high levels of selenium in air is the lungs, with cardiovascular, hepatic, nervous and renal involvement also observed. Acute and chronic exposure is associated with headaches and stomach pain.

Acute oral exposure to high levels of selenium produces nausea, vomiting and diarrhea in both humans and laboratory animals and is occasionally associated with cardiovascular symptoms in humans. An epidemiological study of chronic oral exposure to selenium has been described in the People's Republic of China where chronic oral intake has been reported to produce selenosis (gastrointestinal disorders, hair loss, sloughing of nails, fatigue, irritability and neurological damage) in humans with neurological and dermal symptoms. Similar effects have been reported in animals and there is some evidence of endocrine effects following long term oral exposure in both humans and rats.

Carcinogenicity and Genotoxicity

The International Agency for Research on Cancer (IARC) has determined that selenium and selenium compounds are not classifiable with regard to their carcinogenicity in humans.

Very high amounts of selenium have caused reproductive problems in male and female rates and changes in the menstrual cycles of monkeys. The relevance to humans in unknown. Selenium compounds have not been shown to cause birth defects in humans or other mammals.

Selenium and selenium compounds have been observed to have both genotoxic and antigenotoxic effects however the underlying mechanisms are yet to be elucidated.

Published Dose-Response Values

Available chronic dose-response values published by sources recognised and endorsed by NEPC (1999) and enHealth (2004) are summarised in the following table.

Table 1: Published Dose-Response Values for Selenium

Route of Exposure	Type	Threshold or Non-Threshold	Value	Source	Notes
Oral	Acceptable Daily Intake (ADI)	Threshold	0.24 mg/kg/day	NHMRC (2004)	
Oral	Upper Limit (UL)	Threshold	0.006 mg/kg/day	NHMRC (2006)	TRV.

Route of Exposure	Type	Threshold or Non-Threshold	Value	Source	Notes
Oral	Acceptable Daily Intake (ADI)	Threshold	0.004 mg/kg/day	WHO (2008)	
Oral	Minimum Risk Level (MRL)	Threshold	0.005 mg/kg/day	ATSDR (2003)	Chronic oral exposure
Oral	Reference Dose (RfD)	Threshold	0.005 mg/kg/day	USEPA (2011a)	
Inhalation	Reference Concentration (RfC)	Threshold	0.02 mg/m^3	USEPA (2011b)	

Adopted Threshold Dose-Response Values

For assessment of potential threshold effects associated with oral exposure to selenium, AECOM has adopted the RfD of **0.006 mg/kg/day** adopted by NHMRC (2006).

As reference concentration data for selenium inhalation have not been published, the above RfD (NHMRC, 2006) has been converted to RfC (RfC = (body weight x RfD)/ inhalation rate, where body weight is assumed to be 70 kgs and inhalation rate equal to 20 m3/day) and the RfC of **0.021 mg/m^3** accepted.

Adopted Non-Threshold (Carcinogenic) Dose-Response Values

To AECOM's knowledge, non-threshold dose-response criteria for oral and inhalation exposure to selenium have not been published by Australian or other regulatory bodies. Potential health effects associated with oral and inhalation exposure to selenium have therefore been assessed on the basis of threshold dose response criteria.

References

ATSDR, 2003. *Toxicological Profile for Selenium*. Agency for Toxic Substances and Disease Registry. August, 2007.

enHealth, 2004. *Environmental Health Risk Assessment*, *Guidelines for Assessing Human Health Risks from Environmental Hazards.* June 2004.

NEPC, 1999. *Schedule B(4) Guideline on Health Risk Assessment Methodology.* In: National Environment Protection (Assessment of Site Contamination) Measure. National Environment Protection Council.

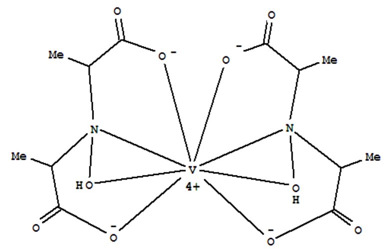
NHMRC 2004, *Australian Drinking Water Guidelines (ADWG)*. National Health and Medical Research Council , 2004.

NHMRC 2006. Nutrient Reference values for Australia and New Zealand including Recommended Dietary Intakes, National Health and Medical Research Council.

USEPA, 2011a. *Integrated Risk Information System (IRIS).* Electronic database maintained by the United States Environmental Protection Agency National Centre for Environmental Assessment, Office of Research and Development. Accessed Aug 2011.

USEPA, 2011b. *Regional Screening Levels for Chemical Contaminants at Superfund Sites*. Available from: http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm. Issued June 2011.

WHO, 2008. *Guidelines for Drinking-water Quality. First and Second Addenda to the Third-Edition. Volume 1. Recommendations.* World Health Organization.



Vanadium – Toxicological profile

The following information has been taken from ATSDR (2009):

General

Vanadium occurs naturally in soil, water and air and is found in continental dust, marine aerosols, and volcanic emissions. Releases of vanadium to the environment are mainly associated with industrial sources, especially oil refineries and power plants using vanadium rich fuel oil and coal. Global human made release of vanadium to the environment has been estimated to be greater than releases due to natural sources. Vanadium is used in the production of rust-resistant springs and high-speed tool steels and vanadium compounds are used in the production of magnets and dietary supplements.

Vanadium particles in the air settle to the ground or are washed out of the air by rain. Smaller particles, such as those emitted from oil-fueled power plants, may stay in the air for longer and are more likely to be transported farther away from the site of release. The transport and partitioning of vanadium in water and soil is influenced by many factors including acidity of the water or soil and the presence of particulates. Vanadium can either be dissolved in water as dissolved ions or adsorbed to particulate matter. As most foods have naturally occurring low concentrations of vanadium the consumption of vanadium-containing supplements may result in intakes of vanadium that would exceed intakes from food and water.

Populations in areas with high levels of residual fuel oil consumption may also be exposed to above-background levels of vanadium, both from increased particulate deposition upon food crops and soil in the vicinity of power plants. Most people take in very little vanadium from breathing. Individuals exposed to cigarette smoke may also be exposed to higher than background levels of vanadium.

Significance of Exposure Pathways and Background

Background intakes are considered to be negligible and therefore AECOM have adopted an intake percentage of 0%.

Non-carcinogenic Health Effects

The general population can be exposed to vanadium primarily through oral and inhalation routes of exposure.

Adverse respiratory effects have been reported in humans and animals exposed to vanadium compounds at concentrations much higher than those typically found in the environment. Although the available data in humans are limited, signs of airway irritation (e.g., coughing, wheezing, sore throat) have been reported in subjects acutely exposed to vanadium and in workers exposed to vanadium pentoxide dust. These effects have persisted for days to weeks after exposure termination and are not always associated with decreased lung function. Studies in laboratory animals provide strong support that the respiratory tract is the most sensitive target following inhalation exposure to vanadium causing alveolar/bronchiolar hyperplasia, inflammation, and fibrosis in rats and mice exposed to vanadium pentoxide (chronic and acute exposure). Longer duration exposures also result in inflammation and hyperplasia in the larynx and hyperplasia in nasal goblet cells.

Other sensitive targets of vanadium toxicity include the gastrointestinal system following oral exposure and hematological system following inhalation or oral exposure. Symptoms of gastrointestinal irritation (diarrhea, cramps, nausea) have been observed in humans following bolus administration of sodium metavanadate or vanadyl sulfate.

In animals vanadium exposure is associated with microcytic erythrocytosis (decreases in hematocrit, hemoglobin, and mean cell volume and increases in reticulocytes and nucleated erythrocytes) which has been observed in rats exposed to vanadium and vanadium pentoxide.

Information on the potential of vanadium to induce developmental effects in humans is limited, but developmental effects have been observed in laboratory animals and include decreases in pup growth, decreases in pup survival and skeletal malformations.

Carcinogenicity and Genotoxicity

No studies have examined the carcinogenic potential of vanadium in humans. An increase in lung carcinoma incidence has been observed in mice chronically exposed to vanadium pentoxide; there is also marginal evidence for lung cancer in male rats (incidence of carcinoma was higher than historical controls but not concurrent controls). Carcinogenicity has not been adequately assessed in laboratory animals following oral exposure. The International Agency for Research on Cancer (IARC) has determined that vanadium pentoxide is possibly carcinogenic (Group 2B) to humans, but other forms of vanadium have not been classified by IARC or the USEPA.

In-vivo and In-vitro studies suggest vanadium compounds are genotoxic and cause clastogenic effects and DNA damage.

Published Dose-Response Values

Available chronic dose-response values published by sources recognised and endorsed by NEPC (1999) and enHealth (2004) are summarised in the following table.

Table 1: Published Dose-Response Values for Vanadium

Route of Exposure	Type	Threshold or Non-Threshold	Value	Source	Notes
Oral	Minimal Risk Level (MRL)	Threshold	0.01 mg/kg/day	ATSDR (2012)	Intermediate duration
Oral	Reference Dose (RfD)	Threshold	0.009 mg/kg/day	USEPA (2011)	For vanadium pentoxide
Oral	Reference Dose (RfD)	Threshold	0.005 mg/kg/day	USEPA (2010)	For vanadium and compounds
Inhalation	Reference Concentration (RfC)	Threshold	0.001 mg/m^3	WHO (2000)	
Inhalation	Minimal Risk Level (MRL)	Threshold	0.0001 mg/m^3	ATSDR (2009)	Chronic duration

Adopted Threshold Dose-Response Values

For assessment of potential threshold effects associated with oral exposure to vanadium compounds, AECOM has adopted the minimal risk level (MRL) value of **0.01 mg/kg/day** (ATSDR, 2012).

For assessment of potential threshold effects associated with inhalation exposure to vanadium compounds, AECOM has adopted the health based guideline value of **0.001 mg/m^3** derived by WHO (2000).

Adopted Non-Threshold (Carcinogenic) Dose-Response Values

To AECOM's knowledge, non-threshold dose-response criteria for oral and inhalation exposure to vanadium compounds have not been published by Australian or other regulatory bodies. Potential health effects associated with oral and inhalation exposure to vanadium compounds have therefore been assessed on the basis of threshold dose response criteria.

References

ATSDR, 2012. *Toxicological Profile for Vanadium*. Agency for Toxic Substances and Disease Registry. September, 2012.

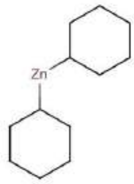
enHealth, 2004. *Environmental Health Risk Assessment*, *Guidelines for Assessing Human Health Risks from Environmental Hazards.* June 2004.

NEPC, 1999. *Schedule B(4) Guideline on Health Risk Assessment Methodology.* In: National Environment Protection (Assessment of Site Contamination) Measure. National Environment Protection Council.

USEPA, 2011. *Integrated Risk Information System (IRIS).* Electronic database maintained by the United States Environmental Protection Agency National Center for Environmental Assessment, Office of Research and Development. Accessed April 2011.

USEPA, 2015. *Regional Screening Levels for Chemical Contaminants at Superfund Sites.* Available on-line at: http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm. June 2015.

WHO, 2000. *Air Quality Guidelines for Europe. Second Edition.* World Health Organization (WHO), Regional Office for Europe. WHO Regional Publications, European Series, No. 91. 2000.



Zinc – Toxicological profile

The following information has been taken from ATSDR (2005):

General

Zinc is one of the most common elements in the Earth's crust. Zinc is found in the air, soil, and water and is present in all foods. In its pure elemental (or metallic) form, zinc is a bluish-white, shiny metal. Powdered zinc is explosive and may burst into flames if stored in damp places.

Metallic zinc is used in industry to coat steel and iron as well as other metals to prevent rust and corrosion. Metallic zinc is also mixed with other metals to form alloys such as brass and bronze. Metallic zinc is also used to make dry cell batteries.

Zinc can combine with other elements, such as chlorine, oxygen, and sulfur, to form zinc compounds. Zinc compounds that may be found at hazardous waste sites are zinc chloride, zinc oxide, zinc sulfate, and zinc sulfide. Most zinc ore found naturally in the environment is in the form of zinc sulfide. Zinc compounds are widely used in industry. Zinc sulfide and zinc oxide are used to make white paints, ceramics, and other products. Zinc oxide is also used in producing rubber. Zinc compounds, such as zinc acetate, zinc chloride, and zinc sulfate, are used in preserving wood and in manufacturing and dyeing fabrics. Zinc chloride is also the major ingredient in smoke from smoke bombs. Zinc compounds are used by the drug industry as ingredients in some common products, such as vitamin supplements, sun blocks, diaper rash ointments, deodorants, athlete's foot preparations, acne and poison ivy preparations, and antidandruff shampoos.

Significance of Exposure Pathways and Background

In accordance with the ASC NEPM (2013), background intakes including plant uptake = 0.46 mg/kg/day, which equates to 90% of the oral TRV.

Non-carcinogenic Health Effects

Zinc is an essential nutrient for humans and animals that is necessary for the function of a large number of metalloenzymes, including alcohol dehydrogenase, alkaline phosphatase, carbonic anhydrase, leucine aminopeptidase, and superoxide dismutase.

The effects of inhalation exposure to zinc and zinc compounds vary somewhat with the chemical form of the zinc compound, but the majority of the effects seen will occur within the respiratory tract. Following inhalation of zinc oxide, and to a lesser extent zinc metal and many other zinc compounds, the most commonly reported effect is the development of “metal fume fever” which is characterized by chest pain, cough, dyspnea, reduced lung volumes, nausea, chills, malaise, and leukocytosis. Symptoms generally appear a few hours after exposure, and are reversible 1–4 days following cessation of exposure.

Exposure levels associated with the development of metal fume fever have not been identified, though are generally in the range of 77–600 mg zinc/m3. Acute experimental exposures of humans to lower concentrations of zinc oxide (14 mg/m3 for 8 hours or 45 mg zinc/m3 for 20 minutes) and occupational exposures to low concentrations of zinc (8–12 mg zinc/m3 for 1–3 hours and 0.034 mg zinc/m3 for 6–8 hours) did not produce symptoms of metal fume fever. In contrast, inhalation of high levels of zinc chloride, which is corrosive, generally results in more pronounced damage to the mucous membranes of the respiratory tract without the effects normally seen in metal fume fever. Symptoms of high-concentration zinc chloride exposure include dyspnea, cough, pleuritic chest pain, bilateral diffuse infiltrations, pneumothorax, and acute pneumonitis, resulting from respiratory tract irritation.

The effects observed after zinc chloride inhalation are likely due to the caustic nature of zinc chloride, rather than a direct action of the zinc ion. Nausea has been reported by humans exposed to high concentrations of zinc oxide fumes (300– 600 mg/m3) and zinc chloride (~120 mg/m3) smoke, as well as following oral exposure to zinc chloride and zinc sulfate. Other gastrointestinal symptoms reported in cases of excess zinc exposure include vomiting, abdominal cramps, and diarrhea, in several cases with blood. In general, oral exposure levels associated with gastrointestinal effects of zinc have not been reliably reported, but the limited available data suggest that oral concentrations of 910 mg zinc/L or single-dose exposures of ~140–560 mg zinc (acute oral doses of 2–8 mg/kg/day) are sufficient to cause these effects. Following longer-term exposure to lower doses (~0.5–2 mg zinc/kg/day) of zinc compounds, the observed symptoms generally result from a decreased absorption of copper from the diet, leading to early symptoms of copper deficiency. The most noticeable manifestation of the decreased copper levels is anemia, manifesting as decreased erythrocyte number or decreased hematocrit. High-dose zinc administration has also resulted in reductions in leukocyte number and function. Some studies have also found decreases in high-density lipoprotein (HDL) levels in humans exposed to increased levels of zinc; however, not all studies have confirmed this observation. Long-term consumption of excess zinc may also result in decreased iron stores, although the mechanism behind this effect is not presently clear.

In most cases, dermal exposure to zinc or zinc compounds does not result in any noticeable toxic effects. Zinc oxide is used routinely in topical applications including sunscreens and creams designed to assist in wound healing. However, dermal exposure to zinc chloride, and to a lesser extent other zinc salts, can result in severe skin irritancy, characterized by parakeratosis, hyperkeratosis, inflammatory changes in the epidermis and superficial dermis, and acanthosis of the follicular epithelia.

Available studies have not presented evidence of reproductive or developmental effects in humans or animals following inhalation of zinc compounds. Effects on reproductive or developmental end points have been noted in oral-exposure animal studies, but generally only at very high doses (>200 mg/kg/day). Available studies of zinc-induced carcinogenic effects in humans and animals following both oral or inhalation exposure have not adequately demonstrated an increase in cancer incidence following long term exposure to zinc compounds.

Carcinogenicity and Genotoxicity

Genotoxicity studies conducted in a variety of test systems have failed to provide evidence for mutagenicity of zinc. However, there are indications of weak clastogenic effects following zinc exposure.

A dominant lethal study in mice failed to show a mutagenic potential for zinc. However, chromosomal aberrations have been observed in bone marrow cells following *in vivo* exposure to zinc (Vilkina et al. 1978). This effect was observed in rats exposed to 14.8 mg zinc/kg/day as zinc chlorate in drinking water (Kowalska-Wochna et al. 1988), mice given intraperitoneal injections of 3.6 mg zinc/kg/day as zinc chloride (Gupta et al. 1991), and mice exposed to zinc oxide by inhalation (Voroshilin et al. 1978). Chromosomal aberrations caused by zinc were observed in the bone marrow cells of mice maintained on a low-calcium diet (Deknudt and Gerber 1979). Calcium may be displaced by zinc in calcium-depleted conditions, leading to chromosome breaks and/or interfering in the repair process (Deknudt and Gerber 1979).

In vivo exposure to zinc may also result in single-strand breaks, as measured by the Comet assay in mice (Banu et al. 2001). An increased incidence of sister chromatid exchange was observed in bone marrow cells of rats exposed to 17.5 mg zinc/kg/day as zinc chlorate in drinking water (Kowalska-Wochna et al. 1988). Exposure to zinc as zinc sulfate or zinc chloride does not increase mutation frequencies in bacterial or mammalian cell culture test systems (Amacher and Paillet 1980; Gocke et al. 1981; Marzin and Vo Phi 1985; Nishioka 1975; Thompson et al. 1989; Venitt and Levy 1974; Wong 1988). Similarly, there was no convincing evidence of a clastogenic effect in human lymphocytes exposed to 0.0003–0.00003 M zinc chloride (Deknudt and Deminatti 1978).

The EPA currently classifies zinc and compounds as carcinogenicity group D (not classifiable as to human carcinogenicity).

Published Dose-Response Values

Available chronic dose-response values published by sources recognised and endorsed by NEPC (1999) and enHealth (2004) are summarised in the following table.

Table 1: Published Dose-Response Values for Zinc

Route of Exposure	Type	Threshold or Non-Threshold	Value	Source	Notes
Oral	Minimal Risk Level (MRL)	Threshold	0.3 mg/kg/day	ATSDR (2010)	
Oral	Reference Concentration (RfC)	Threshold	0.3 mg/kg/day	ATSDR (2010)	
Oral	Reference Concentration (RfC)	Threshold	0.5 mg/kg/day	NHMRC (2006)	Oral TRV.

Adopted Threshold Dose-Response Values

An oral reference dose of **0.5 mg/kg/day** has been published by NHMRC (2006) and has been adopted by AECOM. As reference concentration data for zinc inhalation have not been published the RfD has been converted to RfC (RfC = (body weight x RfD)/ inhalation rate, where body weight is assumed to be 70 kgs and inhalation rate equal to 20 m^3/day) and the RfC of **1.75 mg/m^3** accepted.

Adopted Non-Threshold (Carcinogenic) Dose-Response Values

To AECOM's knowledge, non-threshold dose-response criteria for oral and inhalation exposure to zinc have not been published by Australian or other regulatory bodies. Potential health effects associated with oral and inhalation exposure to zinc have therefore been assessed on the basis of threshold dose response criteria.

References

ATSDR, 2010. *Toxicological Profile for Zinc*. Agency for Toxic Substances and Disease Registry. August, 2005.

enHealth, 2004. *Environmental Health Risk Assessment*, *Guidelines for Assessing Human Health Risks from Environmental Hazards.* June 2004.

NEPC, 1999. *Schedule B(4) Guideline on Health Risk Assessment Methodology.* In: National Environment Protection (Assessment of Site Contamination) Measure. National Environment Protection Council.

USEPA, 2010. *Integrated Risk Information System (IRIS).* Electronic database maintained by the United States Environmental Protection Agency National Center for Environmental Assessment, Office of Research and Development. Accessed February 2010.

Appendix H

Photographs

Figure 1 - Approximate Photograph Locations

PHOTOGRAPHIC LOG

Site Name: Energy From Waste Facility	**Proposed Site Location:** Honeycomb Drive, Eastern Creek, NSW	**Project No:** 60442781
Plate No. **1** / **Date:** 28/09/2015 **Direction Photo Taken:** Location 1 - South-west **Description:** Entrance to Hanson yard and land, beyond which land for the proposed EFW Facility		

Site Name: Energy From Waste Facility	**Proposed Site Location:** Honeycomb Drive, Eastern Creek, NSW	**Project No:** 60442781
Plate No. **2** / **Date:** 28/09/2015 **Direction Photo Taken:** Location 1 - North-west **Description:** Genesis Facility		

Site Name: Energy From Waste Facility		Proposed Site Location: Honeycomb Drive, Eastern Creek, NSW	Project No: 60442781
Plate No. 3	**Date:** 28/09/2015		
Direction Photo Taken: Location 2 - East			
Description: Commercial Facilities			

Site Name: Energy From Waste Facility		Proposed Site Location: Honeycomb Drive, Eastern Creek, NSW	Project No: 60442781
Plate No. 4	**Date:** 28/09/2015		
Direction Photo Taken: Location 3 - South			
Description: Commercial Facilities			

Site Name: Energy From Waste Facility		Proposed Site Location: Honeycomb Drive, Eastern Creek, NSW	Project No: 60442781
Plate No. 5	**Date:** 28/09/2015		
Direction Photo Taken: Location 4 – South-west			
Description: Land south of the proposed EFW Facility – grazing cattle present.			

Site Name: Energy From Waste Facility		Proposed Site Location: Honeycomb Drive, Eastern Creek, NSW	Project No: 60442781
Plate No. 6	**Date:** 28/09/2015		
Direction Photo Taken: Location 4 – South-west			
Description: Land south of the proposed EFW Facility – grazing cattle present.			

Site Name:	Proposed Site Location:	Project No:
Energy From Waste Facility	Honeycomb Drive, Eastern Creek, NSW	60442781

Plate No.	Date:
7	28/09/2015

Direction Photo Taken:

Location 4 – South

Description:

Land south-east of the proposed EFW Facility – grazing cattle present.

Site Name:	Proposed Site Location:	Project No:
Energy From Waste Facility	Honeycomb Drive, Eastern Creek, NSW	60442781

Plate No.	Date:
8	28/09/2015

Direction Photo Taken:

Location 5 – North-east

Description:

Minchinbury Reservoir – two tanks.

Site Name: Energy From Waste Facility		Proposed Site Location: Honeycomb Drive, Eastern Creek, NSW	Project No: 60442781
Plate No. 9	**Date:** 28/09/2015		
Direction Photo Taken: Location 5 – North-east			
Description: Minchinbury Reservoir – two tanks.			

Site Name: Energy From Waste Facility		Proposed Site Location: Honeycomb Drive, Eastern Creek, NSW	Project No: 60442781
Plate No. 10	**Date:** 28/09/2015		
Direction Photo Taken: Location 5 – North-east			
Description: Minchinbury Reservoir – two tanks.			

Site Name: Energy From Waste Facility		Proposed Site Location: Honeycomb Drive, Eastern Creek, NSW	Project No: 60442781
Plate No. 11	**Date:** 28/09/2015		
Direction Photo Taken: Location 6 – South-west			
Description: Land south-east of the proposed EFW Facility – cattle sheds.			

Site Name: Energy From Waste Facility		Proposed Site Location: Honeycomb Drive, Eastern Creek, NSW	Project No: 60442781
Plate No. 12	**Date:** 28/09/2015		
Direction Photo Taken: Location 6 – West			
Description: Land south-east of the proposed EFW Facility – grazing cattle present.			

Site Name: Energy From Waste Facility		Proposed Site Location: Honeycomb Drive, Eastern Creek, NSW	Project No: 60442781
Plate No. 13	**Date:** 28/09/2015		
Direction Photo Taken: Location 7 – North-east			
Description: Land south-west of the proposed EFW Facility – grazing land.			

Site Name: Energy From Waste Facility		Proposed Site Location: Honeycomb Drive, Eastern Creek, NSW	Project No: 60442781
Plate No. 14	**Date:** 28/09/2015		
Direction Photo Taken: Location 7 – East			
Description: Land south-west of the proposed EFW Facility – grazing land.			

Appendix I

Memorandums

MEMORANDUM

To:	Damon Roddis	**Organisation:**	Pacific Environment
cc:	Skye Playfair Redman	**Organisation:**	Urbis
From:	Rosalind Flavell	**Our Ref:**	S1624-0010-0163RSF
Date:	29 January 2015	**No. of Pages:**	5
Subject:	Advice To Address EPA Comments		

Damon,

Please find enclosed a detailed description of how we would propose to assess the impact of the facility operating during periods of upset, start up and shut down. In addition we have provided some advice on likely emissions of ammonia.

1 Periods of Upset Operating Conditions

1.1 Definition

Article 46(6) of the Industrial Emissions Directive (IED) (Directive 2010/75/EU) states that:

> *"… the waste incineration plant … shall under no circumstances continue to incinerate waste for a period of more than 4 hours uninterrupted where emission limit values are exceeded.*
>
> *The cumulative duration or operation in such conditions over 1 year shall not exceed 60 hours."*

Article 47 continues with:

> *"In the case of a breakdown, the operator shall reduce or close down operations as soon as practicable until normal operations can be restored."*

In addition Annex VI, Part 3, 2 states the emission limit values applicable in the circumstances described in Article 46(6) and Article 47:

> *"The total dust concentration in the emissions into the air of a waste incineration plant shall under no circumstances exceed 150 mg/Nm3 expressed as a half-hourly average. The air emission limit values for TOC and CO set out in points 1.2 and 1.5(b) shall not be exceeded."*

The conditions detailed in Article 46(6) are considered to be "Upset Operating Conditions".

1.2 Reasons for occurrence

Upset operating conditions such as those defined may occur as a result of the following:

- reduced efficiency of the Selective Non-Catalytic Reduction (SNCR) system as a result of blockages or failure of the reagent injection system, leading to elevated oxides of nitrogen emissions;
- reduced efficiency of particulate filtration system due to bag failure and inadequate isolation, leading to elevated particulate emissions and metals in the particulate phase;
- reduced efficiency of lime injection system such as through blockages or failure of fans leading to elevated acid gas emissions;

- complete failure of the lime injection system leading to unabated emissions of hydrogen chloride. (Note: this would require the plant to have complete failure of the bag filter system. As a plant of modern design, the plant would have shut down before reaching these operating conditions); or
- complete failure of the activated carbon injection system and loss of temperature control leading to elevated concentrations of metals and dioxin reformation and their unabated release.

1.3 Likely emission concentrations

There is no monitoring data available from existing facilities during 'upset operations'. In the absence of monitoring data plausible worst-case assumptions are used based on consultation with the UK Environment Agency based on their knowledge of plausible upset emissions. It will be worth consulting with HZI to ensure that they agree with the predicted NOx emissions under upset operating conditions.

No data on flow characteristics (flow rate, temperature etc) during these upset operating conditions is available and there is no reason to expect these parameters to change, so for the purposes of any assessment the design flow characteristics are applied.

Table 1: Emission Concentrations

Pollutant	Permitted Emission (mg/Nm³ unless stated)		Plausible Upset Emission (mg/Nm³ unless stated)	% Above Max Permitted Emission
	Daily Average	½ hourly max		
Oxides of nitrogen	200	400	550(1)	38
Particulate matter (PM_{10}s)	10	30	150(2)	400
Sulphur dioxide	50	200	450	125
Hydrogen chloride	10	60	900(3)	1,400
Hydrogen fluoride	1	4	90(4)	2,150
TOC (VOCs)	10	20	20(2)	0
CO	50	100	100(2)	0
Dioxins		0.1 ng/Nm^3	10 ng/Nm^3 (4)	9,900
Group 1 Metals - Mercury	0.05		0.75	1400
Group 2 Metals - Cadmium etc	0.05		0.75	1400

Reference conditions for all emissions dry, 11% oxygen, 283K.
(1) To be confirmed with HZI.
(2) Taken from the Annex VI Part 3 of the IED.
(3) Based on information presented in an Environment Agency document.
(4) *As requested by the Environment Agency.*

It is assumed that all metals are in the particulate phase, therefore metal emissions during predicted upset operation will increase in proportion to the increase in particulate emissions. Reference monitoring methods for metals require periodic monitoring with emission concentrations expressed as an average over a sampling period of up to 8 hours. For the purpose of any assessment the ratio applied to the daily limit for particulates should be applied to the metals emissions. As such the predicted plausible upset emissions for each group of metals (Groups 1 and 2) should be calculated as 15 times the predicted emission concentration.

1.3.1 Plausible upset emissions of group 3 metals

For the purposes of assessing upset operating conditions a number of assumptions are usually made with regard to the plausible upset emissions of the group 3 metals.

(1) The group 3 metals which have a short or long term EAL are considered (antimony, arsenic, chromium, copper, lead, manganese, nickel, vanadium).

(2) The permitted emission concentrations for each group 3 metal is taken as the maximum monitored from "Environment Agency Guidance to Applicants on Metals Impact Assessment for Stack Emissions (September 2012, Version 3)".

(3) The permitted emission concentration of chromium (VI) is based on the ratio of the effective chromium (VI) emission concentration to total metal emissions, as presented in the "Environment Agency Guidance to Applicants on Metals Impact Assessment for Stack Emissions (September 2012, Version 3)".

(4) It is assumed that metals are in the particulate phase, therefore metal emissions during predicted upset operation will increase in proportion to the increase in particulate emissions. Reference monitoring methods for metals require periodic monitoring with emission concentrations expressed as an average over a sampling period of up to 8 hours. For the purpose of any assessment the ratio applied to the daily limit for particulates is applied to the group 3 metals. As such the predicted plausible upset emission for each group 3 metal is calculated as 15 times the predicted emission concentration.

The plausible upset emissions concentrations are presented in Table 2 for group 3 metals.

Table 2: Predicted Group 3 Metal Emission Concentrations

Pollutant	Permitted Emission based on Max Monitored Emission Concentrations (µg/Nm³)	Predicted Plausible Upset Emission (µg/Nm³)	% Above Max Permitted Emission
Antimony	11.5	172.5	1,400
Arsenic	3	45	1,400
Chromium	52.1	781.5	1,400
Chromium (VI)	0.01355	0.20319	1,400
Copper	16.3	244.5	1,400
Lead	36.8	552	1,400
Manganese	36.5	547.5	1,400
Nickel	136.2	2,043	1,400
Vanadium	1	15	1,400

Reference conditions for all emissions dry, 11% oxygen, 283K

1.4 How assessed

In the UK we assess the impact of the plant operating at the upset operating conditions against the relevant short term EALs. For instance an assessment is not made of the plant continually operating at the upset operating conditions for a continuous period of more than 4 hours.

To determine the impact for comparison with the long term objectives it is assumed that the plant operates at the plausible upset operating conditions for 60 hours and the remaining 8,700 hours at the daily limit. The impact is then assessed against the relevant long term EALs.

2 PLANT START-UP AND SHUTDOWN

Start-up of the facility from cold will be conducted with clean support fuel (low sulphur light fuel oil). During start-up waste will not be introduced onto the grate unless the temperature within the oxidation zone is above the 850ºC as required by Article 50, paragraph 4(a) of the IED. During start-up, the flue gas treatment plant will be operational as will be the combustion control systems and emissions monitoring equipment.

The same is true during plant shutdown where waste will cease to be introduced to the grate. The waste remaining on the grate will be combusted, the temperature not being permitted to drop below 850ºC through the combustion of clean support auxiliary fuel. During this period the flue gas treatment equipment is fully operational, as will be the control systems and monitoring equipment. After complete combustion of the waste, the auxiliary burners will be turned off and the plant will be allowed to cool.

Start-up and shutdown are infrequent events. The facility is designed to operate continuously, and ideally only shutdown for its annual maintenance programme.

In relation to the magnitude of dioxin emissions during plant start-up and shutdown, research has been undertaken by AEA Technology on behalf of the Environment Agency. Whilst elevated emissions of dioxins (within one order of magnitude) were found during shutdown and start-up phases where the waste was not fully established in the combustion chamber, the report concluded that:

"The mass of dioxin emitted during start-up and shutdown for a 4-5 day planned outage was similar to the emission which would have occurred during normal operation in the same period. The emission during the shutdown and restart is equivalent to less than 1 % of the estimated annual emission (if operating normally all year)."

There is therefore no reason why such start-up and shutdown operations will affect the long term impact of the facility.

3 AMMONIA SLIP

We have assumed that the facility will use Selective Non-Catalytic Reduction (SNCR) rather than Selective Catalytic Reduction (SCR). The IED NOx limit is easily achieved using SNCR. SCR can achieve much lower NOx levels but at a significant cost to the project.

The BREF states that ammonia slippage from a SNCR system normally range from 1 to 10 mg/Nm^3, with an average of 4 mg of NH3/Nm^3. For the purpose of the permit and planning application in the UK we would normally assume the upper end of the range (i.e. 10 mg/Nm^3) to allow for some flexibility. However, if local sites are highly sensitive to ammonia or nitrogen deposition a more stringent limit may be requested. It will be worth requesting the guarantee from HZI.

If you have any questions please feel free to contact us.

Yours sincerely
FICHTNER Consulting Engineers Limited

Rosalind Flavell
Environmental Consultant

Stephen Othen
Technical Director

Job	**Compilation of COPC Memos**
Client	**EfW Facility TNG NSW**
Date	**2016-10-20**
To	**To Whom it may concern**
From	**Martin Brunner (Ramboll)**
Copy to	**Ian Malouf (DADI)**
	Phill Andrew (Savills)
	Amanda Lee (AECOM)
	Lesley Randall (AECOM)
	Rachael Snape (Urbis)
	Damon Roddis (Pacific Environment)

Compilation and update of memos on compounds of potential concern (COPC)

Over the course of the project several memos concerning COPC for the HHRA have been established. Following a summary and overview of the memos with subject, date of issue and revision date is shown.

	Job	Date of Issue	Revision date
Memo 1	Compounds of Potential Concern (COPC) for HHRA	13.09.2015	-
Memo 2	COPC for HHRA	20.09.2015	19.10.2016
Memo 3	COPC for HHRA – Cr(VI)	03.11.2015	19.10.2016
Memo 4	VOC for HHRA	20.10.2016	-
Memo 5	Bromine in Waste	14.10.2016	-

These memos shall serve as an input to the air quality assessment (AQA) and the human health risk assessment (HHRA)

In summary the most important changes compared to the memos edited until end of 2015 are:

- Update of appendix B of Memo 2 (maximum TOC/VOC concentrations)
- Update Cr(VI) emissions
- Evaluation of further VOC compounds
- Assessing bromine emissions

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Attachments

Memos 1 - 5

MEMO

Job	**Compounds of Potential Concern (COPC) for HHRA**
Client	**DADI TNG NSW**
Memo no.	**1**
Date	**13/09/2015**
To	**Lesley Randall (AECOM)** **Damon Roddis (Pacific Environment)**
From	**Martin Brunner**
Copy to	**Ian Malouf (DADI)** **Phill Andrew (Savills)** **Mary Likar (Savills)** **Amanda Lee (AECOM)** **Skye Playfair Redmann (Urbis)** **Geert Stryg (Ramboll)** **Tore Hulgaard (Ramboll)** **Ruedi Frey (HZI)**

Date 13/09/2015

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1. Reference and basis

Reference is made to the following memos:

a) "TNG Energy from Waste Facility – Inputs to Human Health Risk Assessment", dated 11. September 2015 by Damon Roddis (Pacific Environment)
b) "Advice to address EPA comments", dated 29. January 2015 by Rosalind Flavell (Fichtner)

In line with the above information we have evaluated the in stack concentrations for normal and upset operation based on real data of 4 plants (7 lines and 7 different measuring campaigns) with identical Air Pollution Control system (APC) as planned to be installed at the TNG facility. We have further considered general literature on emission factors of WtE plants. Where no such data was available the concentration was calculated on the expected particulate emission and appropriate concentration of the compound in fly ash. More detailed description of the data used will follow in a separate memo. All values are given based on the following assessment:

Normal operation: Maximum value out of the following:

- Any measured value from the plants with identical APC system
- Literature emission factor for WtE plants

Upset operation: Definition of "Upset Operating Conditions" see memo b) chapter 1. Maximum value out of the following:

- Particulate emission of 150 mg/Nm3, emission based on specific compound concentration in fly ash
- Gas flow of 10% of total gas flow to stack bypassing APC (e.g. bag failure)
- Value of 10 times normal operation

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When evaluating these data we found that in the memo b) some values were far above operational data. As a result we have re-evaluated the values of memo b) for normal operation. Further some in stack concentrations during upset operation (mainly HF and Dioxins) seem to be highly exaggerated, however (from footnote to table 1) we understand these values were requested by the EPA.

2. Table 1: Missing COPC

Compound All values at 11%O2, dry gas		Operation condition	
		normal	upset
Beryllium	mg/Nm3	7.00E-06	5.25E-04
Silver	mg/Nm3	3.40E-04	2.55E-02
Cobalt	mg/Nm3	4.00E-03	4.00E-02
PCB (WHO TEQ humans/mammal)	mg/Nm3	1.60E-08	1.60E-07
PAH (WHO TEQ humans/mammal)	mg/Nm3	5.00E-04	5.00E-03
Zinc	mg/Nm3	3.70E-02	5.09E+00
Tin	mg/Nm3	3.33E-03	2.50E-01
Molybdenum	mg/Nm3	2.20E-05	2.63E-03
Selenium	mg/Nm3	2.12E-03	2.12E-02
HCB	mg/Nm3	8.21E-06	8.21E-05

3. Table 2: Overestimated COPC

Compound All values at 11%O2, dry gas		Operation condition	
		normal	upset
Mercury	mg/Nm3	0.004	0.013
Cadmium	mg/Nm3	0.009	0.090
Thallium	mg/Nm3	0.001	0.009
Nickel	mg/Nm3	0.021	0.208
PCDD/F TEQ (WHO humans/mammal)	ng/Nm3	0.010	0.500

4. Relevant flue gas volume

For calculation of the ground level concentration the methodology described in memo a) should be used. In case of any doubt the following revised flue gas flow shall be applied.

Parameter	Value		
	Design Point (LPN)		
Number of streams	1	2	4
Stack Height (m)	100		
Stack Diameter each stream inside (m)	2.2		
Temperature (°C)	120		
Flue Gas Flow (Nm3/s)	57.4	114.8	229.6
Gas Exit Flow Rate (Am3/s)	82.6	165.2	330.5
Gas Exit Velocity (m/s)	21.7		
Flue Gas Flow (Nm3/s) @ 11% O2	63.5	127.0	254.0
Flue gas composition (v/v)			
H2O	15.90%		
O2	6.60%		
N2	67.80%		
CO2	9.70%		

5. Conclusion

For the further HHRA the data listed in table 1 (above) shall be used.

In case that as a result of the HHRA for one of the compounds listed in table 2 "overestimated COPC" (above) shows to be critical (when using the concentrations in memo b)) we suggest to use the values given in table 2 (above).

MEMO

Job	**COPC for HHRA**
Client	**EfW Facility TNG NSW**
Memo no.	**2 – Rev 1**
Date	**19/10/2016**
To	**To Whom it May Concern**
From	**Martin Brunner (Ramboll)**
Copy to	**Ian Malouf (DADI)**
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Date 19/10/2016

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1. Background and goal

In the context of the input to the Human Health Risk Assessment (HHRA) there has been some discussion on the list of Compounds of Potential Concern (COPC). The following memo gives an explanation on why the current COPC's have been chosen.

2. Basis of the current list of COPC's

An initial list of COPC's was established as a basis of the report "energy from waste facility - air quality and greenhouse gas assessment" produced by Pacific Environment in March 2015.

The COPC's chosen where based on the primary emissions from any Energy-from-Waste (EfW) facility, as defined by emission limits for waste incineration set by the European Union (EU) Industrial Emissions Directive (IED; Directive 2010/75/EU).

The emissions defined by the EID and chosen as COPC's are listed in Appendix A.1. In addition to the emissions identified in the IED, the substances listed in A.2 were included. As a result of the submissions from the Public Exhibition the substances listed in A.3 were added.

The current list of COPC's is substantially broader than substances usually taken into account in an Environmental Impact Assessment for an EfW plant in Europe. Nevertheless it is reasonable to question whether this list is complete. The following shall provide the rational for our opinion that the current list is sufficient to perform the HHRA.

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3. The legislation principle of primary emissions and "lead substances"

While emissions in general cover a broad range of toxic, carcinogenic, mutagenic, etc. substances every industry has a specific set of primary emissions which - for reasons of human health and environmental protection - have to be reduced. It is therefore obvious that legislation focuses on the relevant emissions for any industry.

Besides the primary emissions so-called "lead substances" can be defined. Lead substances are representative for an entire group of comparable compounds and either relevant in their toxicity or present in high concentration. These substances are often difficult to capture by an Air Pollution Control (APC) system. Measuring low concentrations of these lead substances therefore is the proof that the separation mechanisms of the APC control are working. Typical lead substances of an EFW plant are: HCl, SO_2, NOx, TOC, CO, dioxins and furans, cadmium, mercury and further heavy metals as nickel, lead or arsenic.

The chosen approach to primarily focus on substances defined in the IED and further lead substances therefore is rational and good industry practice.

4. The implications of the "lead substance approach"

When considering the emissions of an Energy-from-Waste plant the following categories of compounds can be defined:

- particulate matter
- acid gases (HCl, HF, SO_2)
- NO_x
- heavy metals with low boiling point (mercury, cadmium) and volatile compounds, to a high degree present in vaporised form
- heavy metals with high boiling point (nickel, vanadium, etc.), predominantly present in particle form
- Organic substances (expressed as total organic carbon TOC)
- dioxins and furans

Every one of these substances (and therefore the appropriate category) has a specific reduction mechanism in combustion and the APC process. While the lime injection reduces the acid gases, the bag filter eliminates the particulates and any substance in particulate form (mainly heavy metals with high boiling point). Finally the activated carbon injection reduces organic substances and heavy metals with low boiling point by adsorption.

As mentioned earlier a low emission of any lead substance is the proof of an efficient reduction of the category they represent in general.

The COPC's recently added (appendix A.3) all can be classified in the above categories, e.g.:

- Copper, Molybdenum: metals with high boiling point
- PCBs and PAHs: organic substances
- Selenium, Beryllium: metals with low boiling point
- etc.

As a result any further substance can be classified in the above categories and therefore the reduction efficiency (respectively a low emission) can be assured.

5. TOC as guarantee for low organic emissions

While there is a limited number of toxic metals (including their compounds) there is an indefinite number of organic substances. The most important ones have been listed in the relevant regulations and are part of the current list of COPC's. However it is impossible to supply a complete list of individual organic substance and their emission data.

For this reason an additional emission parameter "total organic carbon" (TOC) has been introduced to legislation. The TOC measurement ensures that no relevant amount of organic substances is emitted. The TOC measurement is usually based on "Flame Ionisation Detection" (FID or FIA) and part of the continuous emission monitoring of any EfW plant. The TOC is a summary parameter for organic substances in general, the result is expressed in "carbon equivalent". Average TOC results of energy from waste plants are in the range of 1 - 2 mg/Nm^3 (Nm^3 is normal cubic meters, i.e. at standard temperature (0 °C) and pressure (101.3 kPa)).

In Europe extensive research has been done on the composition of the TOC of Energy-from-Waste plants. In total less around 50% of the TOC can be allocated to substances with higher molecular weight (see attachment B). The other 50% (or more) are "light" substances like methane, propane, etc. This is further underlined by theoretical considerations [2] which predict that a part of the TOC will be methane, ethane and propane.

To illustrate the low expected emission level, it can be mentioned that the background ambient air concentration of methane is around 1,800 ppb (volume basis) equivalent to around 1 mg/Nm^3 TOC.

6. Operational Data

The above considerations are further supported by operational data (see appendix C). The appendix C.1 shows publicly available emission data from plants exclusively fired by C&I and C&D waste with semi dry APC system (as used for the TNG project) as well as plants with mixed waste (MSW plus C&I, C&D). In summary all values are comparable and far below the emission limits. Further details on operational data are found in appendix C.2 and C.3.

7. Summary and conclusions

The current list of COPC has been established on the following considerations:

- Compounds regulated by recent legislation (in this case the IED; Directive 2010/75/EU) and therefore relevant for the EfW Industry
- Additional COPC's which are not of primary relevance for a EfW plant but might be of public concern
- Lead substances which demonstrate the ability of the APC system to reduce pollutant categories and therefore not only assures a low emission of the substance itself, but also of the entire category
- TOC as an overall guaranty for low organic emissions which – as research has shown –contain very low concentrations of potentially harmful substances

As a result of the above and "real data" from comparable plants we are of the opinion that the current list of COPC is exhaustive and a sufficient basis to perform a robust and trustworthy HHRA.

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Appendix A

1. The emissions defined by the EID and chosen as COPC's

- Particulate matter (PM),
  assumed to be emitted as PM10 and PM2.5.
- Hydrogen Chloride (HCl).
- Hydrogen Fluoride (HF).
- Carbon Monoxide (CO).
- Sulfur Dioxide (SO_2)
- Oxides of nitrogen (NOx)
  (expressed as Nitrogen Dioxide (NO_2)).
- Heavy metals (including Mercury (Hg), Cadmium (Cd), Arsenic (As) and Chromium (Cr).
- Gaseous and vaporous organic substances (expressed as total organic carbon (TOC)).
- Dioxins and furans.

2. In addition the following substances were included:

- Hydrogen sulfide (H_2S).
- Chlorine (Cl_2).
- Ammonia (NH_3).
- Polycyclic aromatic hydrocarbons (PAHs).

3. As a result of the submission the list was amended by the following substances:

- Beryllium (Be)
- Silver (Ag)
- Asbestos
- Copper (Cu)
- Cobalt (Co)
- Manganese (Mn)
- Vanadium (V)
- Polychlorinated Biphenyls (PCBs)
- PAHs (as benzo(a)pyrene equivalent).
- Zinc (Zn)
- Tin (Sn)
- Molybdenum (Mo)
- Selenium (Se)
- Hexachlorobenzene (HCB)

Appendix B

TOC composition in emissions from an EfW plant [1].

Measurement based on adsorption and condensation. Detection limit 5 µg/Nm³.

Characterisation of Emissions from a Waste Incineration Plant

Total organic carbon (TOC)	1.2 mg/m³
Identified single components	0.53 mg/m³
Not identified aliphatic hydrocarbons	56% of TOC

Main Components (µg/m³)	
Benzoic Acid	100
Hexadecanoic Acid	37
Ethyl Benzoic Acid	35
Toluene	30
Phthalates	20
Dichloromethane	20
Acetone (propanone)	18
Tetradecanoic Acid	15
Benzene	15
Acetonitrile	14
Xylene	10
Trichlorophenol	9
Methylhexane	6
Trichloroethylene	5
Heptane	5

Note: There is little literature on the above subject. Most dates from mid 1990ies, when new emission regulations were issued in Europe. The concentrations of the organic substances were consistently low and therefore no further research or measurements were performed.

For any other TOC compound a maximum in stack concentration of 5 µg/Nm³ can be assumed. In case of a compound listed as group (e.g. Phthalates) for a conservative approach a maximum concentration for each speciation according to the above value can be chosen.

Literature references

[1] Ergebnisbericht über Forschung und Entwicklung 1994, Institut für Technische Chemie, Forschungszentrum Karlsruhe, Wissenschaftliche Berichte, FZKA 5531, S. 9

[2] Stand der Gesamtkohlenstoff-Messung im Abgas von Abfallverbrennungsanlagen, Staub – Reinhaltung der Luft, 49 (1989), S. 221-225

[3] Emissions from decentralized CHP plants 2007 - ENERGINET.DK Environmental project No. 07/1882 – National Environmental Research Institute (NERI) Technical Report no. 786, 2010 (available from http://www2.dmu.dk/Pub/FR786.pdf).

Emission Data from plants with C+I / C+D and/or semi dry APC

Publicly available Data

	Plant	EEW Hürth-Knapsack		EEW Heringen		EEW Premnitz	EEW Grossräschen		Riverside			TIRME Mallorca				IED
	Country	DE		DE		DE	DE		UK			E				
	Waste	C&I, C&D		C&I, C&D, RDF from MSW		C&I, C&D	C&I, C&D		Municipal Solid Waste, C&I			Municipal solid waste, C&I, Hospital waste, sewage sludge, tyres				IED limit value
	unit	Line 1	Line 2	Line 1	Line 2		Line 1	Line 2	Line 1	Line 2	Line 3	Line 1	Line 2	Line 3	Line 4	
Total Dust	mg/m³	0.01	0.2	0.4	0	0.2	0.2	0.2	1	1	1	0.3	0	0.4	0.4	10
Total Organic Carbon (TOC)	mg/m³	0.2	0.1	1	0	0.5	0.8	0.5	5	5	3	0.05	0.03	0	0	10
Inorganic chlorine compounds (HCl)	mg/m³	9	9	6	7	6	6.6	3.5	6	3	6	0.5	0.1	0	0.1	10
Inorganic fluorine compounds (HF)	mg/m³	0	0	-	-	0	-	-								1
Sulphur dioxide (SO_2)	mg/m³	2	1	27	11	7.5	18	18	0	0	5	4	2	15	11	50
Oxides of nitrogen (expressed as NO_2)	mg/m³	188	188	183	185	180	174	176	175	175	175	55	38	60	68	200
Mercury (Hg)	µg/m³	4	23	1	0	3	0.3	0.1								50
Carbon monoxide (CO)	mg/m³	23	23	6	7	12.5	8	8				2.5	5	2.5	2.5	50
Ammonia (NH_3)	mg/m³	2	2				0.4	0.9	0	1	2					
Dioxines and furanes	ng/m3	0.01	0.02	-	-	0.015	-	-	-	-	-	-	-	-	-	0.1

all values at standard conditions, 11% O2 dry
all values (except Hg and dioxines & furanes) as daily average, Hg and dioxines & furanes as spot sampling
all plants except Mallorca with SNCR DeNox, Mallorca with SCR

Sources

EEW Hürth-Knapsack	http://www.chemiepark-knapsack.de/fileadmin/user_upload/EEW_Emissionswerte_2013.pdf
EEW Heringen	http://www.eew-energyfromwaste.com/de/emissionswerte-heringen.html
EEW Premnitz	http://www.eew-energyfromwaste.com/de/standorte/hannover.html#c347b
EEW Grossräschen	http://www.eew-energyfromwaste.com/de/standorte/heringen.html#c399b
Riverside	http://www.coryenvironmental.co.uk/energy-from-waste/riverside-resource-recovery-facility/
TIRME Mallorca	http://www.tirme.com/uk/incineration_02f3s25.html

Extended values from plants with semi-dry APC

Detailed emission measurements from HZI plants with semi-dry APC

Metal	Symbol	Unit	Riverside Line 1	Riverside Line 2	Riverside Line 3	Newhaven Line 1	Newhaven Line 2	Cleveland Line 3	Evreux	Ingolstadt (see note)	Average	EU IED
Mercury	**Hg**	**mg/m^3**	**0.0015**	**0.0004**	**0.0002**	**0.004**	**0.003**	**0.0017**			**0.002**	**< 0.05**
Cadmium	Cd	mg/m^3	0.00270	0.00085	0.00111	0.009	0.001	0.004	0.004		0.00324	
Thallium	Tl	mg/m^3	0.00005	0.00003	0.00002	0.000	0.000	0.0009			0.00017	
Sum Cd+Tl	**Cd + Tl**	**mg/m^3**	**0.00275**	**0.00087**	**0.00113**	**0.009**	**0.001**	**0.0049**			**0.003**	**< 0.05**
Arsenic	**As**	mg/m^3	0.0006	0.0003	0.0004	0.003	0.000	0.0013	0.004		0.0009	
Antimony	**Sb**	mg/m^3	0.0148	0.0047	0.0047	0.007	0.001	0.0026			0.0058	
Chromium	**Cr**	mg/m^3	0.0179	0.0115	0.0399	0.014	0.002	0.0467	0.004		0.0220	
Cobalt	**Co**	mg/m^3	0.0003	0.0002	0.0001	0.003	0.000	0.0006	0.004		0.0007	
Copper	**Cu**	mg/m^3	0.0085	0.0085	0.0263	0.051	0.001	0.0049			0.0167	
Lead	**Pb**	mg/m^3	0.0452	0.0137	0.0170	0.172	0.002	0.0094			0.0432	
Manganese	**Mn**	mg/m^3	0.0084	0.0041	0.0037	0.095	0.005	0.0051			0.0202	
Nickel	**Ni**	mg/m^3	0.0118	0.0058	0.0041	0.006	0.002	0.0208			0.0084	
Vanadium	**V**	mg/m^3	0.0003	0.0002	0.0004	0.003	0.000	0.0004			0.0007	
Sum heavy metal	**As-V**	**mg/m^3**	**0.11**	**0.049**	**0.097**	**0.35**	**0.015**	**0.092**			**0.12**	**< 0.5**
Dioxins and Furanes	**PCDD/F TEQ** (WHO humans/mammal)	**ng/m^3**	**0.004**	**0.004**	**0.001**	**0.0015**	**0.0004**				**0.0022**	
Dioxin-like PCB's	**PCB** (WHO TEQ humans/mammal)	**ng/m^3**	**0.016**	**0.011**	**0.014**	**0.00001**	**0.00001**				**0.008**	
Hexachlorbenzol	**HCB**	µg/m3								< 0.0012	0.001	
Benzo(a)pyren	**B(a)P**	µg/m3							0.002	< 0.0013	0.002	
PAH's	**PAH** (WHO TEQ humans/mammal)	**µg/m^3**				**0.4**	**0.5**				**0.45**	

all concentrations in gas ref. to STP and 11% O_2 dry

note: Ingolstad has APC with wet scrubber and bag house filter

Appendix C.3

Extract of the revised 2006 (2007 for natural gas fuelled plants) emission factors for Danish decentralised CHP plants < 25MW$_e$. [3]

Note: For calculation to/from GJ to/from mg/m3 the report uses the flue gas amount of 523 Nm3 (dry, at 11% O2) per GJ for MSW.

	Unit	Natural gas fuelled engines	Biogas fuelled engines	Natural gas fuelled gas turbines	Gas oil fuelled engines	Gas oil fuelled gas turbines	Fuel oil, steam turbines	Biomass producer gas, engines	MSW incinera-tion	Straw	Wood
SO_2	g per GJ	-	-	-	-	-	-	-	< 8.3	49	< 1.9
NO_x	g per GJ	135[8)]	202	48	942	83	136	173	102	125	81
UHC (C)	g per GJ	435[8)]	333	2.5[9)]	(46)[10)]	-	(1.6)[10)]	12	< 0.68	< 0.94[5)]	< 6.1[6)]
NMVOC	g per GJ	92[4) 8)]	10[4)]	1.6[4)]	(37)[10)]	-	(0.8)[10)]	2.3[4)]	< 0.56[4)]	< 0.78[4)]	< 5.1[4)]
CH_4	g per GJ	481[4) 8)]	434[4)]	1.7[4)]	24	-	< 1.3	13[4)]	< 0.34[4)]	< 0.47[4)]	< 3.1[4)]
CO	g per GJ	58[8)]	310	4.8	130	2.6	2.8	586	< 3.9	67	90
N_2O	g per GJ	0.58	1.6	1.0	2.1	-	5.0	2.7	1.2	1.1	0.83
NH_3	g per GJ	-	-	-	-	-	-	-	< 0.29	-	-
TSP	g per GJ	-	-	-	-	-	9.5	-	< 0.29	< 2.3	10
As	mg per GJ	< 0.045	< 0.042	-	< 0.055	-	-	0.116	< 0.59	-	-
Cd	mg per GJ	< 0.003	0.002	-	< 0.011	-	-	< 0.009	< 0.44	< 0.32[3)]	0.27
Co	mg per GJ	< 0.20	< 0.21	-	< 0.28	-	-	< 0.22	< 0.56	-	-
Cr	mg per GJ	0.048	0.18	-	0.20	-	-	0.029	< 1.6	-	-
Cu	mg per GJ	0.015	0.31	-	0.30	-	-	< 0.045	< 1.3	-	-
Hg	mg per GJ	< 0.098[3)]	< 0.12	-	< 0.11	-	-	0.54	< 1.8	< 0.31[3)]	< 0.40[3)]
Mn	mg per GJ	< 0.046	0.19	-	0.009	-	-	0.008	< 2.1	-	-
Ni	mg per GJ	0.045	0.23	-	0.013	-	-	0.014	< 2.1	-	-
Pb	mg per GJ	0.043	0.005	-	0.15	-	-	0.022	< 5.5	-	-
Sb	mg per GJ	< 0.049[3)]	0.12	-	< 0.055	-	-	< 0.045	< 1.1	-	-
Se	mg per GJ	(0.01)[7)]	< 0.21	-	< 0.22	-	-	< 0.18	< 1.1	-	-
Tl	mg per GJ	< 0.20[3)]	< 0.21	-	< 0.22	-	-	< 0.18	< 0.45[3)]	-	-
V	mg per GJ	< 0.048	< 0.042	-	0.007	-	-	< 0.045	< 0.33	-	-
Zn	mg per GJ	2.9	4.0	-	58	-	-	0.058	2.3	0.41	2.3
PCDD/-F	ng per GJ	< 0.57	< 0.96[1)]	-	< 0.99	-	-	< 1.7[1)]	< 5.0	< 19	< 14
PBDD/-F	ng per GJ	-	< 5.0[1)]	-	-	-	-	< 7.2[1)]	< 6.3[1)]	-	-
PAH (BaP)	µg per GJ	< 13	< 4.2	-	< 33	-	-	< 4.9	< 2	< 125	< 13
ΣPAH	µg per GJ	< 1025	< 606	-	< 8988	-	-	< 181	< 37	< 5946	< 664
Naphthalene	µg per GJ	2452	4577	-	17642	-	-	8492	< 129[3)]	12088	2314
HCB	µg per GJ	-	0.19	-	< 0.22	-	-	0.80	< 4.3	< 0.11	-
PCB	ng per GJ	-	< 0.19[1)]	-	< 0.13[1)]	-	-	< 0.24[1)]	< 0.32	-	-
Formalde-hyde	g per GJ	14.1	8.7	-	1.3	-	< 0.002	1.5	-	-	-
HCl	g per GJ	-	-	-	-	-	-	-	< 1.14	56	-
HF	g per GJ	-	-	-	-	-	-	-	< 0.14	-	-

[1)] Emission measurements were below detection limits for all congeners.
[2)] Based on 1 emission measurement. The emission measurement was below the detection limit.
[3)] All emission measurements were below the detection limit.
[4)] Based on disaggregation of the total unburned hydrocarbon (UHC) emission factor.
[5)] Only 1 out of 7 emission measurement was above the detection limit.
[6)] Two out of three emission measurements were below the detection limit.
[7)] Two emission measurements were performed, both below the detection limit. These results have been ignored and instead the lower emission factor 0.01 mg per GJ based on EEA (2009) have been applied.
[8)] The increased emission level during start up and stop of the gas engines have been included in this emission factor.
[9)] Based on emission measurements performed in 2003-2006.
[10)] The emission factor based on emission measurements performed within this project has been ignored. Instead the NMVOC emission factor refers to EEA (2009). The UHC emission factor has been estimated based on the emission factors for NMVOC and CH_4.

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MEMO

Job	**COPC for HHRA – Cr(VI)**
Client	**EfW Facility TNG NSW**
Memo no.	**3 – Rev 1**
Date	**19/10/2016**
To	**To Whom it May Concern**
From	**Martin Brunner (Ramboll)**
Copy to	**Ian Malouf (DADI)**
	Lesley Randall (AECOM)
	Amanda Lee (AECOM)
	Damon Roddis (Pacific Environment)
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Date 19/10/2016

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1. Background and goal

Chromium (Cr) is widely used metal and appears in different valences, mostly as trivalent Cr(III) but also as hexavalent Chromium Cr(VI). Cr(VI) is toxic and carcinogenic and therefore of major concern.

In case of emissions from Energy from Waste (EfW) facilities Chromium is considered as part of the sum of heavy metals and measured as total Chromium. In the context of the Human Health Risk Assessment (HHRA) for the TNG facility Ramboll has been requested to give a forecast on the emission of Cr(VI).

2. Basis of the Cr(VI) forecast

As mentioned earlier, Chromium emissions are limited as total Chromium and therefore very little data on Cr(VI) emissions are available. Existing data date back to the 1980 and these emissions are not comparable to today's Air Pollution Control (APC) systems.

The forecast for updated Cr(VI) emissions therefore is based on total Cr emission, the APC removal behaviour and recent data of Cr(VI) values in APC residues.

3. Existing data on Cr(VI) in APC residues

There is a variety of data on total Chromium in EfW fly ash. The values for total Chromium typically range from 500 to 1000 mg/kg of fly ash.

Few measurements exist on Cr(VI) in fly ash. While many are below the detection limit (< 0.05 mg/kg) some values in the range of 1 - 3 mg/kg are found.

Chromium in the flue gas is predominantly present in form of particulates; the vapour pressure is very low and not relevant for the emission level. As a result it can be expected that the in stack concentrations will have a similar distribution as the fly ash.

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4. Data considered for total Cr emissions

The following plants with a flue gas cleaning system identical to TNG were considered

Plant	No of Measurements	Max value mg/Nm^3	Mean value mg/Nm^3
Riverside UK	3	0.040	0.023
Newhaven UK	2	0.014	0.008
Cleveland UK	1	0.047	0.047
Mallorca ES	2	0.002	0.002
Phitiviers FR	1	0.002	0.002
Perpignan FR	1	0.024	0.024
Le Mans FR	3	0.009	0.005
Evreux FR	2	0.007	0.006
Ludwigslust DE	6	0.007	0.004
Zorbau DE	6	0.014	0.011
Total / max / mean	**27**	**0.047**	**0.010**

All values refer to 11% O_2, dry

5. Evaluation of Cr(IV) in APC residues

The Cr(VI) content in APC residues is in the order of 1-3 mg/kg in relation to a total Chromium content of 500-1000 mg/kg. Expressed as fraction this is 0.1 to 0.3% of the total. To allow for uncertainties due to variations a content of 0.5% as average and 1% as worst case is assumed

6. Conclusion

Based on results of 27 emission measurements of existing plants with identical APC equipment a maximum of total Chromium of 0.047 mg/Nm^3 and a mean of 0.010 mg/Nm^3 (see table above) is reported. This is well in line with a report of the UK EPA (see attachment) which lists a maximum of 0.052 mg/Nm^3 and a mean of 0.011 mg/Nm^3 as a result of measurements in 10 plants in the UK.

As a worst case scenario during normal operation therefore a Cr(VI) emission of 0.0005 mg/Nm^3 (1% of 0.052 mg/Nm^3) and an average of 0.00005 mg/Nm^3 (0.5% of 0.010 mg/Nm^3) can be assumed.

The above results are well in line with a recent publication by the Environment Agency of the UK (see attached) which predicts maximum Cr(VI) levels of 0.00013 mg/Nm^3 and a mean value of 0.000035 mg/Nm^3.

Releases from municipal waste incinerators

September 2012 version 3

Guidance to applicants on impact assessment for group 3 metals stack

Scope

This paper provides guidance to Applicants on how we will consider air quality impact assessments from Group 3 metals stack emissions from Municipal Waste Incinerators when we determine permit applications in respect of Schedule 1 activities under the Environmental Permitting Regulations 2010 (EPR). Metals assessments from other plant subject to the Waste Incineration Directive may use the method in this guidance if they can justify the data as representative.

Background

In April 2010, the Environment Agency published revised Environmental Assessment Levels (EALs) for arsenic, nickel and chromium(VI) in our H1 Guidance (H1 Environmental Risks Assessment). The revised EALs are substantially lower than the former EALs:

- Arsenic – 3 ng/m^3
- Nickel – 20 ng/m^3
- Chromium (VI) – 0.2 ng/m^3

The EALs refer to that portion of the metal emissions contained only within the PM10 fraction of particulates in ambient air.

Arsenic, nickel and (total) chromium are three of the nine Group 3 metals whose emissions are subject to a mandatory minimum emission limit by the Waste Incineration Directive (WID). WID sets an aggregate limit of 0.5 mg/m^3 for nine “Group 3” metals (Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V and their compounds (total)). Previous air dispersion modelling studies supporting permit applications typically made very conservative assumptions that emissions of each individual metal occurs at the WID aggregate limits. Such an analysis may conclude that there is a risk that the current EALs might be exceeded. Where such a theoretical risk exists, a more detailed assessment is required to determine whether the impact of the release is acceptable.

Detailed Modelling Assessment Methodology

Step 1 - Screening scenario

Predictions made assuming each metal is emitted at 100% of the WID ELV (i.e. 0.5 mg/m^3). Where the impact of any metal exceeds the assessment criteria (below), relative to their respective EALs, we consider that there is a potential for significant pollution. Under these circumstances, proceed to Step 2.

Assessment Criteria:

- Long-term Process Contribution (PC) <1% or Short-term Process Contribution (PC) <10%; or
- Long-term and Short-term Predicted Environmental Concentration (PEC) <100% [taking likely modelling uncertainties into account].

[For screening only, assume Cr(VI) comprises 20% of the total background chromium). Selection of all other background data should be justified.]

Step 2

Worst case scenario based on currently operating plant – make predictions based on assuming each metal comprises 11% of the total group (i.e. 0.5 mg/m^3 apportioned across the nine metals). Our emissions monitoring data indicates that it is reasonable to assume that each Group 3 metal comprises no more than 11% of the Group ELV.

Where the impact of any metal is above the assessment criteria given in Step 1 above proceed to Step 3.

Step 3 - Case specific scenario

We will require Applicants to justify their use of percentages lower than 11% of the Group 3 WID ELV or Cr(VI) background levels of <20% for their Step 3 assessment. Assessments should be made using the criteria below Step 1. We will review any use of Applicants' data to identify whether they can achieve the levels proposed and whether that data can be justified as representative.

Appendix A of this guidance contains summary of measured metals stack releases from a range of operating Municipal Waste Incinerators between 2007 and 2009, presented as a range and a mean of actual release and percentage of the WID ELV. The data in Appendix A should be considered as indicative only. Note that although the maximum Nickel concentration is greater than 11%, this represents one single measurement outlier; the mean value is around 4% of the Group ELV.

Appendix B contains data showing the effective Cr(VI) concentration from a range of Municipal Waste Incinerators. Measurement of Cr(VI) at the levels anticipated at the stack emission points is expected to be difficult, with the likely levels being below the level of detection by the most advanced methods. The concentrations presented in the table are based on stack measurements for total chromium and measurements of the proportion of Cr(VI) to total chromium in APC residues collected at the same plant. We have considered the concentration of total chromium and Cr(VI) in the Air Pollution Control (APC) residues collected upstream of the emission point for existing Municipal Waste Incinerators (MWI) and have assumed these to be similar to the particulate matter released from the emission point.

Appendix A – Monitoring Data from Municipal Waste Incinerators

	Measured Concentrations mg/m^3			Percentage of WID Group 3		
	Mean	**Max**	**Min**	**Mean**	**Max**	**Min**
Antimony	0.0033	0.0115	0.0001	0.7%	2.3%	0.02%
Arsenic	0.0007	0.0030	0.0003	0.14%	0.6%	0.06%
Chromium	0.0109	0.0521	0.0004	2.2%	10.4%	0.08%
Cobalt	0.0004	0.0039	0.0002	0.07%	0.8%	0.04%
Copper	0.0077	0.0163	0.0025	1.5%	3.3%	0.50%
Lead	0.0158	0.0368	0.0003	3.2%	7.4%	0.06%
Manganese	0.0172	0.0365	0.0015	3.4%	7.3%	0.30%
Nickel	0.0220	0.1362	0.0000	4.4%	27.2%	0.00%
Tin		0.0024	0.0024		0.48%	0.48%
Vanadium	0.0003	0.0010	0.0002	0.06%	0.20%	0.04%

Values correspond to the distribution from 19 measurements at 13 plant between 2007 and 2009. The data differs slightly from previous guidance notes.
* Minimum values correspond in some cases to the detection limit

Appendix B – Chromium VI analysis from APC Residues

	Effective Cr(VI) emission concentration [a] (mg/Nm^3)
Mean	$3.5*10^{-5}$
Minimum	$2.3*10^{-6}$
Maximum	$1.3*10^{-4}$

These data are taken from ten MWI plant in England and Wales. We are in the process of gathering more data in order to fully understand the implications of metals emissions.
[a] Note the maximum total chromium concentration does not coincide with the plant where the maximum chromium VI fraction in the APC residue was observed.

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MEMO

Job	**COPC for HHRA - VOC**
Client	**EfW Facility TNG NSW**
Memo no.	**4**
Date	**2016-10-20**
To	**To Whom it may concern**
From	**Ahmet Erol (Ramboll)**
Copy to	**Ian Malouf (DADI)**
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	Amanda Lee (AECOM)
	Lesley Randall (AECOM)
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VOC for HHRA/ Air quality Assessment

Background

In Ramboll Memo 2 COPC for HHRA, dated 20.09.2015 the COPC for AQA and HHRA have been listed. The selected COPC where based on the primary emissions from any Energy-from-Waste (EfW) facility, as defined by emission limits for waste incineration set by the European Union (EU) Industrial Emissions Directive (IED; Directive 2010/75/EU). It has been questioned if this list is covering all necessary compounds.

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File; TNGWTE-141-022-VOC for HHRA.docx
Ver. 2

Further input to the selection of COPC

The study "Site specific risk assessment of an energy-from-waste thermal treatment facility in Durham Region, Ontario, Canada. Part A: Human health risk assessment"[1] (following referred to as "the study") has considered a wide range of COPC. This study is one of the most comprehensive investigations on the relevance of emissions from EfW facilities currently available.

The study categorizes the COPC's in five groups:

1. Metals
2. Chlorinated Polycyclic Aromatics
3. Chlorinated Monocyclic Aromatics
4. Poly Aromatic Hydrocarbons (PAH)
5. Volatile Organic Chemicals (VOC)

Methodology

COPC listed in the study and not selected so far for the TNG project were extracted. Then they were evaluated if the study found that they contribute to more than 1% of the background concentration.

[1] Site specific risk assessment of an energy-from-waste thermal treatment facility in Durham Region, Ontario, Canada. Part A: Human health risk assessment, dated 4th of July 2013 (attached)

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Evaluation

Below the COPC are listed according to the categories of the study and evaluated if they are already part of the AQA/HHRA. If they have not been selected so far then to what extend they contribute to an increase of the ground level concentration compared to the baseline.

1. **Metals**

   The metals listed in the study are already included in the AQA. Therefore no further assessment is needed.

2. **Chlorinated Polycyclic Aromatics**

   Chlorinated Polycyclic Aromatics listed in the study are already included in the AQA. Therefore no further assessment is needed.

3. **Chlorinated Monocyclic Aromatics (CMA)**

   The table below shows all COPC categorized under CMA in the study and the evaluation if they have already been included in the AQA.

	Listed in the study	TNG Air quality Assessment Memo 2, Appendix A
1,2-Dichlorobenzene	x	not included
1,2,4,5-Tetrachlorobenzene	x	not included
1,2,4 – Trichlorobenzene	x	not included
Pentachlorophenol	x	not included
Hexachlorobenzene	x	x
Pentachlorobenzene	x	not included
2,3,4,6-Tetrachlorophenol	x	not included
2,4,6-Trichlorophenol	x	not included
2,4-Dichlorophenol	x	not included

Only hexachlorobenzene has been considered for the AQA so far. The assessment concerning impact of the EfW facility on the ground level concentration found in the study is shown below.

The concentration ration values are listed below (see study table 5)

Chlorinated Monocyclic Aromatics	Baseline	Project Alone	Effect level
1-hour	0.0006	7.5E-05	12,5%
24-hour	0.0001	5.2E-07	0,5%
Annual	0.002	3.0E-06	0,15%

Only the 1-hour value is higher than 1%. All other values are below 1%.

Conclusion

Hexachlorobenzene is the most relevant CMA compound present in the emissions from EfW plants. The concentrations measured during normal operation are in the range of below 1 up to max. 10 ng/Nm^3.

The other CMA are mostly expressed as the sum of compounds with identical number of chlorine atoms (dichlorobenze, trichlorobenzene, dichlorphenol, etc.). The measured values for such a group are in the range of below 1 up to max. 10 ng/Nm^3. For any assessment a concentration of max. 10 ng/Nm^3 per group during normal operation and 100 ng/Nm^3 (tenfold value) during upset operation can be assumed.

4. Poly Aromatic Hydrocarbons

Poly Aromatic Hydrocarbons (PAH) listed in the study have been included in the AQA. No further assessment is needed.

5. Volatile Organic Chemicals (VOC)

The table below shows all COPC categorized under Volatile Organic Chemicals (VOC) in the study and the evaluation if they have already been included in the AQA.

	Listed in the study	TNG Air quality Assessment Memo 2, Appendix A
Acetaldehyde	x	not included
Benzene	x	x (Appendix B)
Biphenyl	x	not included
Bromodichloromethane	x	not included
Bromomethane	x	not included
Dichlorodifluoromethane	x	not included
Dichloroethene	x	not included
1,1 -, Ethylbenzene	x	not included
Ethylene Dibromide (1,2-dibromoethane)	x	not included
Formaldehyde	x	not included
Tetrachloroethylene	x	not included
Toluene	x	x (Appendix B)
Trichloroethylene	x	x (Appendix B)
1,1,2, Vinyl chloride (chloroethene)	x	not included
Xylenes	x	x (Appendix B)
m-, p- and o-Bromoform (tribromomethane)	x	not included
Carbon tetrachloride	x	not included
Chloroform	x	not included
Dichloromethane	x	x (Appendix B)
O-terphenyl	x	not included
Trichloroethane	x	not included
1,1,1 -, Trichlorofluoromethane	x	not included

The concentration ration values are listed below (see assessment EfW facility table 5)

Volatile Organic Chemicals (VOC)	Baseline	Project Alone	Effect level
1-hour	0.55	0.005	0,9%
24-hour	0.41	0.002	0,5%
Annual	0.18	0.0002	0,1%

All effect levels are below 1%. No further assessment for VOC is needed.

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Summary and conclusion

Except for chlorinated monocyclic aromatics all compounds evaluated in the study "Site specific risk assessment of an energy-from-waste thermal treatment facility in Durham Region, Ontario, Canada. Part A: Human health risk assessment" are either already included in the AQA or their effect level found in the study is below 1% under all conditions.

For the chlorinated monocyclic aromatics hexachlorobenzene (HCB) - the most relevant compound - is already included in the AQA. Measured values of HCB in EfW plants range from 1-10 ng/Nm^3. For any other group of compound (as sum of compounds with identical number of chlorine atoms) a concentration of 10 ng/Nm^3 during normal operation and 100 ng/Nm^3 (tenfold value) during upset operation can be assumed.

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Site specific risk assessment of an energy-from-waste thermal treatment facility in Durham Region, Ontario, Canada. Part A: Human health risk assessment

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HIGHLIGHTS

- Human health risk assessment was performed for an Energy-From-Waste facility
- Results suggest minimal risks to humans expected at approved operating capacity
- Future expansion may cause slightly elevated risks under upset conditions
- Further risk assessment required if/when future expansion is pursued

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ABSTRACT

The regions of Durham and York in Ontario, Canada have partnered to construct an energy-from-waste thermal treatment facility as part of a long term strategy for the management of their municipal solid waste. This paper presents the results of a comprehensive human health risk assessment for this facility. This assessment was based on extensive sampling of baseline environmental conditions (e.g., collection and analysis of air, soil, water, and biota samples) as well as detailed site specific modeling to predict facility-related emissions of 87 identified contaminants of potential concern. Emissions were estimated for both the approved initial operating design capacity of the facility (140,000 tonnes per year) and for the maximum design capacity (400,000 tonnes per year). For the 140,000 tonnes per year scenario, this assessment indicated that facility-related emissions are unlikely to cause adverse health risks to local residents, farmers, or other receptors (e.g., recreational users). For the 400,000 tonnes per year scenarios, slightly elevated risks were noted with respect to inhalation (hydrogen chloride) and infant consumption of breast milk (dioxins and furans), but only during predicted 'upset conditions' (i.e. facility start-up, shutdown, and loss of air pollution control) that represent unusual and/or transient occurrences. However, current provincial regulations require that additional environmental screening would be mandatory prior to expansion of the facility beyond the initial approved capacity (140,000 tonnes per year). Therefore, the potential risks due to upset conditions for the 400,000 tonnes per year scenario should be more closely investigated if future expansion is pursued.

1. Introduction

The Regions of Durham and York in Ontario, Canada partnered in 2005 to seek a long-term sustainable solution for managing their municipal solid waste. Both Regions have made considerable commitments to decreasing waste production and increasing waste diversion (e.g. through recycling or composting initiatives), but a management strategy is still required for residual waste not diverted through these strategies. Previously, this residual waste was largely exported out of the Regions (primarily to Michigan) for landfill. However, when it was announced that the Michigan border would be closed to municipal waste from Canada as of December 2010, it became imperative to identify a viable waste management alternative.

Abbreviations: CAC, Criteria air contaminant; COPC, Contaminant of potential concern; CR, Concentration ratio; CSF, Cancer slope factor; EA, Environmental assessment; EFW, Energy-from-waste; ERA, Environmental risk assessment; HHRA, Human health risk assessment; HQ, Hazard quotient; ILCR, Incremental lifetime cancer risk; LADD, Lifetime average daily dose; LCR, Lifetime cancer risk; LRASA, Local risk assessment study area; MDL, Method detection limit; RfC, Reference concentration; RfD, Reference dose; TEF, Toxic equivalency factor; TRV, Toxicity reference value; UR, Unit risk.

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Due to public opposition, establishment of a new local landfill was considered unacceptable. In addition, it was recognized that continuing to ship the waste to an external landfill could not provide a stable and secure alternative due to the vulnerability of this option to public policy decisions made by external governments. Therefore, processing and treatment options such as mechanical, biological, and thermal treatment were considered. Through an extensive public consultation process as well as a detailed evaluation of environmental, social and economic considerations, the preferred option was determined to be the construction of an Energy-From-Waste (EFW) thermal treatment plant. Such facilities have the capacity to reduce the volume of waste by >90% while also recovering metals and producing energy that can be sold to offset annual operating costs (Rushton, 2003).

EFW facilities are widespread in Europe and other jurisdictions (Bogner et al., 2008). Research and monitoring programs around these facilities suggest that in light of strict emissions guidelines and modern engineering controls, these facilities are unlikely to be hazardous to human health or the environment (Bordonaba et al., 2011; Cangialosi et al., 2008; Lee et al., 2007; Morselli et al., 2011; Rovira et al., 2010; Schuhmacher and Domingo, 2006). However, a new EFW facility had not been built in Ontario for over 20 years. As part of the approval process for construction of this new facility in Ontario, extensive human health and ecological risk assessments were performed to determine the potential effects of this project on surrounding communities and ecosystems. This paper describes the methods and results of human health risk assessment; the methods and results of the ecological risk assessment are provided in a separate publication (Ollson et al., 2014). These risk assessments formed an important component of the final Environmental Assessment for this project, which was submitted to the Ontario Ministry of the Environment (MOE) in 2009 and received final approval in 2010. On the basis of this approval, the project was permitted to proceed to the construction phase, which was initiated in 2011. Facility start-up is currently projected to occur by the end of 2014.

2. Material and methods

2.1. Scope of the assessment

This risk assessment examined the potential for emissions from the proposed project (i.e., construction, operation, and eventual decommissioning of a modern EFW thermal treatment facility) to pose an unacceptable risk to human health over both short-term and long-term (i.e., after 30 years of operation). Existing conditions at the proposed location for the facility were also assessed in order to provide a baseline for the assessment (Table 1). The entire assessment was carried out following the US EPA human health risk assessment protocol for hazardous waste combustion facilities (US EPA, 2005).

The initial operating design capacity of the proposed facility was 140,000 tonnes per year, with a capacity for expansion to 400,000 tonnes per year within the 30-year planning period. As the expansion of the facility beyond the initial approved capacity of 140,000 tonnes per year would require additional environmental screening under provincial regulations, the present risk assessment focused primarily on the potential risks from the facility with respect to operation at the 140,000 tonnes per year level. However, for comparison purposes, consideration was also given to the potential risks associated with the maximum design capacity of 400,000 tonnes per year.

2.2. Facility description

Facility design information for this assessment was provided by Covanta Energy Corporation, which was selected by the Regions as the preferred vendor for this project. Covanta, the largest provider of thermal treatment services in North America (with 40 facilities in the United States and one in Canada), was contracted by the Regions to direct the design, engineering, construction and operation of the facility. Therefore, they were able to provide detailed information, specific to the planned facility, which also reflects the features and functionality of existing modern EFW facilities elsewhere in North America.

This facility will be accepting municipal solid waste from typical Ontario curbside waste collection (i.e. household waste excluding separated recyclable materials and organics). No additional feed stock separation will occur at the facility. The facility will use a thermal mass burn technology, wherein municipal solid waste is fed into a furnace and burned at very high temperatures. For the initial operating design capacity of 140,000 tonnes per year, there will be two independent waste processing trains consisting of a feed chute, stoker, integrated furnace/boiler, dry recirculation acid gas scrubber, a fabric filter bag house and associated ash and residue collection systems. Expansion to the maximum design capacity (400,000 tonnes per year) would include the addition of two more waste processing trains. Steam produced in each boiler will drive a turbine-generator to produce electricity for delivery to the grid, for in-plant use and/or district heating. After the removal of residual metals for recycling, ash produced by the process will be shipped to landfill for use as daily cover or will be reused, possibly as road construction material or other civil projects. Air pollution control equipment throughout the facility will ensure that emissions do not exceed the provincial guidelines outlined by the Ontario Ministry of the Environment (MOE, 2004a) and specific conditions of Certificate of Approval 7306-8FDKNX issued June 28, 2011 for the Facility.

2.3. Identification of chemicals of potential concern (COPC)

Chemicals that could potentially be released by the facility to the atmosphere were identified by reviewing sources such as existing provincial guidelines for municipal incinerators (MOE, 2004a), the Canadian National Pollutant Release Inventory for waste incinerators (Environment Canada, 2007), and the results of stack testing of an existing waste incinerator in nearby Brampton, Ontario. From this review, a COPC list consisting of 87 chemicals was developed (Table 2) that consisted of both Criteria Air Contaminants (CACs,

Table 1
Project scenarios considered in the human health risk assessment.

Project Scenarios	Case	Conditions assessed
Existing Conditions	Baseline	Existing conditions in the assessment area. No Facility-related emissions or exposures were included as this was completed prior to construction and operation of the Facility.
	Baseline Traffic	Offsite vehicle traffic emissions prior to the start-up of the Facility.
Construction	Construction	Construction and commissioning of the Facility.
Operation	Project Alone	Emissions from the Facility alone.
	Project (Baseline + Project)	Emissions from the Facility combined with existing/baseline conditions.
	Process Upset	Emissions from the Facility operating at upset conditions (i.e., Facility start-up, shutdown, and loss of air pollution control).
	Process Upset Project (Baseline + Upset)	Emissions from the Facility operating at upset conditions combined with existing/baseline conditions.
	Traffic	Emissions from offsite and onsite traffic associated with the Facility combined with baseline traffic conditions and onsite stationary source emissions for the Facility.
Decommissioning	Decommissioning (Closure Period)	Emissions related to the removal of infrastructure and rehabilitation of the Site.

for which regulatory limits already exist) and non-CACs (substances that are capable of causing environmental or health effects for which no regulatory limits were identified).

All COPC were evaluated for their potential to pose a risk to human health via inhalation as this was expected to be the primary route of human exposure to facility-related air emissions (Table 2). In addition, COPC that were considered to be persistent and/or bioaccumulative (i.e., half-life in soil ≥ 6 months and/or Log $K_{ow} \geq 5$) were also included in a multi-pathway risk assessment that addressed the possibility that these compounds may persist in and/or be transferred to various environmental media (e.g., soil, water, and food) following their release to air (Table 2).

2.4. Study area

The selected location for the facility is located within the Municipality of Clarington, Ontario, Canada (approximately 80 km east of Toronto, Ontario). This location is bordered by Lake Ontario to the south, commercial properties to the north and agricultural lands to the east and west. The Darlington Nuclear Generating Station is located approximated 2 km to the east.

In order to define the study area, the CALPUFF dispersion model (Scire et al., 1995) was applied to predict ground level concentrations of COPC as well as wet and dry deposition fluxes over a 40 × 40 km grid around the proposed facility location. The inputs to this model included geophysical (terrain and land use) and meteorological data specific to the region (Environment Canada, 2008; USGS, 2007; UCAR, 2008) as well as COPC physical-chemical properties. Stack parameters (i.e., location, base elevation, stack height, stack diameter, gas exit velocity, gas exit temperature, and emission rates) were provided by the vendor with respect to the planned facility. Potential stack emissions of COPC were estimated based on manufacturer's guarantees of maximum emissions, emission levels measured by the preferred vendor at one or more of their existing facilities that utilise similar technologies (measured at maximum load), and literature sources for other facilities.

Results of the CALPUFF model showed that the highest concentrations of emissions and depositions would be located in the area immediately surrounding the facility with a radius of approximately 10 km. Therefore, this area was defined as the Local Risk Assessment Study Area (LRASA) for consideration in this risk assessment. This LRASA includes the urban centers of Oshawa, Courtice, Bowmanville, and Port Darlington, Ontario.

2.5. Receptor identification and exposure pathways

Residential land use in the LRASA is mainly suburban residential and rural residential. The rural residential areas include large, dispersed lots that may be used for agricultural purposes (e.g., cash crops or livestock). Within the larger urban centers there are numerous commercial and institutional developments. Recreational opportunities in the area include hiking, camping, equestrian activities, hunting, fishing and swimming.

In light of these identified land uses, the human receptors considered in this risk assessment included local residents, local farmers, daycare/school attendees, and recreational users (sport and/or camping) (Table 3). Potential exposure pathways determined for each receptor included inhalation of vapours and particulate emissions, ingestion and dermal exposure to soil and/or dust, and food chain exposures (Table 3). It was also assumed that some receptors may incur additional exposures to COPC via hunting, fishing, or swimming within the LRASA. Therefore, additional exposures related to these activities that can be added to any of the identified receptors were also assessed (Table 3). Consumption of local drinking water was not considered since it was found that residents in the LRASA obtain their drinking water from municipal water supply services, which would not be affected by facility-related emissions. Similarly, consumption of grocery store bought foods was not considered.

The life stages considered for each receptor and for the hunting/angling and swimming additional exposures were selected to represent those with the greatest sensitivity and/or exposure to each COPC. For non-carcinogenic COPC, which act via a threshold mechanism, the

Table 2
Contaminants of potential concern (COPC) considered in this assessment.

COPC	Inhalation	Multi-Pathway
Criteria Air Contaminants:		
Sulfur Dioxide (SO_2), Hydrogen Chloride (HCl), Hydrogen Fluoride (HF), Nitrogen Dioxide (NO_2), Particulate Matter (PM_{10}), Particulate Matter ($PM_{2.5}$), Total Particulate Matter (TSP), Ammonia (Slip at Stack)	✓	
Chlorinated Polycyclic Aromatics:		
Dioxins and Furans as Toxic Equivalents (TEQ), Total PCBs (as Aroclor 1254)	✓	✓
Metals:		
Antimony, Arsenic [b], Barium, Beryllium [b], Boron, Cadmium[b], Chromium (hexavalent) [b], Total Chromium (and compounds) [b], Cobalt, Lead, Mercury[a], Nickel, Phosphorus, Silver, Selenium, Thallium, Tin, Vanadium, Zinc	✓	✓
Chlorinated Monocyclic Aromatics:		
1,2-Dichlorobenzene, 1,2,4,5-Tetrachlorobenzene, 1,2,4 – Trichlorobenzene, Pentachlorophenol [b], Hexachlorobenzene [b], Pentachlorobenzene	✓	✓
2,3,4,6-Tetrachlorophenol, 2,4,6-Trichlorophenol [b], 2,4-Dichlorophenol	✓	
Poly Aromatic Hydrocarbons:		
Acenaphthylene [b], Acenaphthene [b], Anthracene, Benzo(a)anthracene [b], Benzo(b)fluoranthene [b], Benzo(k)fluoranthene [b], Benzo(a)fluorene, Benzo(b)fluorene, Benzo(ghi)perylene [b], Benzo(a)pyrene TEQ [b], Benzo(e)pyrene [b], Chrysene [b], Dibenzo(a,c)anthracene [b], Dibenzo(a,h)anthracene [b], Fluoranthene [b], Fluorene, Indeno(1,2,3 – cd)pyrene[b], Perylene [b], Phenanthrene [b], Pyrene [b]	✓	✓
1 – methylnaphthalene, 2 – methylnaphthalene, Naphthalene	✓	
Volatile Organic Chemicals (**VOC**):		
Acetaldehyde [b], Benzene [b], Biphenyl, Bromodichloromethane, Bromomethane, Dichlorodifluoromethane, Dichloroethene, 1,1 -, Ethylbenzene, Ethylene Dibromide (1,2-dibromoethane) [b], Formaldehyde [b], Tetrachloroethylene [b], Toluene, Trichloroethylene, 1,1,2 [b], Vinyl chloride (chloroethene) [b], Xylenes, m-, p- and o-	✓	
Bromoform (tribromomethane), Carbon tetrachloride b, Chloroform b, Dichloromethane b, O-terphenyl, Trichloroethane, 1,1,1 -, Trichlorofluoromethane	✓	✓

[a] Inorganic and methylmercury.
[b] This chemical was evaluated as a non-carcinogen and a carcinogen.

Table 3
Exposure pathways and life stages evaluated for identified receptor types.

	Receptor Type					Additional Exposures[a]	
	Resident	Farmer	Recreation User – Sport	Recreation User - Camping	Daycare	Swimming	Hunting/Angling
Exposure Pathway							
Direct Inhalation	✓	✓	✓	✓	✓		
Soil Ingestion	✓	✓	✓	✓	✓		
Dermal Contact – Soil	✓	✓	✓	✓	✓		
Dermal Contact – Water						✓	
Incidental Surface Water Ingestion						✓	
Garden Produce	✓	✓					
Fish							✓
Breast Milk	✓	✓					
Wild Game							✓
Agriculture		✓					
Life stage considered for threshold (non-carcinogenic) COPC							
Infant (0 to 6 mo)	✓	✓					
Toddler (7 mo to 4 yr)	✓	✓	✓	✓	✓	✓	✓
Life stage considered for non-threshold (carcinogenic) COPC							
Adult (20 to 75 yr)					✓		
Composite	✓	✓	✓	✓		✓	✓

[a] Exposures through these pathways can be added to identified receptors.

toddler life stage (i.e., 6 months to 4 years) was considered to represent the most sensitive life stage based on receptor characteristics (e.g., lower body weights) combined with behavioural patterns (e.g., higher soil ingestion rates). Therefore, all health risks associated with exposures to non-carcinogenic COPC were estimated for the toddler receptor (Table 3). In addition, the infant life stage (i.e., 0 to 6 months) was evaluated for farmer and resident receptors in the multi-pathway risk assessment for non-carcinogenic COPC in order to address the potential health risks associated with consumption of breast milk (Table 3). For carcinogenic COPC (non-threshold), a composite life stage for most receptors was considered that combines the characteristics of infant (i.e., 0 to 6 months), toddler (i.e., 7 months to 4 years), child (i.e., 5 years to 11 years), adolescent (i.e., 12 to 19 years), and adult (i.e., 20 years to 75 years) life stages (Health Canada, 2007) (Table 3). However, for the daycare/school receptor, exposure to carcinogenic COPC was assessed only for the adult stage (Table 3) since this class of receptor has the potential to have the longest duration of exposure to the daycare/school conditions (assuming employment from youth to retirement at that location).

2.6. Collection of baseline data

In order to characterize pre-project baseline conditions, ambient air monitoring and soil, water, and biota sampling was performed in the vicinity of the proposed facility location. All laboratory analyses of the collected samples were conducted by ALS Laboratory Group using standard methods (See Supporting Information Section S1).

2.6.1. Baseline ambient air monitoring

An air monitoring station was set up approximately 2 km southwest of the proposed facility location. Data was collected and analyzed over a 15 month period (September 2007 to December 2008). The station continuously monitored Sulfur Dioxide (SO_2), Nitrogen Oxides (NOx), Carbon Monoxide (CO), Ozone (O_3), and Particulate Matter smaller than 2.5 microns ($PM_{2.5}$). Hi-volume air samplers were also installed to collect 24-hour average samples of Total Suspended Particulate (TSP) and metals, Polycyclic Aromatic Hydrocarbons (PAHs), and Dioxins and Furans (PCDD/F).

In addition, baseline offsite vehicle emissions prior to the start up of the facility were estimated using traffic volume estimates provided by URS Canada Inc. These traffic estimates were combined with the existing baseline ambient air conditions in the airshed to produce the baseline traffic case.

2.6.2. Baseline soil and biota sampling

Additional baseline soil and biota samples were collected and analyzed for the COPC identified for consideration in the multi-pathway risk assessment. The sampling program included collection of soil, terrestrial vegetation (forage, browse, and crops), small mammals, surface water, sediment and fish sampled within a 1 km radius of the proposed facility location. Where possible, samples were collected in areas where air modeling predicted maximum rates of deposition for various COPC, and locations were also selected to be representative of different land uses. In addition, agricultural products (beef, chicken, pork, dairy and eggs) and produce were collected from farms and markets located outside a 1 km radius due to limited availability. However, efforts were made to ensure that farms were located as close as possible to the proposed facility location, and therefore the collected samples are considered sufficient to represent baseline conditions for this assessment.

2.7. Fate and transport modeling of COPC from project-related emissions

The potential impacts of facility-related emissions on the concentrations of COPC in the surrounding environment were predicted using best available data (i.e., results of the CALPUFF modeling described in Section 2.4, physical-chemical properties of the COPC, and detailed geophysical and meteorological data specific to the LRASA) and accepted modeling techniques as described in the US EPA human health risk assessment protocol for hazardous waste combustion facilities (US EPA, 2005). Specifically, the contributions of facility-related emissions to ambient air concentrations were predicted for all COPC at 309 distinct receptor locations selected to represent a variety of land uses as well as areas where initial modeling suggested the highest acute (1-hr or 24-hr) or chronic (annual) ground level concentrations were likely to occur. Additionally, for the persistent and/or bioaccumulative COPC considered in the multi-pathway risk assessment (Table 2), facility-related changes in COPC concentrations in soil, surface water, garden and farm produce and fruit, agricultural products (i.e., beef, chicken, pork, dairy and eggs), wild game, fish, and breast milk were predicted at 133 of the 309 locations.

In addition to predictions made for emissions from the normal operating scenarios at both 140,000 and 400,000 tonnes per year, the potential emissions under 'process upset' conditions (i.e., facility start-up, shutdown, and loss of air pollution control) were modeled following protocol suggested by the US EPA (2005). Specifically, for determining short-term (1-hour to 24-hour average) ground level COPC concentrations under upset conditions, the emission rates for the facility under normal operation were conservatively increased by a factor of ten. This factor was applied to all COPC except for SO_2 and NO_x for which emissions were increased by factors of 16 and 1.63 respectively, based on data received from the vendor. As per US EPA (2005) guidance, for metals and CACs it was assumed that the facility would operate under upset conditions for 5% of the year. Therefore, emission rates for these COPC were increased by a factor of 1.45 [(0.95 x 1) + (0.05 x 10) = 1.45], with the exception of SO_2 and NO_x, for which emission rates were increased by factors of 1.75 and 1.03, respectively using the same assumptions. For the remaining COPC (organics), annual average concentrations for the process upset case were increased by a factor of 2.8 based on an assumption that the facility would operate under upset conditions for 20% of the year [(0.80 x 1) + (0.20 x 10) = 2.8] (also as suggested by US EPA, 2005). This upset case is considered an absolute extreme scenario, given that the Ministry of the Environment would not allow the facility to operate in upset conditions for 20% of the year.

2.8. Exposure assessment

The sources of chemical concentrations used in the exposure assessment are described in Sections 2.5 and 2.6. In order to ensure a conservative estimate of risk, all exposure assessments were conducted deterministically using exposure point concentrations representative of reasonable maximum exposure. For the baseline values (described in Section 2.6), a single baseline exposure point concentration (i.e., the maximum detected concentration, 95% upper confidence limit of the mean, or method detection limit as described in Supporting Information, Section S2) was used to model exposure for each environmental medium collected for all receptor types. Although individual baseline concentrations were not obtained at the location of each receptor group evaluated, the baseline exposure point concentrations used are considered representative of reasonable maximum exposure, to all receptors, from background concentrations. A different approach was applied for the modeled facility-related contributions of COPC to the environment. In this case, the receptor locations were grouped by similar land use and the maximum or 95% upper confidence limit of the mean (selected as described in Supporting Information, Section S2) of the air and/or deposition concentration of each COPC within each receptor grouping was used to calculate the level of exposure for the entire grouping.

Physiological and behavioural characteristics of the receptors (e.g., respiration rate, soils/dusts intake, time spent at various activities and in different areas) were selected, if available, from existing guidance documents (Health Canada, 1994, 2007; MOE, 2005; Richardson, 1997; US EPA, 1997, 2005). In addition, oral and dermal bioavailability factors were compiled from Health Canada (2007) or the US Department of Energy's Oak Ridge National Laboratory Risk Assessment Information System (RAIS) database (ORNL, 2008). Whenever possible, preference was given to Canadian guidance documents and literature (e.g. Health Canada, 2007; Richardson, 1997). More details regarding the specific assumptions, input parameters and calculations used for each exposure pathway and receptor are provided in the Supporting Information (Section S3).

Exposure estimation was facilitated through the use of an integrated multi-pathway environmental risk assessment model developed by the Study Team. The model is spreadsheet based (Microsoft Excel™) and incorporates the techniques and procedures for exposure modeling developed by the MOE and Health Canada, and the US EPA (Health Canada, 1994; 2007; MOE, 2005; Richardson, 1997; US EPA, 1997, 2005).

2.9. Hazard assessment

2.9.1. Identification of toxicity reference values (TRVs)

For chemicals that follow a threshold dose-response (i.e., non-carcinogens), a threshold level must be exceeded in order for toxicity to occur, and it is possible to derive a reference concentration (RfC, for inhalation receptors) or reference dose (RfD, for multi-pathway receptors) that is expected to be safe to sensitive subjects following exposure for a prescribed period of time (US EPA, 1989). For chemicals that follow non-threshold dose-responses (i.e., carcinogens), a specific dose where toxic effects manifest themselves cannot be identified as any level of long-term exposure to carcinogenic chemicals is associated with some hypothetical cancer risk. As a result, risk assessment of these types of chemicals typically considers evaluation of the incremental lifetime cancer risk (ILCR) associated with exposure to the chemical (US EPA, 1989). This may be estimated based on the unit risk (UR) or cancer slope factor (CSF) of the chemical, where UR represents the upper-bound excess lifetime cancer risk estimated to result from continuous exposure to an agent at a concentration of 1 μg/L in water, or 1 $\mu g/m^3$ in air and CSF provides an upper bound estimate of the increased cancer risk from lifetime exposure to an agent (US EPA, 1989).

Literature and public guidance documents were reviewed to identify RfCs, RfDs, URs or CSFs for inclusion as toxicity reference values (TRVs) for each COPC. Regulatory benchmarks, which are also health-based but often also policy derived, were also considered as TRVs for some COPC. A summary of the non-carcinogenic and carcinogenic TRVs used in both the inhalation and multi-pathway exposure assessment are presented in Supporting Information (Section S4).

2.9.2. Chemical mixtures and additivity of risks

In order to properly assess health risks to the human receptors, certain groups of chemicals were assessed as mixtures. Specifically, dioxin and furan congeners and carcinogenic PAHs were assessed using the toxic equivalency factor (TEF) approach (Supporting Information, Section S5). TEFs for dioxin and furan congeners represent their potency relative to 2,3,7,8 TCDD (Van den Berg et al., 2006), while TEFs for carcinogenic PAHs represent their toxicity relative to benzo(a)pyrene (IPCS, 1998).

Additional groups of chemicals were identified that may have additive, synergistic, or antagonistic effects due to their similar toxic modes of action (see Table S7 in Supporting Information, Section S5). However, there is currently very little available toxicological data or regulatory guidance to support the prediction of the effects of simultaneous exposure to these chemicals. In the original risk assessment an approach assuming additivity of the effects was used (see details in Supporting Information, Section S5). However, as this approach is not based on actual toxicological study results and cannot consider more complex interactions (i.e. synergism or antagonism), it is considered highly speculative and was presented for information purposes only. In light of these uncertainties, the effects of simultaneous exposure to multiple pollutants are not discussed further in the present manuscript. It is acknowledged that the interpretation of the potential effects of simultaneous exposure to chemical mixtures remains a considerable source of uncertainty in human health risk assessments conducted in Ontario.

2.10. Risk characterization

2.10.1. Threshold chemicals (non-carcinogens)

The risk associated with threshold chemicals was assessed using a Concentration Ratio (CR) for the inhalation pathway. CR values were calculated by dividing the predicted ground level air concentration (1-hour, 24-hour or annual average) by the appropriate toxicity reference value (reference concentration [RfC] or health based inhalation benchmark), according to Eq. (1):

$$CR_{duration} = \frac{[Air]_{duration}}{RfC_{duration} \text{ or health benchmark}} \quad (1)$$

Where CR $_{duration}$ represents a duration specific Concentration Ratio (unitless), calculated for 1-hr, 24-hr and chronic durations as appropriate; $[Air]_{duration}$ represents the predicted ground-level air concentration (μg/m³) for that duration and $RfC_{duration}$ represents the selected (duration specific) reference concentration (μg/m³). A CR less than or equal to one signifies that the estimated exposure is less than or equal to the exposure limit; therefore, no adverse health risk is expected. Conversely, a CR greater than one signifies the potential for adverse health effects.

For the multi-pathway risk assessment, a Hazard Quotient (HQ) approach was applied. HQ values were calculated by dividing the predicted exposure dose (via multiple pathways) by the appropriate toxicity reference value (reference dose [RfD]), according to Eq. (2):

$$HQ = \frac{\sum Exp}{RfD} \qquad (2)$$

Where $\sum Exp$ represents the chronic exposure estimate resulting from the sum of multiple exposure pathways (μg/kg/day) and *RfD* represents the selected chronic reference dose (μg/kg/day). For the purposes of this assessment, it was considered that the intake of the COPC by all routes of exposure was unlikely to exceed the tolerable intake level when the HQ was less than 0.2. This conservative approach allows 80% of the tolerable daily intake of a COPC to be received from other sources not considered in this risk assessment.

2.10.2. Non-threshold chemicals (carcinogens)

Incremental lifetime cancer risk (ILCR) and lifetime cancer risk (LCR) estimates resulting from direct air inhalation were calculated described in Eqs. (3) and (4):

$$ILCR = [Air]_{project\ alone} \times UR \qquad (3)$$

$$LCR = [Air]_{all\ sources} \times UR \qquad (4)$$

Where $[Air]_{project\ alone}$ represents the predicted annual average ground-level air concentration from the Project Alone (μg/m³), $[Air]_{all\ sources}$ represents predicted annual average ground-level air concentrations from all sources, and *UR* represents COPC-specific unit risk $(\mu g/m^3)^{-1}$.

For the multi-pathway risk assessment, ILCR/LCR estimates resulting from a lifetime of exposure through multiple pathways were calculated using Eqs. (5) and (6):

$$ILCR = \sum LADD_{project\ alone} \times CSF \qquad (5)$$

$$LCR = \sum LADD_{all\ sources} \times CSF \qquad (6)$$

Where $\sum LADD_{project\ alone}$ represents the sum of average daily dose via multiple pathways from the project alone (μg/kg/day), $\sum LADD_{all\ sources}$ represents the sum of average daily dose via multiple pathways from the all sources (μg/kg/day), and CSF represents the cancer slope factor $(\mu g/kg/day)^{-1}$.

In this risk assessment, an ILCR of 1-in-1,000,000 was considered acceptable, as outlined in relevant provincial guidelines (MOE, 2005). As no regulatory guidance exists for LCRs, this value was compared with the typical observed cancer incidence in the Canadian population, which is 38% for women and 44% for men (Canadian Cancer Society, 2007).

3. Results and discussion

3.1. Risk characterization: Existing conditions

Human health risks resulting from baseline exposures to individual COPC in the baseline scenario (prior to construction of the facility) were estimated using the results of the baseline ambient air monitoring and the baseline soil and biota sampling (Supporting Information, Section S6).

3.1.1. Inhalation risk assessment: Non-carcinogens

For criteria air contaminants (CACs, for which regulatory limits already exist), no baseline case acute (1-hr or 24-hr) or chronic (annual) CR risk estimates exceeded the regulatory benchmark (CR = 1), therefore no adverse health risks were expected from exposure to baseline air concentrations of these compounds (Table 4). Additionally, baseline case CACs (including NO_2, SO_2, $PM_{2.5}$, and PM_{10}) were also compared to WHO benchmarks for informational purposes and no exceedances were observed (Table 4). Similar results were noted for the baseline traffic case, in which estimated offsite vehicle emissions were added to the measured baseline ambient air conditions, except for a slight exceedance (CR = 1.1) for annual nitrogen dioxide compared to the WHO benchmark (Supporting information Section S8). However, the concentration of nitrogen dioxide measured in the baseline ambient air monitoring program in the LRASA was similar to that observed in other urbanized areas such as Toronto, Hamilton, and Windsor (Supporting information, Section S7), therefore this observation does not represent a unique property-specific risk. For non-criteria air contaminants (for which no relevant criteria were identified) baseline case concentrations were also shown not to exceed the acute (1-hr or 24-hr) or chronic (annual) CR regulatory benchmark (Table 5).

3.1.2. Inhalation risk assessment: Carcinogens

For non-criteria air contaminants assessed as possible carcinogens, the estimated lifetime cancer risk (LCR) values associated with their baseline ambient air concentrations were calculated (Supporting information Section S8). Because there are no acceptable benchmarks for comparison of LCR values, the implications of baseline results for each receptor group and scenario are not discussed in detail. However, to put these values in context, the maximum LCR associated with an individual baseline ambient air concentration for a COPC addressed in this study was 3.1×10^{-3} % (Supporting information Section S8), while the typical observed cancer incidence in the Canadian population is 38% for women and 44% for men (Canadian Cancer Society, 2007).

3.1.3. Multi-pathway risk assessment: Non-carcinogens

For all non-carcinogens, baseline chronic risk estimates (via multiple exposure pathways) were expressed as HQ values (Tables 6, 7, and Supporting Information Section S8). For most receptors and COPC, the predicted hazard quotients did not exceed the regulatory benchmark of 0.2 for the Baseline Case. However, some exceedances were noted for resident and farmer infants and toddlers. Also, addition of the swimming or hunting/angling exposures to the toddler receptor also led to some exceedances. Therefore, these cases were examined further.

3.1.3.1. Resident infant. For the resident infant receptor, the multi-pathway assessment indicated that potential risks may exist from exposure to baseline concentrations of PCBs and dioxins/furans (Table 6, HQ values of 11 and 3.8, respectively). The identified risk from these compounds was entirely related to the ingestion of breast milk, for which the COPC concentrations had been predicted based on exposure of the infant's mother to measured or estimated background COPC concentrations in relevant exposure media (i.e., soil) and food items (e.g., produce, poultry, etc.). However, in the results of the baseline sampling program, concentrations of PCBs, dioxins and furans were frequently below detection limit for these exposure media and food items (Supporting Information, Section S6). In these cases, the method detection limit (MDL) was substituted for the contaminant concentration in order to provide a 'worst-case scenario' estimate of exposure. However, it is possible that actual contaminant concentrations were significantly lower than the MDL (or not present at all). Therefore, the HQ values for PCBs and dioxins/furans that were calculated in this assessment for the resident infant receptor may represent a significant overestimation of the actual risk.

Table 4
Concentration Ratio (CR) Values for Baseline and 140,000 tpy for Criteria Air Contaminants at the Maximum Ground Level Concentration. A bolded cell indicates exposure for that particular scenario and COPC exceeded the selected benchmark.

COPC	Concentration Ratio (CR) Values					Concentration Ratio (CR) Values –WHO Benchmarks[f]				
	Baseline	Project Alone	Project	Process Upset	Process Upset Project	Baseline	Project Alone	Project	Process Upset	Process Upset Project
1-Hour										
Ammonia[a]	-	0.0006	0.0006	0.006	0.006	-	-	-	-	-
Carbon Monoxide (CO)	0.07	0.001	0.07	0.01	0.08	-	-	-	-	-
Hydrogen Chloride (HCl)[a]	-	0.04	0.04	0.44	0.44	-	-	-	-	-
Hydrogen Fluoride (HF)[a]	-	0.01	0.01	0.13	0.13	-	-	-	-	-
Nitrogen Dioxide (NO_2)	0.16	0.11	0.27	0.18	0.34	0.32	0.22	0.54	0.36	0.68
Particulate Matter - PM_{10} [a, b, e]	-	-	-	-	-	-	-	-	-	-
Particulate Matter - $PM_{2.5}$ [b, e]	-	-	-	-	-	-	-	-	-	-
Particulate Matter - Total[b, e]	-	-	-	-	-	-	-	-	-	-
Sulfur Dioxide (SO_2)	0.03	0.02	0.05	0.29	0.32	-	-	-	-	-
24-Hour										
Ammonia[a]	-	0.003	0.003	0.03	0.03	-	-	-	-	-
Carbon Monoxide (CO)[c]	-	-	-	-	-	-	-	-	-	-
Hydrogen Chloride (HCl)[a]	-	0.02	0.02	0.23	0.23	-	-	-	-	-
Hydrogen Fluoride (HF)[a, c]	-	-	-	-	-	-	-	-	-	-
Nitrogen Dioxide (NO_2)	0.29	0.03	0.32	0.05	0.34	-	-	-	-	-
Particulate Matter - PM_{10} [a, e]	-	0.01	0.01	0.11	0.11	-	0.01	0.01	0.11	0.11
Particulate Matter - $PM_{2.5}$ [e]	0.68	0.02	0.70	0.18	0.86	0.82	0.02	0.84	0.21	**1.0**
Particulate Matter - Total[e]	0.29	0.004	0.30	0.04	0.34	-	-	-	-	-
Sulfur Dioxide (SO_2)	0.07	0.006	0.08	0.10	0.17	0.15	0.01	0.17	0.22	0.38
Annual										
Ammonia[a]	-	7.8E-05	7.8E-05	0.0001	0.0001	-	-	-	-	-
Carbon Monoxide (CO)[d]	-	-	-	-	-	-	-	-	-	-
Hydrogen Chloride (HCl)[a]	-	0.0007	0.0007	0.0010	0.0010	-	-	-	-	-
Hydrogen Fluoride (HF)[ad]	-	-	-	-	-	-	-	-	-	-
Nitrogen Dioxide (NO_2)	0.62	0.003	0.62	0.003	0.62	0.93	0.005	0.93	0.005	0.93
Particulate Matter - PM_{10} [a, d, e]	-	-	-	-	-	-	0.0008	0.0008	0.001	0.001
Particulate Matter - $PM_{2.5}$ [d, e]	-	-	-	-	-	0.98	0.002	0.98	0.002	0.98
Particulate Matter - Total[e]	0.35	0.0003	0.35	0.0004	0.35	-	-	-	-	-
Sulfur Dioxide (SO_2)	0.20	0.002	0.21	0.003	0.21	-	-	-	-	-

[a] Baseline Data Not Available.
[b] 1-hr TRV Not Available.
[c] 24-hr TRV Not Available.
[d] Annual TRV Not Available.
[e] Particulate Matter results include contribution of Secondary Particulate.
[f] "-" indicates WHO benchmark not available.

3.1.3.2. Resident toddler. The multi-pathway assessment for exposure of the toddler resident receptor to COPC indicates that potential risks may exist from exposure to baseline concentrations of PCBs (HQ = 0.49), arsenic (HQ = 0.32) and thallium (HQ = 0.25) (Table 6). For PCBs, it was determined that the majority of risk was associated with ingestion of homegrown produce and fruit. However, as was previously noted in the discussion of the risk of PCBs to resident infants, the PCB concentrations in these media in the baseline sampling program were below detection limits and were replaced with the value of the MDL in the risk assessment. Therefore, the HQ value for PCB exposure for the toddler resident likely overestimates the actual risk.

For arsenic, risk to the toddler resident receptor was attributed to incidental ingestion of soil. In contrast to PCBs, arsenic was widely detected in soil in the baseline sampling program. However the maximum detected soil arsenic concentration (8 mg/kg) used in the risk characterization was within the range of concentrations previously reported in natural, uncontaminated soils in Canada (Wang and Mulligan, 2006) and was less than the current Ontario Ministry of the Environment regulatory soil chemical standard of 11 mg/kg for arsenic at sensitive sites (MOE, 2004b). Therefore, this soil is not likely to cause any undue risk to human receptors within the LRASA. The elevated HQ values observed for the resident toddler receptors for arsenic can likely be attributed to conservative model assumptions applied throughout the risk assessment process.

For thallium, the relevant exposure pathways that contributed to the potential risk to resident toddlers were incidental soil ingestion and produce and fruit ingestion. However, none of the soil, produce, or fruit samples collected during the baseline sampling program had detectable levels of thallium. Therefore, the risk assessment for thallium was based entirely on the substitution of the method detection limit (1 mg/kg) for the undetected values and likely provides a significant overestimation of risk. In addition, the detection limit (1 mg/kg) was less than the Ontario Ministry of the Environment regulatory soil chemical standard for sensitive sites of 2.5 mg/kg (MOE, 2004b). This also suggests that the elevated HQ values observed in this assessment for thallium for the resident toddler are likely due to conservative model assumptions applied throughout the risk assessment process.

3.1.3.3. Farmer Infant. The multi-pathway assessment for exposure of the farmer infant receptor to COPC also suggested potential risks may exist from exposure to baseline concentrations of PCBs, dioxins/furans, and 1,2,4-trichlorobenzene (Table 6, HQ values of 118, 20, and 0.21, respectively). However, as was noted for the resident infant receptor, PCBs and the majority of dioxins/furans were not detected in any media relevant to exposure of farmers (i.e., soil, home-grown produce, or farm-raised livestock) (Supporting Information, Section S6). Furthermore, 1,2,4-trichlorobenzene was also not detected in any samples collected in the baseline sampling program (Supporting Information, Section S6). Therefore, these HQ values may also represent a significant

Table 5
Concentration Ratio (CR) Values for Baseline and 140,000 tonnes per year operating scenarios at the Maximum Ground Level Concentration. Each value represents the maximum observed CR value for an individual COPC within each chemical class. A bolded cell indicates exposure for that particular scenario and COPC exceeded the selected benchmark.

COPC	Concentration Ratio (CR) Values – 140,000 tpy														
	1-hour					24-hour					Annual				
	Baseline	Project Alone	Project	Process Upset	Process Upset Project	Baseline	Project Alone	Project	Process Upset	Process Upset Project	Baseline	Project Alone	Project	Process Upset	Process Upset Project
Metals	0.04	0.03	0.04	0.25	0.27	0.03	0.01	0.04	0.14	0.16	0.12	0.003	0.12	0.004	0.12
Chlorinated Polycyclic Aromatics	0.001	0.0003	0.001	0.003	0.004	0.005	0.0006	0.005	0.006	0.01	0.002	9.0E-06	0.002	2.0E-05	0.002
Chlorinated Monocyclic Aromatics	0.0006	7.5E-05	0.0007	0.0008	0.001	0.0001	5.2E-07	0.0001	5.0E-06	0.0001	0.002	3.0E-06	0.002	1.0E-05	0.002
Polycyclic Aromatic Hydrocarbons (PAH)	0.01	6.9E-05	0.01	0.0007	0.01	0.07	0.0002	0.07	0.002	0.07	0.002	1.0E-06	0.002	2.0E-06	0.002
Volatile Organic Chemicals (VOC)	0.55	0.005	0.55	0.05	0.56	0.41	0.002	0.41	0.02	0.41	0.18	0.0002	0.18	0.0005	0.18

overestimation of the actual risk due to the substitution of the MDL for non-detect values.

3.1.3.4. Farmer Toddler. HQ values greater than 0.2 were observed for the farmer toddler receptor for total PCBs, bromoform, carbon tetrachloride, chloroform, dichloromethane, 1,2,4,5-tetrachlorobenzene, 1,2,4-trichlorobenzene, antimony, arsenic, beryllium, thallium, and dioxins/furans (Table 6). When the risks to the farmer toddler from each COPC were apportioned into their respective exposure pathways, it was observed that ingestion of dairy was the primary exposure pathway associated with risks to the farmer toddler (>65% of total exposure for all chemicals except for arsenic for which only 47% of exposure was related to ingestion of dairy). However, none of these chemicals were actually detected in dairy products in the baseline sampling program and risk assessment was performed using the method detection limit. Therefore, as has been observed for other receptors and COPC in this assessment, the hazard quotients resulting from this substitution likely represent overestimations of the true risk. Furthermore, as toddler-specific ingestion rates for food items produced on farms were not available, child-specific ingestion rates were adopted from US EPA (2005) as a conservative measure that may also have resulted in an overestimate of exposure since ingestion rates are typically proportional to body weight (Health Canada, 2007).

The farmer toddler also received a significant proportion of its exposure to arsenic via soil and dust ingestion (26%). As was previously discussed with respect to the resident toddler, the maximum soil arsenic concentration used for risk characterization in this assessment (8 mg/kg) is within the expected range for uncontaminated soils in Canada and is also less than the Ontario Ministry of the Environment regulatory soil chemical standard for sensitive sites (MOE, 2004b). Therefore, it is not considered likely that soil and dust ingestion will pose significant undue risk with respect to arsenic exposure for any of the human receptors in the LRASA.

3.1.3.5. Additional Risks Related to Swimming and Hunting/Angling. Additional risks from exposure to surface water while swimming, wading or playing in surface water bodies, as well as from engaging in hunting and angling activities within the LRASA were assessed (Table 7). Results of the swimming exposure assessment indicate that the incremental risks associated with exposure to surface water are between one to six orders of magnitude less than the acceptable multi-pathway HQ benchmark of 0.2 (Table 7). When this additional exposure pathway was added to an existing receptor (e.g., the resident Toddler), the only HQ exceedances noted were for COPC that exceeded the regulatory guideline prior to addition of the swimming pathway (Table 7). In contrast, results of the hunter/angler assessment suggested that this pathway alone may be sufficient to increase COPC exposure above the regulatory guideline for arsenic, cadmium, total PCBs and dioxins/furans (Table 7, HQ values of 0.43, 0.46, 0.67, and 0.38, respectively). Some of these contaminants were not detected in small mammals or fish collected in the baseline sampling program (Supporting Information, Section S6), therefore some of the perceived risk may relate to the replacement of non-detect values with the method detection limit. Furthermore, the concentrations of COPC that were detected in fish (PCBs, arsenic, cadmium, and certain dioxins/furans) and small mammals (arsenic and cadmium), were similar to what would be expected at other areas across Ontario and are therefore not unique to this project (Supporting Information, Section S7).

3.1.4. Multi-pathway risk assessment: Carcinogens

The baseline case multi-pathway assessment also provided oral/dermal lifetime cancer risk (LCR) estimates for all carcinogenic COPC for the defined multi-pathway receptors and for the incremental exposures resulting from recreational swimming and/or hunting/angling (Supporting Information, Section S8). As discussed in Section 3.1.2, there is no acceptable benchmark for comparison of LCR values, as they represent an individual's lifetime cancer risks associated with all potential exposures to a given carcinogenic COPC within the environment. However, the maximum LCR observed under baseline conditions for these COPC was 0.03%, which is much lower than the typical observed rates of cancer in Canada (38% for women and 44% for men) (Canadian Cancer Society, 2007).

3.2. Risk characterization: Construction case

For consideration of the construction case, it was assumed that construction activities would occur intermittently, during daylight hours, over a period of approximately 30 months. The primary concerns related to these activities with respect to human health were considered to be dust emissions from construction activities and exhaust emissions from fuel combustion by vehicles on the site. In addition, construction activities such as welding, use of solvents, sand blasting and painting may also affect air quality in the construction area. However, relative to the anticipated operational emissions, construction emissions will be minor, short-term and transitory. Therefore, it was expected that the assessment of operational scenarios (Sections 3.3-3.4) will be protective of any potential health risks that could arise during periods of construction and this case was not assessed in detail.

3.3. Risk characterization: Operational scenarios (140,000 tonnes per year)

3.3.1. Inhalation risk assessment: Non-carcinogens

For CACs, predicted maximum 1-hour, 24-hour and annual air concentrations for predicted operational scenarios at 140,000 tonnes per year (i.e. Project Alone Case, Project Case, Process Upset Case or Process Upset Project Case) did not exceed their relevant exposure limits (Table 4); therefore, no adverse health risk is expected from potential exposure to CACs. Additionally, when predicted CAC concentrations were compared to WHO benchmarks for informational purposes, no exceedances were noted for any of the considered assessment scenarios, except for $PM_{2.5}$ in the Process Upset Project Case ($CR = 1.01$, Table 4). The exceedance of fine particulate matter is driven by baseline concentrations as the CR for baseline conditions alone is 0.82, while the CR for process upset conditions is only 0.21 (Table 4). However, the baseline concentration of $PM_{2.5}$ in this area is similar to other urban areas in Ontario (Supporting Information, Section S7). In addition, frequency analysis of the baseline monitoring performed as part of this assessment showed that 24-hour $PM_{2.5}$ concentrations exceeding the WHO benchmark of 25 $\mu g/m^3$ are very rare (Supporting Information, Section S9). No exceedance was noted in comparison to the selected 24-hour $PM_{2.5}$ Canada-Wide Standard (Table 4).

In addition, for the CACs, the Traffic Case (which combined emissions from offsite and onsite traffic with the anticipated onsite stationary source emissions for the facility) was contrasted with the baseline traffic case. In this case, the predicted 1-hour, 24-hour and annual air concentrations for the CAC at 140,000 tonnes per year did not exceed their relevant exposure limit for either the Baseline Traffic Case, or the Traffic Case (Supporting Information, Section S8). Therefore, no adverse health risk is expected from potential exposure to CACs due to the combined effect of facility emissions at 140,000 tonnes per year and local vehicular traffic. When compared to WHO benchmarks for informational purposes, an exceedance was noted for annual nitrogen dioxide ($CR = 1.2$) for both the baseline traffic case and the traffic case (Supporting Information, Section S8). However, as discussed in Section 3.1.1, this exceedance was driven by baseline concentrations, which were within a normal range for an urban area in Ontario (Supporting Information, Section S7). Therefore, this does not represent an unusual level of risk associated with this location.

For remaining COPC, none of the predicted maximum 1-hour, 24-hour or annual air concentrations exceeded their relevant exposure limit for any of the operational scenarios (Table 5).

3.3.2. Inhalation risk assessment: Carcinogens

For all carcinogenic COPC, chronic incremental lifetime cancer risks (ILCR) values were calculated for the 140,000 tonnes per year Project Alone Case and Process Upset Case at the maximum predicted ground level concentration (Supporting Information, Section S8). As outlined in Section 2.10.2, an ILCR less than or equal to 1-in-1,000,000 (i.e., 1×10^{-6}) signifies that the incremental lifetime cancer risk is less than the regulatory benchmark (*i.e.*, the assumed safe level of exposure); therefore, no adverse risk is expected. Conversely, an ILCR greater than 1×10^{-6} indicates that the potential for an elevated level of risk may be present and suggests further investigation should be pursued to confirm the identified risk. In this assessment, none of the predicted ILCR exceeded the regulatory benchmark for the carcinogenic COPC in either the Project Alone Case or Process Upset Case (Supporting Information, Section S8). Therefore, it is not expected that concentrations of carcinogenic COPC from the facility at 140,000 tonnes per year will pose any individual adverse carcinogenic risk to the health of human receptors via inhalation.

3.3.3. Multi-pathway risk assessment: Non-carcinogens

For most receptors, COPC, and operational scenarios, the HQ values did not exceed the regulatory benchmark of 0.2 (Tables 6, 7). The only exceedances noted were for operational scenarios that also incorporated the baseline conditions (i.e., the Project Case and Process Upset Project Case). In these cases, the source of the exceedance was always the baseline case. For instance, for the local resident infant and toddler receptors neither the Project Alone Case nor the Process Upset Case ever represented more than approximately 0.5% of the Project Case or Process Upset Project Case risk, respectively. Similarly, for the farmer infant and toddler receptors, the Project Alone Case or Process Upset Case never represented more than approximately 2% of the Project Case or Process Upset Project Case risk, respectively.

As discussed in Section 3.1.3, the exceedances observed in the baseline conditions were related to a number of issues such as the use of laboratory method detection limits as environmental media concentrations and the conservative nature of risk assessment exposure calculations. In addition, some COPC concentrations actually exceeded relevant guidelines in specific media. However, the baseline COPC concentrations were found to be no different in the LRASA than in other similar areas of Ontario and are therefore not unique to this project.

3.3.4. Multi-pathway risk assessment: Carcinogens

Incremental lifetime cancer risks (ILCR) were estimated for all receptors under the Project Alone Case and Process Upset Case assessment scenarios (Supporting Information, Section S8). In addition, activity specific ILCR values were calculated with respect to hunting/angling and swimming and were added to that of the worst case resident receptor. None of the predicted ILCR values exceeded the accepted regulatory benchmark for the Project Alone Case or Process Upset Case; therefore, it is not expected that the facility will pose any additional adverse cancer risk to the health of local receptors at 140,000 tonnes per year.

3.4. Risk characterization: Operational scenarios (400,000 tonnes per year)

For comparison purposes, a human health risk assessment was also performed that considered the possible expansion of the facility to its maximum design operating capacity of 400,000 tonnes per year. This assessment was performed using identical methods and assumptions as those described for the 140,000 tonnes per year assessment, except that the facility related emissions were increased. Most of the conclusions of this assessment were similar to those identified for operational scenarios at 140,000 tonnes per year (i.e., most observed risks were related to existing baseline conditions rather than facility-related emissions). However, in the Process Upset Case,

Table 6
Summary of Multi-Pathway Risk Assessment Hazard Quotient (HQ) Results for Baseline and 140,000 tonnes per year operating scenarios for a. the worst-case resident infant and toddler and b. farmer infant and toddler receptors. Each value represents the maximum observed HQ value for an individual COPC within each chemical class. A bolded cell indicates exposure for that particular scenario and COPC exceeded the selected benchmark.

a.

	Worst-case resident infant					Worst-case resident toddler				
	Baseline	Project Alone	Project	Process Upset	Process Upset Project	Baseline	Project Alone	Project	Process Upset	Process Upset Project
PAHs										
Maximum observed	6.3E-06	3.4E-11	6.3E-06	9.6E-11	6.3E-06	2.0E-05	5.7E-10	2.0E-05	1.6E-09	2.0E-05
PCBs										
Aroclor 1254 (Total PCBs)	**10.8**	0.0003	**10.8**	0.0008	**10.8**	**0.49**	3.4E-05	**0.49**	9.6E-05	**0.49**
VOCs										
Max	0.0002	1.0E-12	0.0002	2.8E-12	0.0002	0.03	2.7E-09	0.03	7.6E-09	0.03
Chlorinated Monocyclic Aromatics										
Maximum observed	0.003	1.2E-08	0.003	3.4E-08	0.003	0.06	1.2E-07	0.06	3.5E-07	0.06
Inorganics										
All except Arsenic and Thallium	0.02	4.0E-05	0.02	5.9E-05	0.02	0.07	0.0002	0.07	0.0004	0.07
Arsenic	0.10	5.0E-07	0.10	7.3E-07	0.10	**0.32**	3.2E-06	**0.32**	4.6E-06	**0.32**
Thallium	0.05	0.0004	0.05	0.0006	0.05	**0.25**	0.002	**0.25**	0.003	**0.26**
Dioxins/Furans and Lead										
2,3,7,8-TCDD Equivalent	**3.8**	0.002	**3.8**	0.004	**3.8**	0.17	0.0002	0.17	0.0006	0.17
Lead	0.04	0.0002	0.04	0.0002	0.04	0.12	0.0005	0.12	0.0007	0.12

b.

	Farmer infant					Farmer toddler				
	Baseline	Project Alone	Project	Process Upset	Process Upset Project	Baseline	Project Alone	Project	Process Upset	Process Upset Project
PAHs										
Maximum observed	6.8E-06	4.7E-11	6.8E-06	1.3E-10	6.8E-06	5.8E-05	1.5E-09	5.8E-05	4.1E-09	5.8E-05
PCBs										
Aroclor 1254 (Total PCBs)	**117.5**	0.004	**117.5**	0.01	**117.5**	**4.2**	0.0001	**4.2**	0.0004	**4.2**
VOCs										
1,1,1-Trichloroethane	1.8E-07	1.6E-14	1.8E-07	4.6E-14	1.8E-07	0.0006	5.1E-11	0.0006	1.4E-10	0.0006
Bromoform	6.6E-05	4.4E-11	6.6E-05	1.2E-10	6.6E-05	**0.32**	1.9E-07	**0.32**	5.3E-07	**0.32**
Carbon Tetrachloride	0.003	4.0E-11	0.003	1.1E-10	0.003	**4.6**	6.3E-08	**4.6**	1.8E-07	**4.6**
Chloroform	3.1E-05	2.3E-13	3.1E-05	6.4E-13	3.1E-05	**0.32**	2.0E-09	**0.32**	5.6E-09	**0.32**
Dichloromethane	2.8E-05	2.1E-12	2.8E-05	6.0E-12	2.8E-05	**0.65**	4.9E-08	**0.65**	1.4E-07	**0.65**
Trichlorofluoromethane	5.9E-06	1.2E-11	5.9E-06	3.4E-11	5.9E-06	0.02	3.8E-08	0.02	1.1E-07	0.02
Chlorinated Monocyclic Aromatics										
Maximum observed (excepting 1,2,4,5-Tetrachlorobenzene and 1,2,4-Trichlorobenzene)	0.03	4.0E-08	0.03	1.1E-07	0.03	0.17	3.2E-07	0.17	9.0E-07	0.17
1,2,4,5-Tetrachlorobenzene	0.02	1.6E-08	0.02	4.4E-08	0.02	**0.40**	2.4E-07	**0.40**	6.8E-07	**0.40**
1,2,4-Trichlorobenzene	**0.21**	1.7E-10	**0.21**	4.8E-10	**0.21**	**20.1**	1.3E-08	**20.1**	3.7E-08	**20.1**
Inorganics										
Maximum observed (excepting antimony, arsenic, beryllium, and thallium)	0.02	4.2E-05	0.02	6.1E-05	0.02	0.18	0.0006	0.18	0.0009	0.18
Antimony	0.01	5.9E-06	0.01	8.6E-06	0.01	**0.24**	8.3E-05	**0.24**	0.0001	**0.24**
Arsenic	0.10	7.0E-07	0.10	1.0E-06	0.10	**0.57**	7.6E-06	**0.57**	1.1E-05	**0.57**
Beryllium	0.001	6.6E-07	0.001	9.6E-07	0.001	**0.42**	2.8E-06	**0.42**	4.1E-06	**0.42**
Thallium	0.05	0.0006	0.05	0.0008	0.05	**1.2**	0.01	**1.2**	0.02	**1.2**
Dioxins/Furans and Lead										
2,3,7,8-TCDD Equivalent	**20.3**	0.05	**20.3**	0.13	**20.4**	**0.72**	0.002	**0.72**	0.004	**0.73**
Lead	0.04	0.0002	0.04	0.0003	0.04	**0.20**	0.0010	**0.20**	0.001	**0.20**

slightly elevated potential risks above the government benchmarks for human health were noted that were not explained by baseline conditions. Maximum exposure to the 1 hour hydrogen chloride concentration at the commercial/industrial receptor location resulted in a CR of 1.0 (benchmark CR = 1.0) and exposure of farmer infant to breast milk of a mother living in close proximity to the facility under the Process Upset Case resulted in an infant dioxin and furan HQ of 0.22, which was slightly in excess of the government benchmark of 0.2. However, these slight exceedances of benchmark risk levels were seen only under upset conditions, it is possible that they may be prevented through the application of adequate engineering controls. Regardless, in the event that a 400,000 tonnes per year expansion of the facility is eventually contemplated, special consideration should be given at that time to ensure that Process Upset Conditions do not result in an undue risk to people living and working in the area surrounding the facility. Overall, the results suggest that a 400,000 tonnes per year facility could be safely sited in Clarington, Ontario using the pollution control technology suggested by Covanta.

Table 7
Summary of multi-pathway risk assessment hazard quotient (HQ) results for baseline and 140,000 tonnes per year operating scenarios for additional exposure via a. swimming and b. hunting/angling. The results of adding these exposure pathways to the worst case resident toddler are also shown. Each value represents the maximum observed HQ value for an individual COPC within each chemical class. A bolded cell indicates exposure for that particular scenario and COPC exceeded the regulatory benchmark.

a.

	Hazard quotients for swimming exposure alone (toddler)					Swimming exposure added to worst case resident toddler				
	Baseline	Project Alone	Project	Process Upset	Process Upset Project	Baseline	Project Alone	Project	Process Upset	Process Upset Project
PAHs										
Maximum observed	1.2E-06	2.8E-11	1.2E-06	7.8E-11	1.2E-06	2.1E-05	5.7E-10	2.1E-05	1.6E-09	2.1E-05
PCBs										
Aroclor 1254 (Total PCBs)	0.03	6.8E-07	0.03	1.9E-06	0.03	**0.52**	3.5E-05	**0.52**	9.8E-05	**0.52**
VOCs										
Maximum observed	0.001	2.1E-08	0.001	5.8E-08	0.001	0.03	2.6E-08	0.03	7.3E-08	0.03
Chlorinated Monocyclic Aromatics										
Maximum observed	0.0007	1.1E-07	0.0007	3.0E-07	0.0007	0.06	2.3E-07	0.06	6.5E-07	0.06
Inorganics										
Maximum observed excepting arsenic, cadmium, and thallium	0.02	1.3E-05	0.02	1.9E-05	0.02	0.07	0.0002	0.07	0.0003	0.07
Arsenic	0.01	2.7E-06	0.01	3.9E-06	0.01	**0.33**	5.8E-06	**0.33**	8.5E-06	**0.33**
Cadmium	0.0003	2.6E-05	0.0003	3.8E-05	0.0003	0.03	0.0003	0.03	0.0004	0.03
Thallium	0.005	0.001	0.006	0.001	0.008	**0.26**	0.003	**0.26**	0.004	**0.26**
Dioxins/Furans and Lead										
2,3,7,8-TCDD Equivalent	0.003	2.8E-07	0.003	8.0E-07	0.003	0.17	0.0002	0.17	0.0006	0.17
Lead	0.0008	2.3E-05	0.0008	3.4E-05	0.0008	0.12	0.0005	0.12	0.0007	0.12

b.

	Hazard quotients for hunter/angler exposure alone (toddler)					Hunter/angler exposure added to worst case resident toddler				
	Baseline	Project Alone	Project	Process Upset	Process Upset Project	Baseline	Project Alone	Project	Process Upset	Process Upset Project
PAHs										
Maximum observed	2.1E-05	3.4E-12	2.1E-05	9.6E-12	2.1E-05	4.1E-05	5.7E-10	4.1E-05	1.6E-09	4.1E-05
PCBs										
Aroclor 1254 (Total PCBs)	**0.67**	0.002	**0.67**	0.006	**0.68**	**1.20**	0.002	**1.20**	0.006	**1.20**
VOCs										
Maximum observed	–	6.2E-09	–	1.7E-08	–	0.03	6.2E-09	0.03	1.7E-08	0.03
Chlorinated Monocyclic Aromatics										
Maximum observed	0.06	8.3E-06	0.06	2.3E-05	0.06	0.11	8.4E-06	0.11	2.4E-05	0.11
Inorganics										
Maximum observed excepting arsenic, cadmium, and thallium	0.16	0.001	0.16	0.002	0.16	0.17	0.001	0.17	0.002	0.17
Arsenic	**0.43**	3.3E-05	**0.43**	4.7E-05	**0.43**	**0.75**	3.6E-05	**0.75**	5.2E-05	**0.75**
Cadmium	**0.47**	0.008	**0.47**	0.01	**0.48**	**0.49**	0.008	**0.50**	0.01	**0.50**
Thallium	0.17	0.002	0.17	0.003	0.17	**0.42**	0.004	**0.42**	0.006	**0.43**
Dioxins/Furans and Lead										
2,3,7,8-TCDD Equivalent	**0.38**	0.002	**0.38**	0.005	**0.38**	**0.54**	0.002	**0.54**	0.005	**0.55**
Lead	0.04	0.0006	0.04	0.0009	0.04	0.15	0.001	0.15	0.002	0.15

3.5. Risk characterization: Decommissioning and abandonment

Decommissioning and abandonment of the facility is not expected to occur for several decades. Similar to the construction case, it is expected that this process would entail short-term, localized emissions of air contaminants. While it is unlikely that these activities would significantly increase any potential risk to human health, it is expected that a more current assessment of these potential risks would be conducted prior to the commencement of decommissioning activities. Consequently, the prediction of risks to human health from decommissioning and abandonment were not undertaken in this assessment.

4. Uncertainty Analysis

As part of this risk assessment, it was necessary to make certain assumptions in order to be able to quantitatively evaluate the risks to human health from exposure to the Project. These assumptions inherently add an element of uncertainty to the risk assessment. Where variability and uncertainty are known to exist, it is standard risk assessment practice to make assumptions and select data that are likely to overestimate, rather than underestimate, potential exposure and effects. As a result, risk assessments tend to overstate the actual level of risk. Some of the conservative assumptions applied in this risk assessment include the use of method detection limits to represent chemical concentrations and use of child-specific ingestion rates to represent toddler rate of ingestion. A full accounting of the assumptions and uncertainties relied upon in this HHRA is provided in the Supporting Information (Section S10).

5. Conclusions

Overall, the results of the human health risk assessment indicate that it is not expected that the proposed project (i.e., construction, operation, and eventual decommissioning of a modern EFW thermal treatment facility) will result in any adverse health risk to local residents, farmers or other receptors in the Local Risk Assessment Study Area at 140,000 tonnes per year. Although some risk has been identified through the assessment of Baseline Case concentrations, this risk can be attributed to conservative modeling assumptions that overestimate the actual risk present (e.g., use of method detection limits to represent chemical concentrations and use of child-specific ingestion rates to represent toddler rate of ingestion) and/or pre-existing natural or anthropogenic conditions that correlate to baseline risk. These pre-existing natural or anthropogenic conditions were generally shown not to differ from those of similar urbanized areas in Ontario.

Based on the success of this human health risk assessment and an accompanying ecological risk assessment (see Ollson et al., 2014), the regions of Durham and York were able to move forward with this project, and the described facility is currently under construction, with operational start-up anticipated in Fall 2014. This facility will be capable of processing 140,000 tonnes of post-diversion residual waste annually while recovering metals and energy.

Conflict of interest

The authors have no actual or potential conflicts of interest to declare.

Acknowledgements

The authors wish to acknowledge the contribution of Greg Crooks and his Air Quality team at Stantec who provided the required air input data. We would also like to thank the Chair Anderson, Council, and Cliff Curtis and his staff at Durham Region; without them this project would not have been undertaken. The direction of the overall environmental assessment was provided by James McKay, now with HDR Canada.

Appendix A. Supplementary data

Supplementary data to this article can be found online at http://dx.doi.org/10.1016/j.scitotenv.2013.07.019.

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ENERGY

MEMO

Job	**Bromine in Waste**
Client	**EfW Facility TNG NSW**
Memo no.	**5**
Date	**2016-10-14**
To	**To Whom it may concern**
From	**Ahmet Erol (Ramboll)**
Copy to	**Ian Malouf (DADI)**
	Phill Andrew (Savills)
	Amanda Lee (AECOM)
	Lesley Randall (AECOM)
	Rachael Snape (Urbis)
	Damon Roddis (Pacific Environment)

Bromine Emissions from WtE

Background

The most common use of brominated flame retardants (BFRs) is in building materials, textiles and electronic supplies, e.g. TVs, PCs and photocopiers. In incineration plants with good combustion BFRs will decompose and form other brominated compounds (Söderström, G. et al, 2000), mainly hydrogen bromide (HBr) (Vehlow, J. et al, 1998).

In addition, other brominated compounds will also be formed, in particular brominated organic compounds, such as dioxins where chlorine is fully or partly substituted by bromine (brominated and brominated/chlorinated dioxins).[1]

Characterization of the brominated waste

Data from literature regarding bromine content in municipal waste from households and small businesses indicates typical bromine content of 0,003-0,006 % by weight of bromine.

Floc waste TNG

Analysis of 17 floc samples from TNG facility done by HRL Technology shows that the average bromine content is 0,01 % on dry basis (db). Maximal bromine content was 0,04 % (db).
TNG has 14,4% floc waste in the design waste.

Increase of bromine content by floc waste

Assuming an average content of 0.0045% bromine (average of reported minimum and maximum content of 0.003% and 0.006%) in all waste streams except floc waste and 0,01% bromine in floc this results in an increase of bromine in the total waste from 0.0045% to 0.00529%. The final concentration of 0.00529% is still within the reported range of MSW.

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[1] Emission Measurements During Incineration of Waste Containing Bromine, TemaNord 2005:529

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Effect of increased bromine content in waste

The most extensive measurements were performed at the largest municipal waste incineration plant in Oslo (Klemetsrud Plant). The plant has two incinerator lines, each with the capacity of incinerating 10 tons of waste per hour. Each line is equipped with a flue gas cleaning system, consisting of a bag house filter with active coal injection, and a wet scrubber.

At this plant sampling and analysis were carried out in three different situations:

- No addition of brominated waste
- Mix with 5 % by weight brominated waste; i.e. approximately 0,05 % by weight bromine in total waste.
- Mix with 10 % by -weight brominated waste; i.e. approximately 0,1 % by weight bromine in total waste.

Results

The in stack (after flue gas treatment) concentration of gaseous bromine (HBr and Br_2) was reported to be < 2,2 mg/Nm^3 even in the case of addition of 10% brominated waste.

The in stack concentration of BFR in case of the Klemetsrud Plant was 14-22 ng/Nm^3, in case of the Energos Plant (Ranheim) <5 ng/Nm^3. The BFR detected where DekaBDE and TBBPA, in the flue gas DekaBEDE has the highest concentration level.

Brominated waste has no adverse effect on dioxin formation nor on additional formation of brominated and chlorinated/brominated dioxins.

Conclusions

Using floc waste as a fuel has no adverse effect on the emissions of a WtE facility.

In case of TNG (with a comparable flue gas cleaning technology as the Energos plant) the in stack concentrations for gaseous bromine can be assumed to be below 2 mg/Nm^3, BFR below 5 ng/Nm^3 and total brominated dioxins far below 0,05 ng/Nm^3.

Reference (attached):

Emission Measurements During Incineration of Waste Containing Bromine, TemaNord 2005:529, © Nordic Council of Ministers, Copenhagen 2005

Emission Measurements During Incineration of Waste Containing Bromine

TemaNord 2005:529

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Nordic Environmental Co-operation

Environmental co-operation is aimed at contributing to the improvement of the environment and forestall problems in the Nordic countries as well as on the international scene. The co-operation is conducted by the Nordic Committee of Senior Officials for Environmental Affairs. The co-operation endeavours to advance joint aims for Action Plans and joint projects, exchange of information and assistance, e.g. to Eastern Europe, through the Nordic Environmental Finance Corporation (NEF-CO).

Nordic Co-operation

Nordic co-operation, one of the oldest and most wide-ranging regional partnerships in the world, involves Denmark, Finland, Iceland, Norway, Sweden, the Faroe Islands, Greenland and Åland. Co-operation reinforces the sense of Nordic community while respecting national differences and similarities, makes it possible to uphold Nordic interests in the world at large and promotes positive relations between neighbouring peoples.

Co-operation was formalised in 1952 when *the Nordic Council* was set up as a forum for parliamentarians and governments. The Helsinki Treaty of 1962 has formed the framework for Nordic partnership ever since. The *Nordic Council of Ministers* was set up in 1971 as the formal forum for co-operation between the governments of the Nordic countries and the political leadership of the autonomous areas, i.e. the Faroe Islands, Greenland and Åland.

Content

Preface

Background

The most common use for BFRs is in building materials, textiles and electronic supplies, e.g. TVs, PCs and photocopiers. In incineration plants with good combustion BFRs will decompose and form other brominated compounds, mainly hydrogen bromide (HBr).

In addition, other brominated compounds will also be formed, in particular brominated organic compounds, such as dioxins where chlorine is fully or partly substituted by bromine (brominated and brominated/chlorinated dioxins).

There have been few Studies regarding incineration of plastics containing BFRs at full-scale incineration plants with a modern flue gas cleaning system.

The Norwegian Ministry of the Environment presented in the autumn of 2002 a working plan for reducing the emissions and discharges of BFRs. One action is to investigate the emissions from incineration of waste containing BFRs.

The project has been organised as follows:

Management group:

- Håkon Jentoft, Norwegian Solid Waste Assosiation (NRF)
- Bernt Ringvold, Norwegian Pollution Control Authority (SFT)
- Ole Viggo Svendsen, Elektronikkretur AS
- Tor Christian Svendsen, Hvitevareretur AS
- Hallgeir Betele, Renas
- Fredrik Eide Aas, Stena Miljø AS
- Gerhard Dürbeck, Oslo kommune renovasjonsetaten
- Nordic working group for Thermal Treatment

Reference group:

- NRF's working group for Thermal Treatment
- NRF has been the secretary for the project.

The work has been done by Kjelforeningen Norsk Energi. Authors are Dag Borgnes and Bente Rikheim.

Abstract

Project objective

The objective of the project is to investigate the emissions of dioxin-compounds that may occur from incineration of plastic waste containing brominated flame retardants (BFRs) together with waste from households and the commercial sector. The decomposition of BFRs will also be investigated.

The project results will serve as a basis for both the authorities and the owners of incineration plants, to make decisions about whether, and under what conditions, this type of waste may be incinerated.

Literature search and initial studies

The objective of the literature search and initial studies is to establish a detailed program for measurements. It should also be the basis for comparison and evaluation of the results from the measurements.

Studies in small-scale pilot plants

Incineration tests with waste containing BFRs have been carried out in small-scale pilot plants in Sweden (University of Umeå) and in Germany (TAMARA Plant).

The results from Sweden, where the content of bromine was increased up to 1-2 % by weight, showed that the concentration of halogenated dioxins in untreated flue gas was significantly higher with BFRs than without.

At the TAMARA-Plant, the content of bromine varied from 0 to approximately 0,2 % by weight. Increasing the content of bromine showed no increase in the concentration of chlorinated dioxins, or in brominated or brominated/chlorinated dioxins in untreated flue gas.

Measurements on full-scale plants

Studies of emissions of brominated dioxins to air were earlier carried out on incineration plants in Denmark, Sweden and Norway. Measurements performed in Denmark also included brominated/chlorinated dioxins. All plants were equipped with advanced flue gas treatment systems. Measurements were performed during incineration of waste from households and the commercial sector (waste with low BFR content), and results showed very low levels for all analysed dioxins.

There is little relevant data of emissions of BFRs from waste incineration plants. We have found results from emission measurements carried out at a Japanese incineration plant burning plastic waste containing

BFRs, mixed with waste from households and the commercial sector. Total input of BFRs was less than 500 g/hr, and the emission to air of PBDE (polybrominated diphenyl ethers) and TBBPA (tetrabrombisphenol) was respectively 3,5 and 8 ng/Nm^3.

Incineration tests at three Norwegian plants

The main goal of the incineration tests was to establish the flue gas concentration of brominated, chlorinated and brominated/chlorinated dioxins before and after flue gas cleaning, and with different proportions of plastic waste containing BFRs. To verify the input, the contents of bromine and chlorine in all output flows (bottom ash, fly ash, scrubber water and flue gas) were analysed. The decomposition of BFRs was investigated by analysing BFRs in output flows.

Execution of tests

The incineration test included sampling and analysis at two larger plants for mixed municipal waste, and one smaller plant for ground/shredded industrial waste. The brominated waste added was waste from a plant for demolition of electric and electronic devices. It was estimated to contain approximately 1 % by weightbromine. Approximately 80% of this contained PBDE.

The most extensive measurements were performed at the largest municipal waste incineration plant in Oslo (Klemetsrud Plant). The plant has two incinerator lines, each with the capacity of incinerating 10 tons of waste per hour. Each line is equipped with a flue gas cleaning system, consisting of a bag house filter with active coal injection, and a wet scrubber.

At this plant sampling and analysis were carried out in three different situations:

- No addition of brominated waste
- Mix with 5 % by weight brominated waste; i.e. approximately 0,05 % by weight bromine in total waste.
- Mix with 10 % by -weight brominated waste; i.e. approximately 0,1 % by weight bromine in total waste.

At the second plant (FREVAR Plant, Fredrikstad) measurements were carried out with no addition of BFRs.

At the third and smaller plant (Energos Plant, Ranheim) measurements were performed incinerating a mix with 0 and 20 % by weight bromine containing waste (i.e. 0,2 % by weight bromine in the total mix).

Results and conclusions

The incinerating conditions during sampling and measurements at Klemetsrud Plant (Oslo) were normal for the plant, with average CO-levels at approximately 20-30 mg/Nm^3. During sampling at the FREVAR Plant average CO-levels were approximately 50 mg/Nm^3. At FREVAR Plant they also experienced some problems with the fabric filters during the measurements.

At the Energos Plant (Ranheim) CO was not detectable, which indicates that incineration was good.

Bromine in output flows

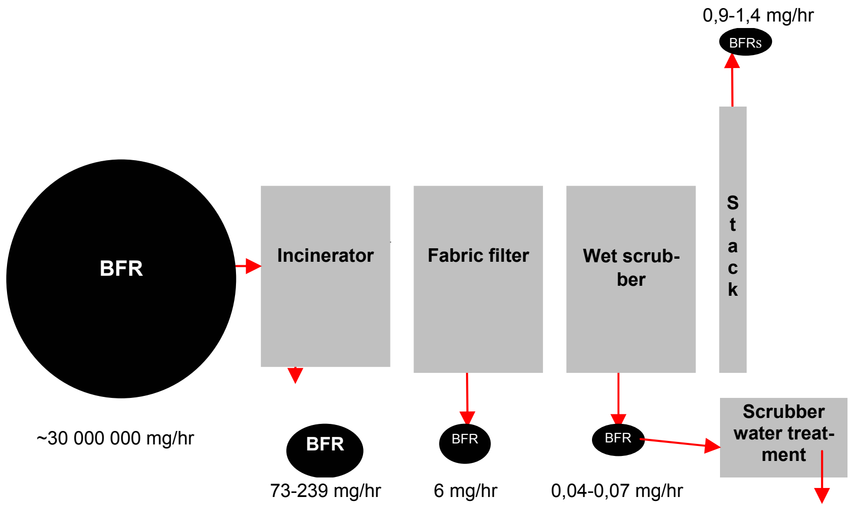
Measured results for gaseous bromine in untreated flue gas during incineration of normal waste mix indicates a bromine content equal to or lower than what is common for waste from households and the commercial sector.

Measured results of bromine in output flows at Klemetsrud Plant (Oslo) and at the Energos Plant (Ranheim) indicate that the content of bromine in the plastic mixture was correctly estimated.

Brominated flame retardants (BFRs)

The amount of BFRs in the waste mixture used in the tests at Klemetsrud Plant (Oslo) was not analysed, but calculated/estimated to be approximately 30 kg/hr. The measured results confirm that BFRs decompose in the incineration process. The amount of BFRs in output flows is less than 0,001 % by weight of the total amount of BFRs in the waste mix (see figure below).

Observed input and output flows of brominated flame retardants at Klemetsrud Plant (Oslo) with 10 % by weight addition of brominated waste.



The concentration of BFRs in flue gas from Klemetsrud Plant (Oslo) was 14-22 ng/Nm^3. This equals 0,9-1,4 mg/hour and approximately 0,01 kg/year, assuming 8000 running hours/year at the same emission level. A Danish study (Miljøstyrelsen, 1999) estimates the total national Danish emissions of BFRs from incineration to be < 0,04 tons. A report from the Norwegian National State Pollution Control Authority (SFT), estimates the national emissions from combustion in Norway to be < 0,01 tons (1998), i.e. < 10 kg/year.

At the Energos Plant (Ranheim) the reported concentration of BFRs in the flue gas was <5 ng/Nm^3.

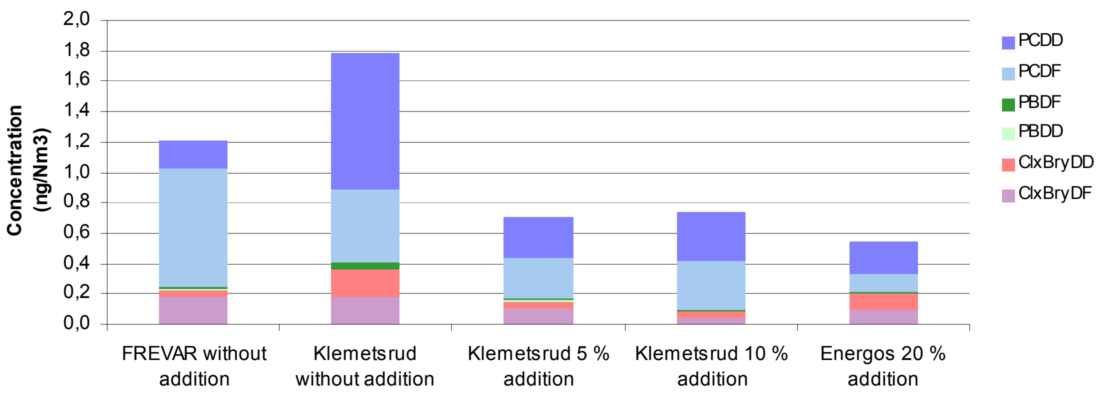
The concentration of BFRs in bottom ash from the tests at Klemetsrud Plant (Oslo) shows levels far below the threshold value stated in the Hazardous Waste Directive.

DekaBEDE and TBBPA (Tetrabrombisphenol A) are the dominating compounds of BFRs in the bottom ash at Klemetsrud Plant (Oslo). In the flue gas dekaBEDE has the highest concentration level.

Concentration of dioxins in emissions to air (after cleaning)

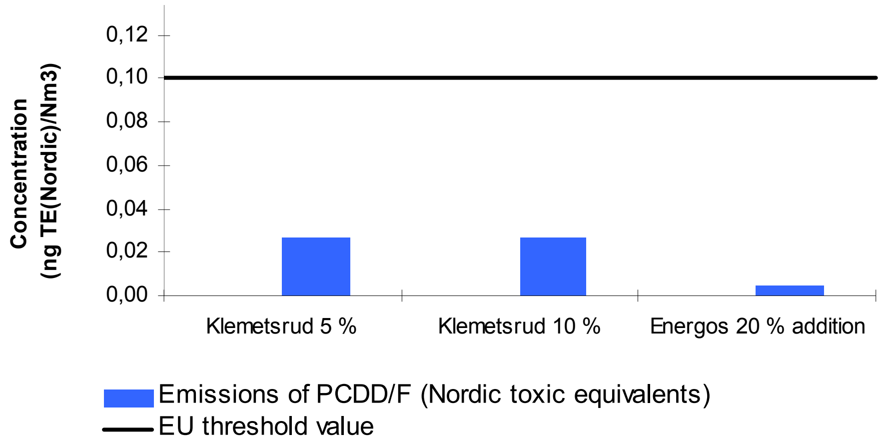
The figure below shows emissions of chlorinated, brominated and chlorinated/brominated dioxins without any addition of brominated waste, and with the addition of 5 % by weight, 10 % by weight and 20 % by weight bromine containing waste.

Emissions of chlorinated, brominated and chlorinated/brominated dioxins. The results are reported as actual emission, not toxic equivalents.



Emissions of chlorinated dioxins (PCDDs/Fs), in terms of Nordic toxic equivalents, resulting from the addition of brominated waste, are presented in the figure below.

Emissions of chlorinated dioxins (PCDDs/Fs), in terms of Nordic toxic equivalents, resulting from addition of brominated waste.



Uncertainty in sampling and analysis, variations in operating conditions and waste mixture, differences between laboratories with respect to methods of analysis (especially dioxins), makes comparison of results difficult. We may although draw the following main conclusions:

- Increasing the content of BFRs in the waste gave no significant increase in the emissions of chlorinated dioxins, or either brominated and chlorinated/brominated dioxins
- The emission level is highest for chlorinated dioxins, lower for chlorinated/brominated dioxins and lowest for brominated dioxins

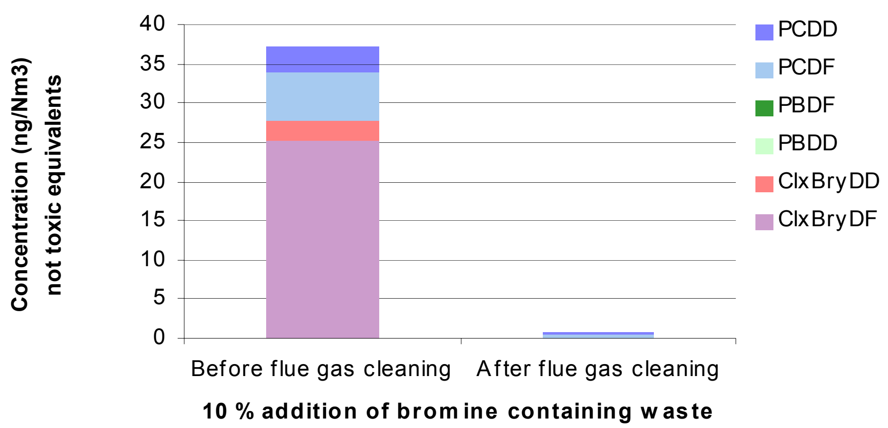
- The emission levels for chlorinated dioxins, reported as Nordic toxic equivalents, are low compared to emission threshold value in the EU-directive for incineration of waste. The reported emission levels were 0,03 ng/Nm^3 and 0,006 ng/Nm^3 respectively for the Klemetsrud Plant (Oslo) and Energos Plant (Ranheim), and the EU threshold value is 0,1 ng/Nm^3.
- The emission measurement results indicate that the incineration efficiency and the operating conditions of the flue gas treatment systems are of greater importance to the resulting emission levels for dioxins, rather than the bromine content level.

Concentration of dioxins in emissions before and after cleaning

Measurements of dioxins in the flue gas before and after flue gas cleaning were carried out with addition of 10 % by weight bromine containing waste at the Klemetsrud Plant (Oslo)

The concentration of chlorinated/brominated dioxins before cleaning was approximately 28 ng/Nm^3, which was three times the concentration of chlorinated dioxins. After cleaning the concentration was approximately 0,1 ng/Nm^3. This gives a removal efficiency for chlorinated/brominated dioxins of >99% and for chlorinated dioxins approximately 93%. The removed dioxins end up in the fly ash from the fabric filter, which is treated as hazardous waste.

Concentration of chlorinated, brominated and chlorinated/brominated dioxins in flue gas before and after flue gas cleaning, Klemetsrud Plant (Oslo). The levels are given as actual measured levels, not corrected for toxicity.



1. Background and Objective

The most common use of BFRs is in building materials, textiles and electronic supplies, e.g. TVs, PCs and photocopiers. In incineration plants with good combustion BFRs will decompose and form other brominated compounds (Söderström, G. et al, 2000), mainly hydrogen bromide (HBr) (Vehlow, J. et al, 1998). Additionally, other brominated compounds will also be formed, in particular brominated organic compounds, such as dioxins where chlorine is fully or partly substituted by bromine (brominated and brominated/chlorinated dioxins).

The formation of brominated/chlorinated dioxins during incineration of waste with BFRs has been proven earlier, in the project "Co-incineration of brominated flame-retardants and MSW in small-scale reactor" in 2000 (financed by the Nordic PA-group and documented in TEMA-Nord Report No 2001:512). The tests were carried out at Umeå University, in at laboratory pilot plant with no flue gas treatment.

There have been few studies regarding incineration of plastics containing BFRs at full-scale incineration plants with a modern flue gas cleaning system.

The Norwegian Ministry of the Environment presented in the autumn of 2002 a working plan for reducing the emissions and discharges of BFRs. One action is to investigate the emissions from incineration of waste containing BFRs.

The objective of the project is to investigate the emissions of dioxin-compounds that may occur from incineration of plastic waste containing brominated flame-retardants (BFRs) together with waste from households and the commercial sector. The decomposition of BFRs will also be investigated.

The project results will serve as a basis for both the authorities and the owners of incineration plants, to make decisions about whether, and under what conditions, this type of waste may be incinerated.

This report is based on separate reports from incineration tests at Klemetsrudanlegget (Oslo) (Kjelforeningen-Norsk Energi, 2004), and at FREVAR (Kjelforeningen-Norsk Energi, 2004b), which also include detailed description of measurement methods and analysis results.

The incineration tests at Energos Ranheim are reported in a report from TÜV Nord Umweltschutz (2003).

2. Terms and Abbreviations

Brominated flame-retardants (BFRs)

Name specific compound	IUPAC-no*.	Abbreviation	Abbreviation groupname	Groupname
TBA		TBA	TBA	Tribromanisol
4,4'-DiBB	15	DiBB	PBB	Polybrominated Biphenyls
2,2',4,5'-TetBB	49	TetBB		
2,2',5,5'-TetBB	52			
2,2',4,4',5,5'-HexBB	153	HeksaBB		
2,4,4'-TriBDE	28	TriBDE	PBDE	Polybrominated diphenyl ethers
2,2',4,4'-TetBDE	47	TetBDE		
2,3',4',6-TetBDE	71			
3,3',4,4'-TetBDE	77			
2,2',4,4',5-PenBDE	99	PeBDE		
2,2',4,4',6-PenBDE	100			
2,3',4,4',6-PenBDE	119			
2,2',3,4,4',5'-HexBDE	138	HexBDE		
2,2',4,4',5,5'-HexBDE	153			
2,2',4,4',5,6'-HexBDE	154			
2,2',3,4,4',5',6-HepBDE	183	HepBDE		
DecaBDE	209	DecaBDE		
TBBPA		TBBPA	TBBPA	Tetrabrombisphenol A
alpha-HBCD		HBCD	HBCD	Hexabrom-cyklododecane
beta-HBCD				
gamma-HBCD				

* Indexes according to International Union of Pure and Applied Chemistry (IUPAC).

Chlorinated dioxins (PCDD+PCDF)
PCDD = polychlorinated dibenzo-p-dioxins
PCDF = polychlorinated dibenzofurans

Brominated dioxines (PBDD+PBDF)
PBDD = polybrominated dibenzo-p-dioxins
PBDF = polybrominated dibenzofurans

Brominated/chlorinated dioxins (ClxBryDD+ClxBryDF)
ClxBryDD, PXDD = polychlorinated/brominated dibenzo-p-dioxins
ClxBryDF, PXDF = polychlorinated/brominated dibenzofurans

3. Incineration of Plastics Containing Brominated Flame-Retardants

3.1 Plastics from EE-waste

Brominated flame-retardants are being found in i.e. electric and electronic (EE) products. In Norway and Sweden there is established extensive collection systems for discarded EE products. As a consequence of new EU regulations, similar systems will have to be established in all EU/EEA countries within the end of 2005.

Table 1 shows the amounts of plastics from EE-waste, based on the information from collection companies in Norway (Svendsen, T. C., 2003).

Table 1 Amounts of plastics from EE-waste, based on the information from collection companies (tons/år)

Collection company	Separated plastics (tons/år)	Plastics in shredderfluff (tons/år)
Elektronikkretur AS	1800	180
Hvitevareretur AS	150	4000
RENAS AS	45	239
Total	1995	4419

As will be seen from Table 1, approximately 2000 tons separated plastics is generated yearly from EE-waste. This is bigger plastic items with and without BFRs, which relatively easy may be sorted out manually, for example the cover of a data monitor, back-cover of a TV and soap container in a dishwasher. These plastic components will mainly be incinerated in advanced waste incinerators with adequate flue gas cleaning.

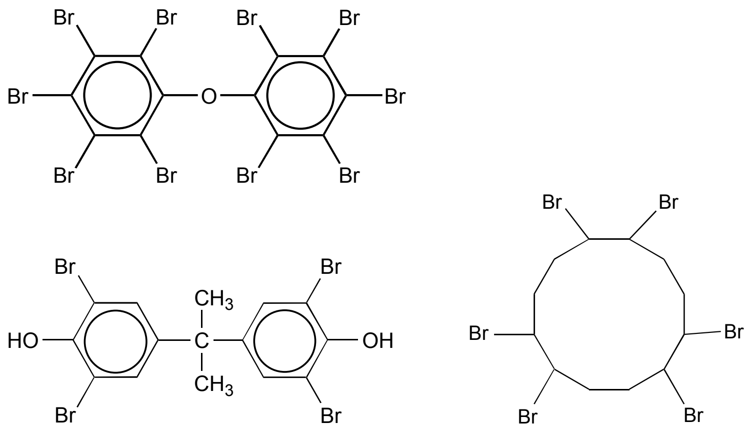
The largest amount of plastics will however be found in the so-called shredderfluff, with an amount of approximately 4400 tons/year. Shredderfluff is the waste fraction from wrecked car/scrap metal fragmenting plants, and it contains (among other things) a mix of plastics, rubber, wood, concrete, and small amounts of metals. In Norway, shredderfluff is normally deposited in landfills.

3.2 Emissions of brominated flame-retardants

The most applied brominated flame-retardants are the group polybrominated diphenylethers (PBDE) and the compunds tetrabromobisphenol A (TBBPA) og hexabromocyclododecane (HBCD).

Figure 1 shows and example of polybrominated diphenylethers (DeBDE), TBBPA and HBCD.

Figure 1 Polybrominated diphenylether (DeBDE), TBBPA og HBCD.



Decabromodiphenyl ether (DeBDE) *Tetrabromobisphenol A (TBBPA)*
Hexabromocyclododecane (HBCD)

In incinerators with good combustion, the BFRs will decompose and form other brominated compounds (Söderström, G. et al, 2000), mainly hydrogenbromide (HBr) (Vehlow, J. et al, 1998).

3.3 Formation and emissions of chlorinated, brominated and brominated/chlorinated dioxins

Chlorinated dioxins is a collective term for organic compounds consisting of dibenzo-p-dioxins and dibenzofurans with 1-8 chlorine substituents in different positions. This gives a total 210 different plychlorinated dibenzo-p-dioxins (PCDD) and polychlorinated dibenzofurans (PCDF). Chlorinated dioxins and furans are often referred to as ”dioxins”.

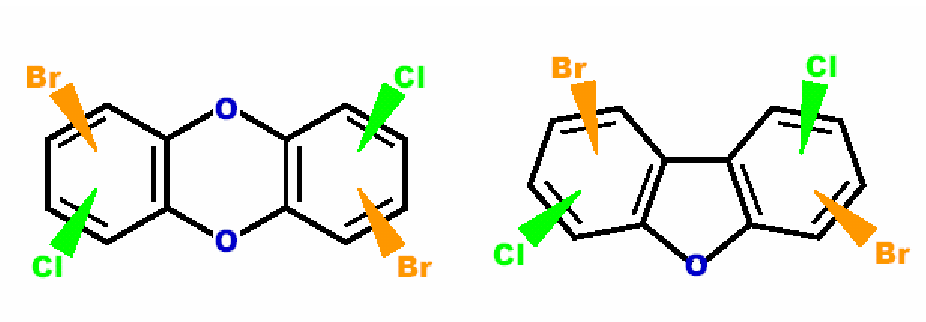
Brominated dioxines is a collective term for the corresponding 210 organic compounds substituted with bromine instead of chlorine. These are normally also reffered to as PBDD og PBDF (polybrominated dibenzo-p-dioxins og polybrominated dibenzofurans).

Brominated/chlorinated dioxins includes dibenzo-p-dioxins and dibenzofurans with both bromine and clorine substituents, in total 4600 different compounds. See figure 2.

Air emissions of chlorinated dioxins are regulated through the standard regulations for incineration, and the emissions are checked every 6 or 12 months. The emission limit value is given in terms of toxic equivalents, which is generated by weighted calculation, giving each compound a relative weight value between 0 and 1, depending on the toxicity. 2,3,7,8-tetrachlorine dibenzo-p-dioxin is known as the most toxic compound, and therefore has the relative weight value 1.

Toxic equivalents terms is however not established for compounds of brominated and brominated/chlorinated dioxins.

Figure 2 Brominated/chlorinated dibenzo-p-dioxins and dibenzofurans



Formation of dioxins

The formation of dioxins during incineration has been studied extensively for nearly 30 years.

Different formation mechanisms has been found:

- De Novo synthesis
- Precursor reactions
- Secondary halogenations in flue gas

In the de Novo synthesis, the formation takes place by chlorination of compounds in flue gas containing carbon. The chlorination step is assumed to occur as HCl combine to form Cl_2 (the Deacon-reaction), with subsequently chlorination of aromatics. The Deacon-reaction is catalysed by (among others) compounds of copper, and is favoured by oxygen excess.

Chlorinated dioxins may also be formed from precursors, for example chlor-phenols, which can condensate on particle surfaces, and also by halogenation of non-chlorinated dioxins and furans in flue gas. Studies have shown that the highest formation of dioxins takes place at temperatures between 200-600° C.

Emissions of dioxins may also occur if the incinerated waste or the added combustion air contains dioxins. To minimize the formation of chlorinated dioxins, one has found the following to be important:

- Short residence time at temperatures favouring dioxin formation
- Efficient combustion
- Minimize chlorine content in waste
- Minimize particle content in flue gas
- Increased sulphur/chlorine content ratio
- Minimize oxygen excess
- Minimize content of metals which can act as catalysers (especially copper)

Several studies have shown that there is no clear relation between the rate of dioxin formation and the chlorine content (SFT, 1994) (Wikström, E., 1999). However, some waste incineration tests indicate that dioxin formation increases with increasing chlorine content, when the chlorine content exceeds a certain value.

Several studies of waste incineration have shown that combustion efficiency is of greater importance for the dioxin formation, rather than the chlorine content.

Formation mechanisms for brominated and brominated/chlorinated dioxins are less investigated. It is however reasonable to assume that mechanism has similarities with the formation mechanism of chlorinated dioxins.

Incineration plants which comply with the regulations of the EU-directive for waste incineration, are all equipped with flue gas cleaning systems which reduce the concentration of chlorinated dioxins in the flue gas substantially. The similarities between chlorinated, brominated and brominated/chlorinated dioxins indicates strongly that the cleaning efficiency is also high for brominated and brominated/chlorinated dioxins.

4. Former Incineration Tests

Swedish, Danish and Finnish environmental authorities has been contacted to get data from incineration tests including measurements of brominated and brominated/chlorinated dioxins.

Information has also been gathered from universities and research communities in Sweden, Denmark and Germany, and also through search on the Internet. Articles from the last three Dioxin conferences (2001, 2002, 2003) are also examined.

The objective of this work has been to establish a detailed measurement program. The possibility to estimate input amounts of bromine from measurements/calculations of output bromine containing flows (bromine in bottom ash, fly ash, flue gas and scrubber water) is also investigated. The work should also form basis for comparison and evaluation of measurement results from the incineration test.

4.1 Brominated and brominated/chlorinated dioxins

4.1.1 Incineration tests in pilot plants

Emissions and formation of brominated dioxins is investigated in a pilot plant in Germany. The TAMARA Plant has a capacity of 250 kgs of waste per hour, and is equipped with textile filter, quenching and a wet scrubber. At this plant incineration tests of polystyrene- and polyurethane foam containing BFRs has been carried out, together with waste from households and smaller industries/businesses (Vehlow, J. et al, 1996).

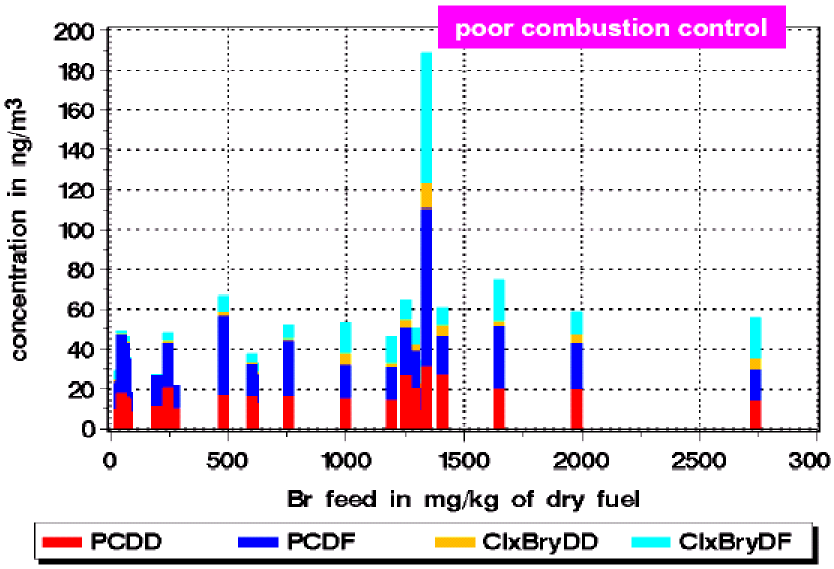
The incineration temperature was ranging from 850 to 950 ºC. The additional inputs of bromine during the tests were ranging up to 6 times the original bromine content in the household waste.

Measurement results showed low concentrations of brominated dioxins, and the study concluded that incineration of limited amounts of specific foams in efficient plants with "state of the art" flue gas cleaning, is environmentally acceptable.

Tests with incineration of plastics from EE-waste, together with waste from households and smaller industries/businesses, have also been carried out in the TAMARA Plant (Vehlow, J. et al, 1997). The tests included four different types of plastics, with different contents of bromine.

Measurements of brominated, chlorinated, and brominated/chlorinated dioxins in flue gas, both prior to and after cleaning, were carried out. The tests also included analysis of bromine content in the plastics, bromine-, chlorine- and antimony-content in bottom ash, fly ash and flue gas before cleaning. Antimony is often added to enhance the effect of BFRs. It was concluded that EE-waste containing bromine and bromine and chlorine did not increase the total formation of dioxins. Figure 3 shows concentration levels of PCDDs/Fs and Cl_xBr_yDDs/Fs in flue gas before cleaning as a function of the bromine content in the waste.

Figuer 3 Concentration levels of PCDDs/Fs and Cl_xBr_yDDs/Fs in flue gas before cleaning as a function of the bromine content in the waste, recorded from incineration tests with EE-waste at TAMARA Plant, Germany (Vehlow, J. et al, 1997).



The formation of brominated dioxins from co-incineration of household waste and brominated flame-retardants is investigated in a 5kW incineration reactor (fluidised bed) in pilot scale at the university of Umeå (Söderström, G. et al, 2000). Different types of flame-retardants were added in amounts corresponding to a ”worst case scenario” for batch wise incineration of flame retarded products med BFRs. The incineration temperature was slightly above 800 ºC.

The results from the studies in Umeå showed that the formation of halogenated dioxins were much higher when adding BFRs, than with only chlorine present. Additionally, the study showed that bromine caused significant higher formation of halogenated dioxins than the equal amount of chlorine, which is assumed to relate to the ratio between Br_2 and HBr, which again is substantially different from the ratio between Cl_2 and HCl. The conclusion from the study is that batch incineration of wastes containing BFRs should be avoided.

4.1.2 Measurements at full scale plants

In 2002 measurements of emissions of brominated dioxins were carried out at Energos Hurum Plant, Norway (Energos Hurum Energigjenvinning) with normal waste composition (wastes from households and small industries/businesses).

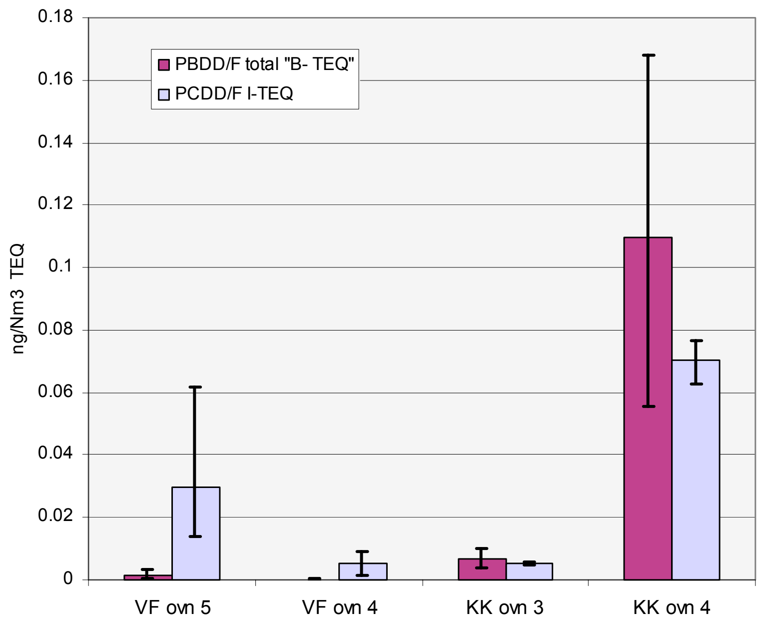
It was found 0,003 ng/Nm^3 tetrabrominated dibenzo-p-dioxins. Concentrations of other single compounds were lower than the detection limit, i.e. than 0,0001-0,02 ng/Nm^3. Note that the concentrations is given as actual measured values, not as toxic equivalents (Energos ASA, 2002).

In 1999 measurements of brominated dioxins were carried out at Uppsala Energi, Sweden and at Renova, Gothenburg, during incineration of ordinary municipal waste. Both plants are equipped with advanced flue gas cleaning systems, with low emissions of chlorinated dioxins (substantially lower than 0,1 ng/Nm^3 in 1999). The emissions of brominated dioxins were lower than the detection limit for the measurements, i.e. < 0,05 ng/Nm^3 for all measured dioxins (Westas, H., 2000).

Autumn 2002, Danmarks Miljøundersøgelser carried out a study regarding the content of brominated, chlorinated and brominated/chlorinated dioxins in flue gas and in remains from flue gas cleaning at Vestforbrænding (VF) (wastes from households and small industries/businesses) and Kommunekemi (KK) (hazardous waste) (Vikelsøe, J., 2000). Both plants were equipped with advanced flue gas cleaning systems.

Figure 4 shows comparison of PBDDs/Fs and PCDDs/Fs in flue gas from the plants after cleaning

Figur 4 Comparison of PBDDs/Fs and PCDDs/Fs in flue gas from Vestforbrænding and Kommunekemi (after cleaning). PBDDs/Fs total "B-TEQ" og PCDD/F I-TEQ, ng/Nm^3. (Vikelsøe, J., 2000).



4.1.3 Comparison of test programs from earlier tests

Table 2 shows the added amount of bromine/brominecontaining plastics in earlier testprograms in small-scale pilot plants.

Table 2 Former test programs/measurements

Plant/test description	Share BFR-plastics [% by weight]	Bromine content in BFR-plastics [% by weight]	Bromine content in waste [% by weight]
TAMARA			
Polystyrene- and polyurethanefoam + waste from housholds and small industry/ businesses	1-3	2,2-4,2	0,02-0,08
TAMARA Plastics from EE-waste + waste from housholds and small industry/ businesses	3-12	0,4-1,5	0,01-0,18
Umeå University			
Waste from housholds and small industry/businesses added different BFRs	-	-	0,9-1,7

Table 3 shows the measurements included in incineration tests with brominated dioxins and/or chlorinated/brominated dioxins.

Table 3 Measurements included in incineration tests with brominated dioxins and/or chlorinated/brominated dioxins

	Analyzed parameters in waste	Analyzed parameters Raw flue gas	Analyzed parameters Clean flue gas	Additional analyzed parameters
TAMARA	Bromine, chlorine	PXDDs/Fs		Bromine in fly ash
PS- og PU- foam + waste from housholds and small industry/ businesses				
TAMARA Plastics from EE-waste + waste from housholds and small industry/ businesses	Bromine, chlorine, antimony (Sb), PXDDs/Fs[0] and flame-retardants[1)]	Bromine (HBr, Br_2) , chlorine, antimony (Sb), PXDDs/Fs	PCDDs/Fs Non-brominated dioxins	Bromine, chlorine, antimony (Sb) in bottom- and flyash
Umeå Universitet Waste from housholds and small businesses added different BFRs	Bromine, chlorine and flame-retardants [2)]	Cl_2, HCl, Br_2, HBr, PXDDs/Fs[3)]		
Uppsala Energi,Renova Waste from housholds and small industry/businesses			PXDDs/Fs	
Vestforbrænding Waste from housholds and small industry/businesses			PXDDs/Fs	PXDDs/Fs in residue from flue gas cleaning
KommunekemiHazardous waste			PXDDs/Fs	PXDDs/Fs in residue from flue gas cleaning

0) PXDDs/Fs: Dioxins containing bromine and/or chlorine
PBB, PBDE, TBBA
DeBDE, TBBP-A, HBCD
PCDD, PCDF, TeBCDD, TeBCDF, TeBDF, TeBDD

Relatively extensive incineration tests, with different input of bromine, have been carried out at pilot plants both in Sweden and Germany. In both tests analysis were carried out with respect to brominated and brominated/chlorinated dioxins on raw flue gas only (before cleaning).

Analysis of brominated dioxins in flue gas after cleaning is carried out on some Swedish and Danish waste incineration plants, with normal waste composition.

Our literature search and preliminary studies indicated clearly a need for more incineration tests and studies of brominated and brominated/chlorinated dioxins, especially in full scale plants. The scope of former studies indicates that the main goal with such tests should be to decide the concentrations in flue gas of brominated, chlorinated and brominated/chlorinated dioxins before and after cleaning, and at different levels of bromine content in the waste. To verify the input of bromine and chlorine, all output flows (bottom ash, fly ash, water from scrubbers and flue gas) should also be analyzed for bromine and chlorine.

4.2 Brominated flame-retardants

An article presented by Chen, Y. et al (Dioxin 2003) reports from sampling and analysis of emissions of BFRs and brominated dioxins carried out at an incineration plant burning wastes from households and small industry/businesses. The plant is not described in the article, nor the waste or the operating conditions of the plant. The method used to determine BFRs and dioxins is not the same as the methods used in the tests at Klemetsrud Plant, Oslo and Energos Plant, Ranheim. It is carried out five series of measurements of air emissions from a waste incinerator and 3 series from an electric smelter. Average results are quoted in Table 4. Seven congeners of PBDE (BDE-28, -47, -100, -99, -154, -153, -183) was detected in all the samples. The three most dominating congeners is BDE -47, -99 og -28 and both the tests shows equal distribution between the congeners.

Table 4 Emissions of BFRs and brominated dioxins from waste incinerator and electric smelter. (Chen, Y. et al, 2003).

	BFRs (ng/m^3)	Brominated dioxins (ng/m^3)
Waste incinerator	99±31	0,275-4,01
Electric smelter	68±25	0,079-0,485

An article presented by Tamade, Y. et al, Japan (Dioxin 2003) reports from measurements during incineration of plastic waste with BFRs. The measurements include analysis of brominated dioxins and furans, PBDE and TBBPA on the input waste, such as back covers from TVs, dust from

TVs, and also in mass flows from a recovery plant for plastics, and finally in mass flow from an incineration plant.

The incineration plant was equipped with an electric precipitator and a fabric filter. The incinerated waste was a mixture of residues from the plastic waste recovery plant (with BFRs) and waste from households and small industry/businesses. The waste was analysed with respect to content of PBDE, TBBPA and brominated dioxins. Total input amount of PBDE and TBBPA were 18-360 g/hr and 6,2-96 g/hr respectively. Analysis of brominated dioxins and furans in air emissions showed a total concentration of 0,014 ng/Nm^3. Air emission of PBDE and TBBPA was 3,5 and 8 ng/Nm^3 respectively. Bottom ash and filter dust showed a content of PBDE of 300 and 470 ng/g respectively. The content of TBBPA in bottom ash and filter dust was 20 and 1,3 ng/g respectively.

Due to few studies and lack of emission limit values for BFRs from waste incineration, we have also looked at reported concentration levels in other types of samples.

A study of indoor dust in common households in Germany includes analysis of 40 samples (taken from vacuum cleaners) with respect to 10 different PBDE congeners (BDE-28, -47, - 49, -85, -99, -100, -153, -154, -183, -209) (Knoth, W. et al, 2003). The results show huge variations in concentrations between the different congeners, and also between the samples. BDE-209 was the dominating congenere in 35 of the 40 samples, as BDE-99 dominated in 4 of the samples. The source for PBDE in the samples was reported unknown, with exception for some samples of dust from mattresses which showed high levels of dekaBDE. Average total concentration of the 10 PBDEs in the 40 samples was determined to 1404 ng/g.

The Norwegian Institute for Air Research (NILU) has taken samples of sediments for analysis of BFRs in the Drammen river, Norway (Fjeld et al, 2004).

Samples of sediment were taken at seven different spots in the river, four samples from the inner Drammensfjord and one sample in the marine environment of the fjord. The sum of PBDEs analysed showed a concentration level of 4-80 ng/g. The BDE-209 congenere dominated in all samples.

NILU have also made studies of BFRs in leachate from landfills (Schlabach. M. et al, 2002).

Samples were taken from sediments in leachate from 6 larger landfills. PBBs were not detected in any of the samples. PBDE-209 was detected in all samples, with a concentration level in the range of 0,49-91 ng/g wet weight. The three HBCD-isomeres was detected in almost all samples, and the concentrations was in the range <0,1-84 ng/g wet weight for HBCD. TBBPA was detected in all sediment samples from the landfills, with a concentration level in the range of 01,9-44 ng/g wet weight.

PBDE-209 and HBCD are also detected in samples of moss, which implies that the compounds may be transported by air. NILU has estimated that maximum discharge from a larger landfill might rate up to 1-10 g/year per single compound of PBDE, HBCD and TBBPA. The concentrations found in the inestigations are at the same levels as concentrations found in sewage sludge in Sweden.

Table 5 Results from different studies of BFRs

Type of study	BFR-compound	µg/g	ng/m^3
Air emissions from waste incineration	PBDE		99
Air emissions from electric smelter	PBDE		68
Dust from households	PBDE	1,4	
River sediments	PBDE	0,004-0,08	
Sediments from landfill leachate	PBDE HBCD TBBPA	0,0005-0,09 <0,0001-0,08 0,001-0,044	
Bottom ash from incinerator, Japan	PBDE TBBPA	0,3 0,02	
Fly ash from incinerator, Japan	PBDE TBBPA	0,47 0,0013	
Air emissions from incinerator, Japan	PBDE TBBPA		3,5 8

Our preliminary studies and literature search indicated clearly a need for more incineration tests and studies of emissions and decomposition of BFRs in connection with waste incineration.

4.3 Studies of other bromine compounds at Klemetsrud Plant, Norway

In 2002 measurements of brominated and brominated/chlorinated organic compounds were carried out at the Klemetsrud Plant in Norway. The measurements were performed by Kjelforeningen-Norsk Energi (Kjelforeningen-Norsk Energi, 2002).

In 1998 incineration tests with EE-waste were carried out at the same plant, and online measurements of a variety of brominated components in flue gas were performed (not dioxins). A portable GC was used for the measurements (Det Norske Veritas, 1998). In parallel measurements of emissions of chlorinated dioxins after flue gas cleaning was performed. The results indicated an increased level of dioxins during incineration of EE-waste. It should be noted that this was before active coal injection and fabric filtration were introduced at the plant.

5. Incineration Tests at Three Norwegian Waste Incineration Plants

Measurements of emissions of brominated and brominated/chlorinated dioxins, and brominated flame-retardants (BFRs) are carried out during incineration of waste with both normal and increased content of BFRs in the waste. For verification of input, analysis of bromine and chlorine in output flows were made. Decomposition of BFRs during incineration was also investigated by analysis of BFRs in output flows.

Tests and measurements were carried out at the following Norwegian plants:

- Klemetsrud Plant, Oslo : municipal waste incinerator, capacity 2 x 10 tons/hr
- Energos Plant, Ranheim : municipal waste incinerator*, capacity 1,5 tons/hr
- FREVAR Plant, Fredrikstad : municipal waste incinerator, capacity 2 x 5 tons/hr

* source separated and shredded waste

5.1 Measurement program

The program for measurements during tests at three Norwegian waste incineration plants are shown in Table 6 below.

Table 6 Program for measurements during tests at three Norwegian waste incineration plants

	Type of waste	Analysed parameters in flue gas *before* cleaning	Analysed parameters in flue gas *after* cleaning	Other analysed parameters
	Waste from households and small industry/businesses	HCl, Cl_2, HBr, Br_2	Chlorinated, brominated and chlorinated / brominated dioxins	-
Klemetsrud-Plant	Waste from households and small industry/businesses + 5 % by weight brominated waste	HCl, Cl_2, HBr, Br_2	Chlorinated, brominated and chlorinated / brominated dioxins	-
	Waste from households and small industry/businesses + 10 % by weight brominated waste	Chlorinated, brominated and chlorinated / brominated dioxins HCl, Cl_2, HBr, Br_2	Chlorinated, brominated and chlorinated / brominated dioxins BFRs	Bromine, Chlorine and BFRs in bottom ash, fly ash, flue gas, scrubberwater
FREVAR Plant	Waste from households and small industry/businesses Hospital waste	HCl, Cl_2, HBr, Br_2	Chlorinated, brominated and chlorinated / brominated dioxins	-
Energos Plant	Industrial waste	HCl, Cl_2, HBr, Br_2	Chlorinated and brominated dioxins	-
	Industrial waste + 20 % by weight brominated waste	HCl, Cl_2, HBr, Br_2	Chlorinated, brominated and chlorinated / brominated dioxins HCl, Cl_2, HBr, Br_2 BFRs	Bromine, Chlorine and BFRs in bottom ash

Sampling and analysis of dioxins during tests with no addition of brominated waste at Klemetsrud Plant, and all sampling and analysis at Energos Plant, were performed by the German consultancy TÜV. Kjelforeningen-Norsk Energi did all other sampling at Klemetsrud Plant, and at FREVAR Plant. NILU laboratory made the analysis of dioxins and BFRs, Eurofins laboratory (Oslo) analysed the flue gas samples, and Analytica laboratory made the bottom ash, filter dust and scrubber water analysis.

5.2 Characterization of the brominated waste

Data from literature regarding bromine content in municipal waste from households and small businesses, indicates typical bromine content of 0,003-0,006 % by weight of bromine. One source (Söderström, G. et al, 2000) reports typical content of 0,004 % by weight from a study in 1992, but that the level has increased the last decade. In comparison is normal chlorine level in municipal waste approximately 0,75 % by weight (Söderström, G. et al, 2000).

The brominated waste added to the municipal waste was generated in a demolition plant for electric and electronic waste (Stena Miljø AS, Oslo). In total approximately 70 tons brominated waste were generated for the incineration tests.

Stena Miljø AS has calculated the level of bromine in the actual mixture (brominecontaining plastics) which were used in the tests at Klemetsrud and Energos Plants. The calculations gave the following levels : 27 % by weight brominated plastics, 16 % by weight wooden material, 57 % by weight plastics without bromine (Aass, F.E., 2003a). The bromine level in plastics is reported to be 3-4,5 % by weight, and the bromine level in the total mixture approximately 1 % by weight (Sjølin, S., 2003).

Approximately 80 % by weight of the brominated plastics is reported to contain PBDE (polybrominated diphenylethers).

Exact level of BFRs in the plastics is not known, but is earlier reported to be approximately 12 % by weight (SFT, 2003) (Aass, F.E., 2003b). This is determined mainly from PCs and monitors, and the level relatively uncertain.

A Danish report from 1999 reports the content of TBBPA and other BFRs separately in different electronic products (Miljøstyrelsen i Danmark, 1999). Reported levels are:

- Colour TVs :
  a) TBBPA 12 % by weight
  b) BFRs 12 % by weight

- PCs
  a) TBBPA 12-14 % by weight
  b) BFRs 12-14 % by weight

Levels in printers, photocopiers and fax-machines are reported to be lower.

As the brominated plastics used in the tests mainly origins from TV- and monitor-cabinets, it is assumed a BFR-level in the plastics of 12 % by weight.

Stena Miljø AS has also reported that the waste mix may contain approx. 1 % by weight PVC (Aass, F.E., 2004), from which on may derive that the chlorine level in the waste is significantly lower than in municipal waste from households and businesses.

The Norwegian State Pollution Control Authority (SFT) has done a preliminary analysis of BFRs in 60-100 kgs of plastic waste from the Stena Miljø AS demolition plant.

The total concentration level of BFRs was determined to be approximately 20 000 mg/kg, i.e. 2 % by weight.

The level of BFRs in the these plastics is therefore lower than the assumed levels for the plastics used in the tests. Still, the samples analysed by SFT may not necessarily be representative for the brominated waste used in the tests. Further, SFT showed that octaBDE and decaBDE was the dominating BFR-compounds, with a level of 8 000 - 9 000 mg/kg for each of the compounds.

Figure 5 shows brominated waste used in the incineration tests (before shredding).

Figur 5 Brominated waste used in the incineration tests (before shredding).

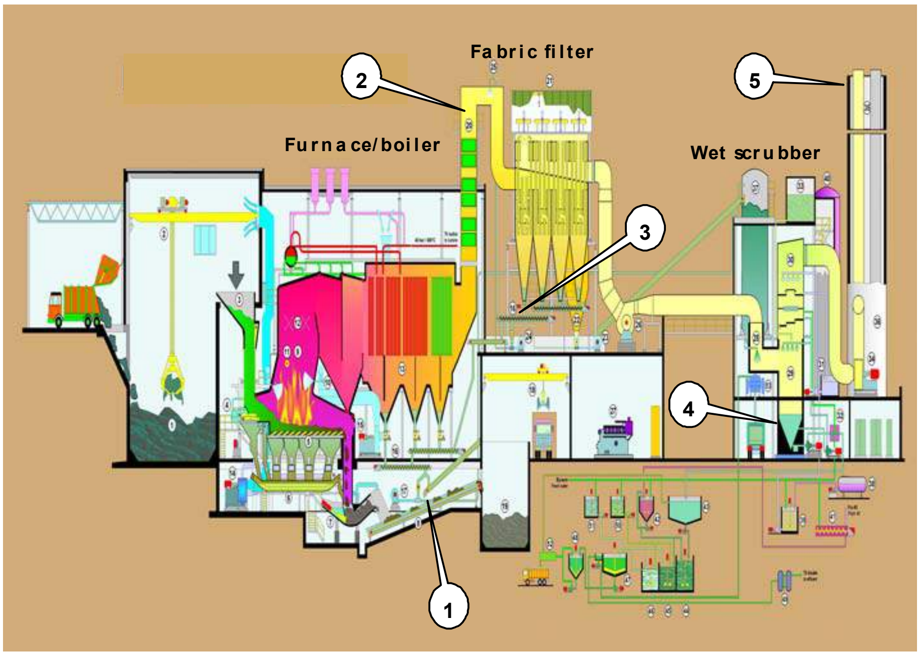
5.3 Description of plants and sampling points

5.3.1 Klemetsrud Plant

Measurements are carried out at Oslo Municipality's incineration plant at Klemetsrud in Oslo. The plant incinerates untreated municipal waste from households and businesses in 2 lines, each with a capacity of approx. 10 tons/hr. Each line is equipped with a flue gas cleaning system, consisting of active coal injection, a fabric filter and a wet scrubber.

A sketch of the plant, with marking of the sampling points, is shown in figure 6.

Figure 6 Sketch of Klemetsrud Plant, with marking of the sampling points.



1 Bottom ash Total bromine, total chlorine. Brominated flame-retardants.
2 Raw flue gas Gaseous bromine and chlorine. Brominated, chlorinated, brominated/chlorinated dioxins
3 Filter dust Total bromine, total chlorine. Brominated flame-retardants.
4 Scrubber water Total bromine, total chlorine. Brominated flame-retardants.
5 Cleaned flue gas Brominated, chlorinated, brominated/chlorinated dioxins. Brominated flame-retardants.

Measurements without addition of bromine containing waste

Measurements of brominated, chlorinated, brominated/chlorinated dioxins were done on line 1 by TÜV in parallel to the annual emission control measurements October 16th -17th 2003. Measurements of total bromine and chlorine in raw flue gas were done on line 2 December 18th 2003 by Kjelforeningen-Norsk Energi.

Measurements with addition of bromine containing waste

The measurements with addition of bromine containing waste were done October 28th and 30th 2003 by Kjelforeningen Norsk Energi.

Measurements were done with two different mixtures:

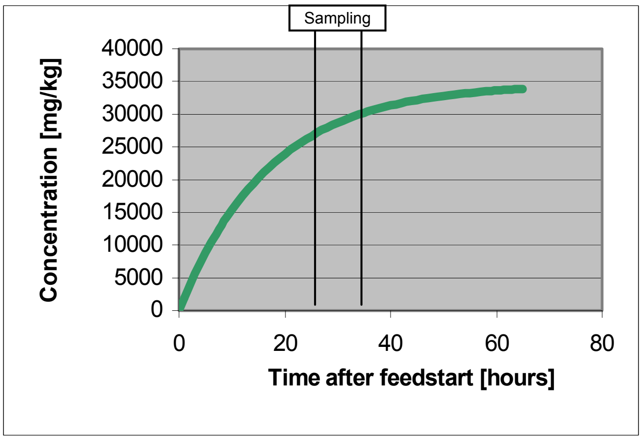
- Low addition: 5 % by weight addition of bromine containing waste. This mixture gives a feed rate for bromine containing waste of approx. 0,5 tons/hr, i.e. slightly above 5 % by weight. The resulting bromine feed rate was approx. 5 kg bromine/hr.
- High addition: 10 % by weight addition of bromine containing waste. It is possible to feed up to 2 tons/hr of bromine containing waste at line 2 at the Klemetsrud Plant. This is however an unrealistic high share, because it may significantly affect the incineration conditions. A realistic maximum addition is approx. 1 ton/hr (10 % by weight

bromine containing waste). This mixture gives a feed rate of approx. 10 kg bromine/hr.

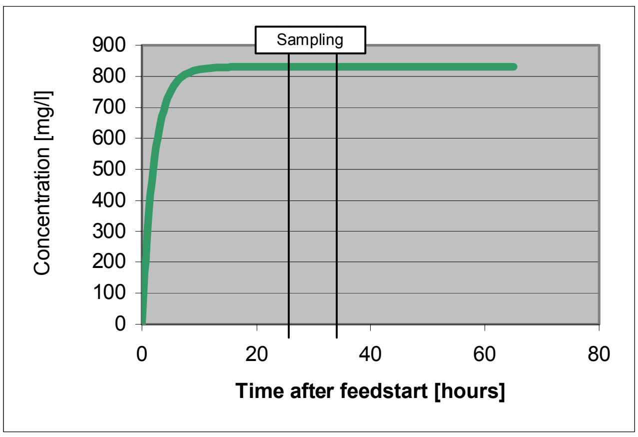
In order to maintain stable concentrations in output flows from the process, feeding of bromine containing waste to the incinerator has to start in due time before sampling.

Figure 7 shows the calculated theoretical change in concentration of bromine in filter dust, and in circulating fluids in scrubber (HCl-step). One can see from the figure that the concentration level in filter dust during sampling period is approx. 80-90 % by weight of maximum concentration level, and that the actual time of feed start, 24 hours before sampling, was sufficient to maintain a stable concentration level in circulating fluids in scrubber.

Figure 7 Calculated change in concentrations of bromine in filter dust and circulating fluids in scrubber (HCl-step).



Concentration change in filter dust



Concentration change in circulating fluids in scrubber

5.3.2 Energos Plant

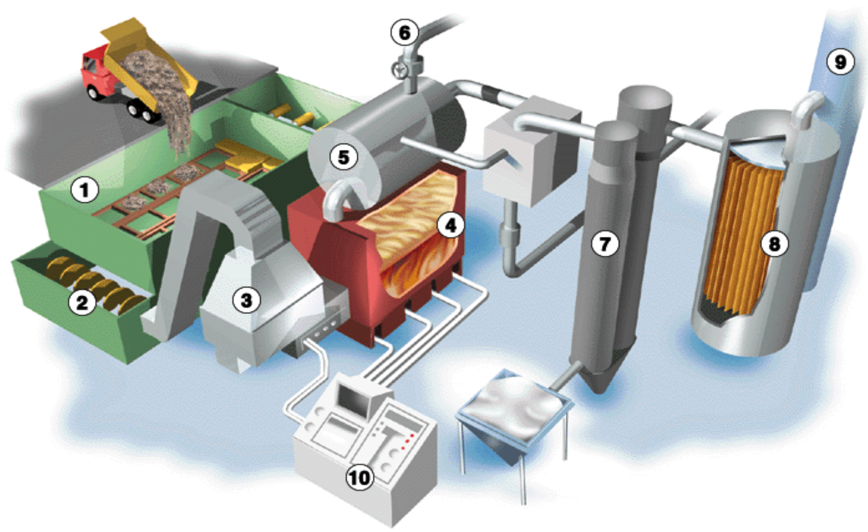
The Energos Plant at Ranheim incinerates annually approx. 10 000 tons of waste. The plant has approx. 4 MW thermal output, and a steamproduction of approx. 25 GWh/year, supplied to a neighbouring industrial plant, Peterson Linerboard Ranheim (PLR). The waste is a mixture of waste from PLR and other industries.

The flue gas is treated in a fabric filter after injection of coal and lime. Output flows are bottom ash/slag, fly ash and emissions to air from stack.

A flow sheet for the plant is shown in Figure 8. The waste is fed from the storage silo (1) with the conveyor (2) into the 2nd storage (3). From this storage the waste is fed in portions onto the fire grate in the primary chamber of the furnace (4). On the fire grate the waste is dried, gasified and burned-out at sub-stoichiometric conditions. A conveyor brings the waste through the primary chamber, and to the output shaft, where the burned waste falls down as slag. The flue gases are led through the boiler (convection unit) (5) and are cleaned in the fabric filter (8) after addition of activated carbon and lime.

Measurements with and without addition of 20 % by weight of bromine containing waste were carried out November 11th-13th 2003 by TÜV. The sampling points are positioned right into the inlet to the filter (8), and in the vertical outlet of the filter/inlet to stack (9).

Figure 8 Flow sheet for the Energos Plant at Ranheim



1. Storage silo	2. Conveyor
3. 2nd storage	4. Furnace
5. Boiler	6. Steam system
7. Reactor	8. Filter system
9. Chimney	10. Control- / monitoring system

5.3.3 FREVAR Plant

FREVAR Incineration Plant is owned by Fredrikstad municipality. The plant incinerates approximately 78 000 tons waste annually, using two incineration furnaces. The plant produces 185 GWh steam per year, and has 99 % utilization of the produced energy (FREVAR, 2004).

The waste is fed into the feedershaft with a crane. From the shaft, the waste is fed in portions onto the fire grate. On the grate, the waste is dried, combusted and burned out. The movable grate takes the waste through the furnace to the outgoing shaft, into which the burned waste drops down as slag.

The flue gases are burned in a secondary combustion zone over the grate. The flue gas is cleaned in an electric precipitator, wet scrubber and a fabric filter. Active coal is added prior to the wet scrubber, and activated carbon and lime prior to the fabric filter.

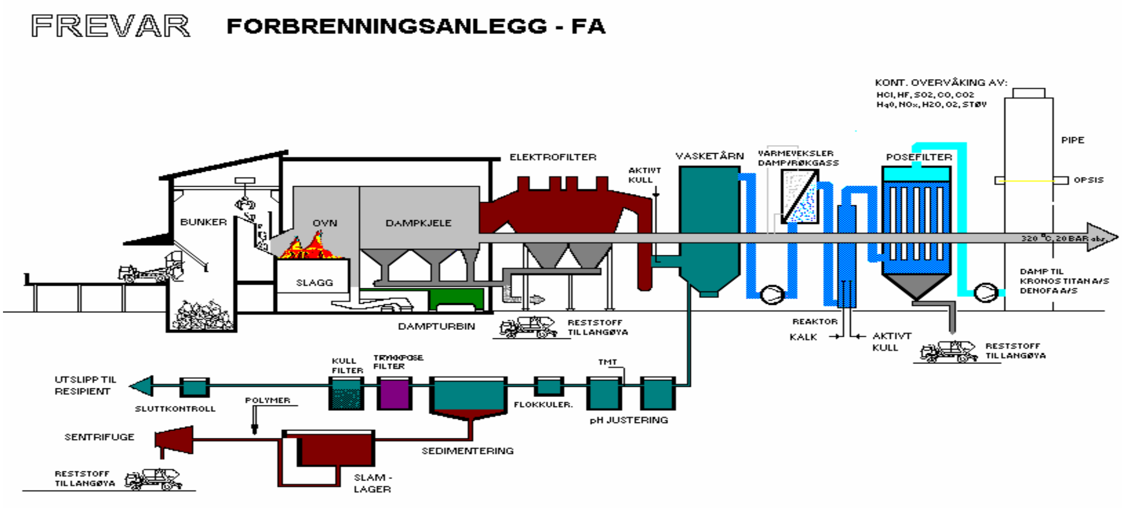
The flue gases from the two furnaces are led in to the same duct before the scrubber, and let out trough a joint stack.

FREVAR also has a incinerator for hospital waste. The flue gas from this furnace is quenched and treated through a separate wet scrubber, before it is led in to one of the other furnaces for further combustion and cleaning. Annual control measurements at FREVAR are normally done with the hospital waste incinerator running.

Measurements of gaseous bromine and chlorine, and brominated, chlorinated and brominated/chlorinated dioxins were carried out parallel to the annual control measurements on November 5th 2003, by Kjelforeningen Norsk Energi.

A flow sheet of the plant is shown in Figure 9.

Figure 9 Sketch of the FREVAR incineration plant for household waste (FREVAR, 2004*)*, with sampling points.



6.Results

6.1 Operating conditions

The combustion conditions were normal during sampling and measurement at the Klemetsrud plant, with CO-levels of approximately 20-30 mg/Nm^3. CO-levels during sampling at FREVAR Plant were approx. 50 mg/Nm^3. At the Energos Plant, CO was not detected during measurements, which indicates a very effective combustion.

Some problems were experienced with the fabric filter at FREVAR Plant during the sampling period.

6.2 Measurements of gaseous bromine in flue gas before cleaning

Results of measurements of gaseous bromine in flue gas before cleaning are shown in Table 7.

Table 7 Results from measurements in uncleaned flue gas with different addition of bromine containing waste

Plant	Addition of bromine containing waste	Gaseous bromine			
		HBr		Br_2	
		mg/Nm^3	kg/hour	mg/Nm^3	kg/hour
Klemetsrud Plant	No addition	3,6	0,2	0,1	0,007
	5 % by weight addition	6	0,4	0,3	0,02
	10 % by weight addition	40	2,5	2,3	0,1
FREVAR Plant	No addition	1,2	0,08	<0,5	<0,03
Energos Plant	No addition	< 2,15	< 0,014	< 2,15	< 0,014
	20 % by weight addition	97-200[1)]	0,95-1,97	< 2,15	< 0,014

1) During the approx. 12 hour sampling period, the HBr-concentration in raw flue gas varied from approx. 97 to 200 mg/Nm^3, with the highest level during the last sample.

The measurement results for gaseous bromine in uncleaned flue gas, with a normal waste composition, indicates a bromine level equal to, or slightly lower than what is normal for waste from households and small businesses (0,003-0,006 % bromine by weight).

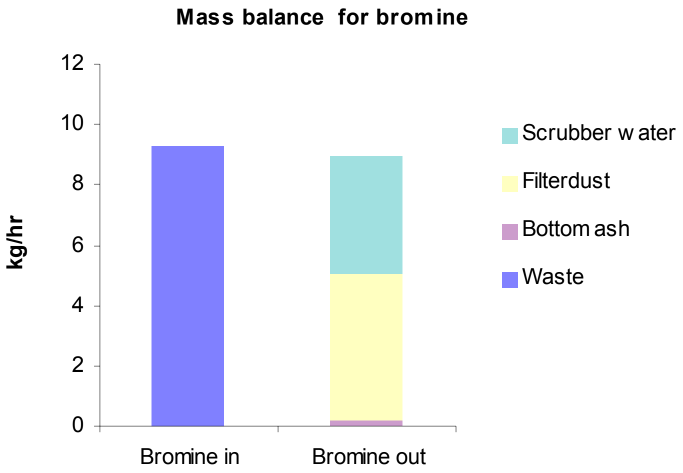
Results from measurements during addition of bromine containing waste, shows a clear increase in the HBr-concentration in uncleaned flue gas, compared to results from measurements with no brominated waste.

At the Energos Plant, gaseous bromine was also measured after the filter. The concentration was < 2,2 mg/Nm^3, which leads to a removal efficiency of >97 % for the filter.

6.3 Mass balance for bromine

Figure 10 shows a mass balance for bromine after addition of 10 % by weight bromine containing waste at Klemetsrud Plant.

Figure 10 Mass balance for bromine after addition of 10 % by weight bromine containing waste at Klemetsrud Plant.



From Figure 10, we can see that the mass balance of bromine from Klemetsrud Plant shows good correspondence between input and output flows in the plant.

At the Energos Plant, 20 % by weight of bromine containing waste was fed into the furnace.

Table 8 shows resulting bromine levels in input and output mass flows.

Table 8 Bromine in input and output mass flows, Energos Plant

Mass flow	**Amount (kg/hour)**
Bromine in input waste (total input)	2,1
Bottom ash	0,045
Flue gas before filter	0,95-1,97
Flue gas after filter	0,014
Total output (excl. bromine in filterdust)	1,0-2,0

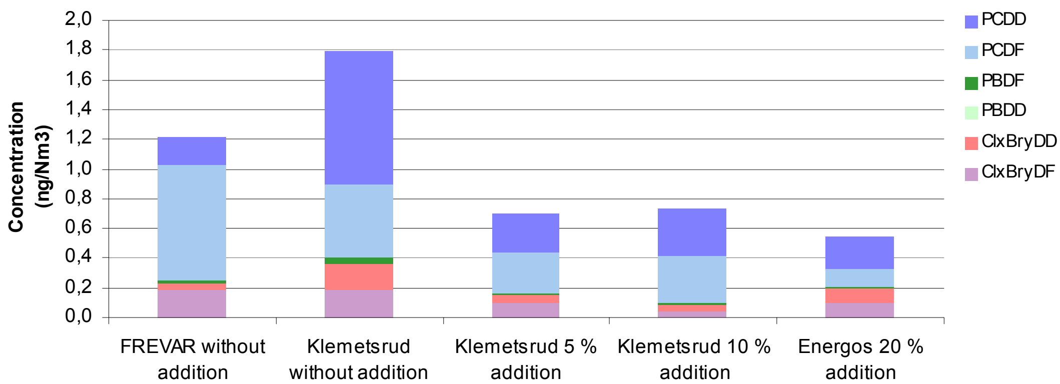
During the approximately 12 hours of sampling and measurement, the bromine content in flue gas before filter varied between approximately 1-2 kgs/hr, with the highest level during the last measurement. According to Energos, it is very likely that the adsorption-/desorption-processes in the boiler system leads to a slow increase of HBr-level in flue gas. Bromine in filterdust is not measured.

6.4 Brominated, chlorinated and brominated/chlorinated dioxins

Concentrations in emissions to air (flue gas after cleaning)

Figure 11 shows resulting emissions of brominated, chlorinated and brominated/chlorinated dioxins with no addition of brominated waste, and with the addition of 5 % , 10 % and 20 % by weight of brominated waste respectively. The results are reported as the actual concentration levels, not as toxic equivalents.

Figure 11 Total emissions of the brominated, chlorinated and brominated/chlorinated dioxins analysed.



From Figure 11 one can see that the emissions of *chlorinated dioxins* (PCDDs+PCDFs, as actual concentrations, not toxic equivalents) from Klemetsrud Plant were approx. 1,5 ng/Nm^3 with no addition of brominated waste, and approx. 0,5 ng/Nm^3 with 5 % and 10 % by weight of bromine containing waste. At the FREVAR Plant, the emissions of chlorinated dioxins were approx. 1 ng/Nm^3 (with no addition of bromine containing waste). The Energos Plant had an emission concentration of approx. 0,3 ng/Nm^3 with the addition of 20 % bromine containing waste.

Further, one can see that the emission of *brominated dioxins* (PBDDs+PBDFs) was very low, both with and with no addition of bromine containing waste.

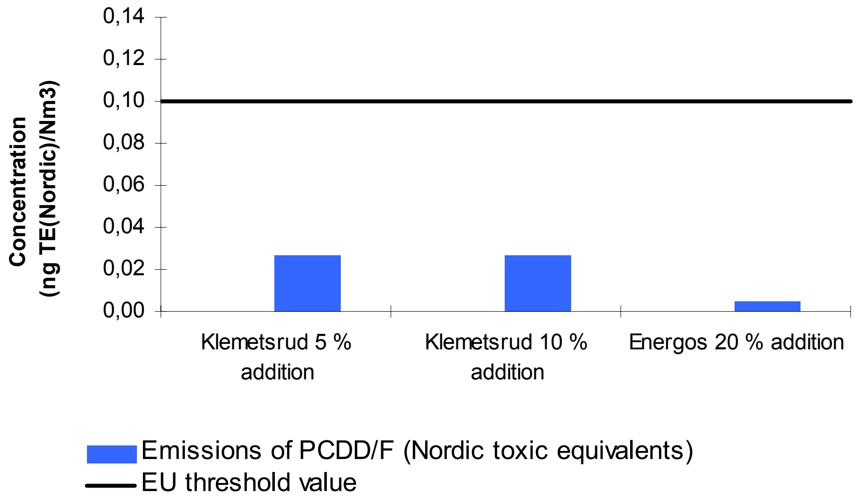
The emissions of *brominated/chlorinated dioxins* (ClxBryDDs+Clx BryDFs) with no addition of brominated waste (Klemetsrud and FRE-

VAR plants) were apparently higher than with addition of brominated waste (Klemetsrud and Energos plants).

Resulting concentrations of brominated/chlorinated dioxins (ClxBryDDs+ClxBryDFs) during measurements with addition of brominated waste, were less than half of the concentrations of chlorinated dioxins (PCDDs+PCDFs).

The emissions of *chlorinated dioxins (PCDDs/Fs), presented as nordic toxic equivalents*, resulting from addition of brominated waste, is shown in Figure 12.

Figure 12 Emissions of chlorinated dioxins (PCDDs/Fs), presented as Nordic Toxic Equivalents, resulting from addition of brominated waste



From Figure 12, one can see that the emissions of chlorinated dioxins, presented as Nordic Toxic Equivalents, were approx. 0,03 ng/Nm^3 from the Klemetsrud Plant, both with addition of 5 % and 10 % by weight of bromine containing waste. From the Energos Plant, the concentration level was 0,006 ng/Nm^3 with addition of 20 % by weight of bromine containing waste.

The corresponding emission limit value in the EU-directive for waste incineration is 0,1 ng/Nm^3.

Uncertainty in sampling and analysis, variations in operating conditions and waste mixture, differences between laboratories with respect to methods of analysis (especially dioxins), makes comparison of results difficult. We may however draw the following main conclusions:

- Increasing the content of BFRs in the waste gave no significant increase in the emissions of chlorinated dioxins, or either brominated and chlorinated/brominated dioxins
- The emission level is highest for chlorinated dioxins, lower for chlorinated/brominated dioxins and lowest for brominated dioxins
- The emission levels for chlorinated dioxins, reported as Nordic toxic equivalents, are low compared to the emission threshold value in the

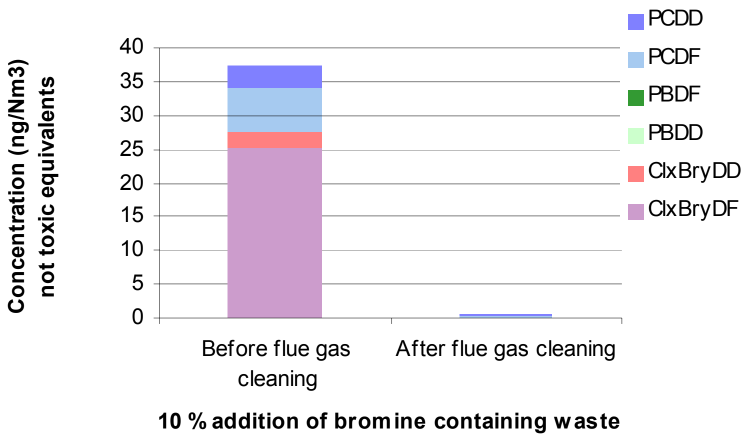
EU-directive for incineration of waste. The reported emission levels were 0,03 ng/Nm^3 and 0,006 ng/Nm^3 respectively for the Klemetsrud Plant (Oslo) and Energos Plant (Ranheim), and the EU threshold value is 0,1 ng/Nm^3.

The emission measurement results indicate that the incineration efficiency and the operating conditions of the flue gas treatment systems are of greater importance to the resulting emission levels for dioxins, rather than the bromine content level.

Flue gas concentrations before and after cleaning

Measurements of dioxins in flue gas before and after cleaning were carried out with addition of a high proportion (10 % by weight) bromine containing waste, see Figure 13.

Figure 13 Concentrations of brominated, chlorinated and brominated/chlorinated dioxins analysed in raw flue gas/emission outlet from Klemetsrud Plant, resulting form addition of 10 % by weight of bromine containing waste.



Concentration of brominated/chlorinated dioxins before cleaning is significantly higher than the corresponding concentration of chlorinated dioxins. After cleaning, the brominated/chlorinated dioxins amounts to only 10-20 % of the total emissions of dioxin compounds. Dioxins removed from flue gas are found in the filter dust. The filter dust from incineration plants is treated as hazardous waste.

6.5 Brominated flame-retardants (BFRs)

Table 9 shows concentrations of BFRs in bottom ash, filter dust, water from the scrubber and in emissions to air from tests with addition of bromine containing plastics at Klemetsrud and Energos Plants.

Table 9 Concentrations of BFRs from incineration tests with addition of bromine containing plastics at Klemetsrud and Energos Plants.

		Level of BFRs	
	Unit	Klemetsrud Plant	Energos Plant
Bottom ash	mg/kg	0,034-0,1	<0,016
Filter dust	mg/kg	0,04	-
Scrubber water (untreated)	ng/l	0,01	-
Emissions to air (after cleaning)	ng/Nm^3	14-22	< 5

From table 9, one can see that the concentration of BFRs in flue gas from Klemetsrud Plant was 14-22 ng/Nm^3. This equals 0,9-1,4 mg/hour and approximately 0,01 kg/year, assuming 8000 running hours/year at the same emission level. A Danish study (Miljøstyrelsen, 1999) estimates the total annual Danish emissions of BFRs from incineration to be < 0,04 tons. A report from the Norwegian National State Pollution Control Authority (SFT), estimates the national emissions from combustion in Norway to be < 0,01 tons/year (1998), i.e. < 10 kg/year.

At the Energos Plant (Ranheim) the reported concentration of BFRs in the flue gas was <5 ng/Nm^3.

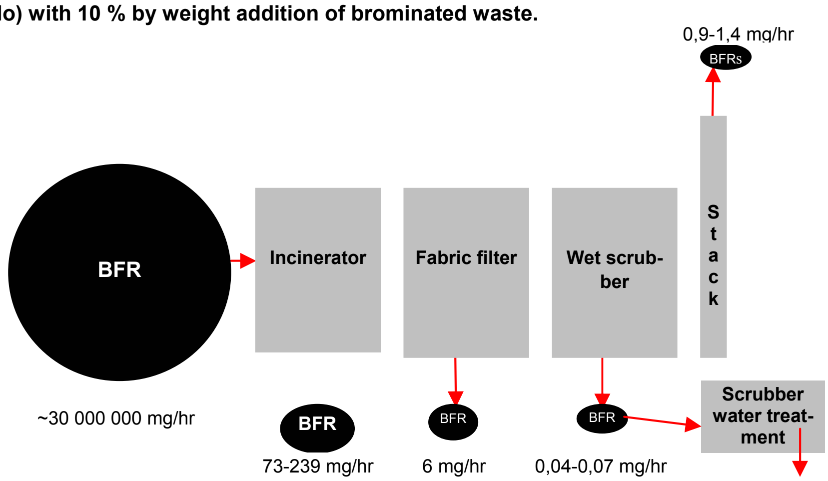
The concentration of BFRs in bottom ash from the tests at Klemetsrud Plant (Oslo) shows levels far below the emission limit value of 0,25 % by weight stated in the Hazardous Waste Directive.

DekaBDE and TBBPA (Tetrabrombisphenol A) are the dominating compounds of BFRs in the bottom ash from Klemetsrud Plant. In water from the scrubber and in the flue gas, dekaBEDE has the highest concentration level.

The amount of BFRs in the waste mixture used in the tests at Klemetsrud Plant was not analysed, but calculated/estimated to be approximately 30 kg/hr, based on a share of bromine containing plastics of 27 % by weight, and an assumed content of BFRs in the plastics of 12 % by weight.

Figure 14 shows input and output flows of brominated flame-retardants at Klemetsrud Plant (Oslo) with 10 % by weight addition of brominated waste.

Figure 14 Input and output flows of brominated flame-retardants at Klemetsrud Plant (Oslo) with 10 % by weight addition of brominated waste.



The results indicates that the BFR-level in output flows amounts to less than 0,001 % by weight of the total BFRs in the waste mixture

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RE: Ozone Limiting Method Study for Upset Conditions at TNG Energy for Waste Facility

1 INTRODUCTION

The following document provides supplementary information for the Human Health Risk Assessment (HHRA) being completed by AECOM for the TNG Energy from Waste (EfW Facility.

As presented within the Air Quality Assessment for the EfW facility (**Pacific Environment, 2016**), under 'Upset Conditions', there are predicted to be exceedances of the NSW EPA assessment criteria for NO_2 (**NSW DEC, 2005**) when conservatively assuming that all NO_x is converted to NO_2.

This predicted exceedance is only anticipated to occur under a worst case emission scenario (i.e. plant upset) combined with worst-case dispersion meteorology. It should thus be regarded as 'worst-worst case', with the probability of occurrence of these two combined events extremely unlikely.

Notwithstanding the above, the authors of the HHRA have requested that the inherent conservatism within the dispersion modelling be evaluated, and a more accurate prediction of impacts be presented, if possible.

To realistically estimate NO_2 concentrations at ground level using modelled NO_x concentrations, it is necessary to incorporate the effects of atmospheric chemistry. The amount of primary nitrogen dioxide (NO_2) in a combustion process exhaust stream is typically in the order of 5-10% of total NO_x (expressed as NO_2 equivalents). This can be higher for some combustion sources, such as modern diesel vehicles equipped with catalytically regenerating particle filters.

Following release, the NO_2 proportion also changes through complex photochemical reactions of atmospheric ozone and NO_x.

Several approaches are available for estimating the transformation of NO to NO_2 that occurs after the exhaust gases are discharged. For the current evaluation, the 'ozone limiting method' (OLM) was used. The OLM is an approved method document in *Section 8.1.2* of the Approved Methods (**NSW DEC, 2005**).

The OLM is based on the assumption that approximately 10% of the NOx emissions are generated as NO_2 (**Alberta Environment, 2003**). The majority of the NO_x emission is in the form of nitric oxide (NO), which readily reacts with ambient levels of ozone to form additional NO_2.

If the ambient ozone concentration is greater than 90% of the predicted NO_x concentration, all the NO_x is assumed to be converted to NO_2, otherwise NO_2 concentrations are calculated using the equation below, which assumes total conversion of the ozone and adds the 10% of the NO_x that was emitted as NO_2:

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$$[NO_2]_{total} = \{0.1 \times [NO_x]\} + MIN\{(0.9) \times [NO_x] \text{ or } (46/48) \times [O_3]_{background}\} + [NO_2]_{background}$$

To apply the OLM, hourly background concentrations of ozone and NO_2 for the calendar year 2013 were obtained for the NSW EPA monitoring station at St Marys.

The NO_2 concentration at each receptor (maximum residential, commercial and grid) was calculated using the above equation for each hour of the year, and then added to the corresponding hourly background value from the St Marys site. The maximum hourly NO_2 concentration were then determined from the results.

2 OLM ASSESSMENT

The results of the OLM assessment are presented in **Table 1**. As shown, there are not anticipated to be any exceedances of the assessment for the NSW EPA 1-hour NO_2 assessment criterion (246 µg/m³).

The ground level concentrations differ from those presented in **Pacific Environment, 2016** since, as noted above, in this assessment it was conservatively assumed that 100% conversion of NO_x to NO_2 would occur.

Note that the cumulative results have accounted for the respective background 1-hour NO_2 concentrations from the St Marys site during the 2013 year.

Table 1: Summary of 1-hour NO_2 concentrations under 'Upset Conditions' using the Ozone Limiting Method

Receptor Type	x	y	Max. Incremental NO_2 (µg/m³)	Max. Cumulative NO_2 (µg/m³)
Residential	299412	6258847	123.2	137.6
Commercial	299251	6258615	159.6	167.8
Grid Maximum	299400	6256900	166.8	179.1

3 CONCLUSION

Pacific Environment has re-evaluated the predicted ground level concentrations of NO_2 under 'Upset Conditions' at the Energy for Waste facility. Using the Ozone Limiting Method (per the Approved Methods), the results indicate that there are not anticipated to be any exceedances of the NSW EPA assessment criterion at the most impacted residential and commercial receptor, or the grid maximum.

4 REFERENCES

Alberta Environment (2003). Emergency / Process Upset Flaring Management: modelling Guidance, Alberta Environment, Edmonton, AB.

NSW DEC (2005). "Approved Methods for the Modelling and Assessment of Air Pollutants in NSW", published August 2005

Pacific Environment (2016). "Energy from Waste Facility – Air Quality and Greenhouse Gas Assessment".

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ENERGY

MEMO

Job **TNG Energy from Waste Facility, Eastern Creek, Treated Wood Waste (TWW)**
Date **2016-10-25**
From **Martin Brunner, Ahmet Erol**

Treated wood waste (TWW)

Treated wood waste (TWW) represents a large proportion of wood waste arising. A WRAP study [1] on waste composition found that (including laminated and veneered wood) an average of 85% of the wood from the observed Civic Amenity sites and 23% of the wood from the observed construction and demolition sites was treated.

TWW is defined as wood that has been treated with one or more of the following:

- Copper Chromium Arsenic (CCA)
- Copper Organics
- Creosote
- Light Organic Solvent Preservatives (LOSP)
- Micro-emulsion
- Paint / stain
- Varnish

EfW plants must incinerate waste aligning with the relevant requirements of Australian and NSW Regulatory Framework.

According to NSW Energy from Waste Policy Statement (chapter 4 Energy recovery facilities, technical criteria) the gas resulting from the process should be raised to a minimum temperature of 850 °C for two seconds after the last injection of combustion air. If waste has a content of more than 1% of halogenated organic substances, expressed as chlorine, the temperature should be raised to 1,100 °C for at least 2 seconds after the last injection of air.

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File; TNGWTE-141-001-013 Treated Wood Waste.docx
Ver. 3

[1] Options and Risk Assessment for Treated Wood Waste, The Waste & Resources Action Programme http://www2.wrap.org.uk/downloads/Options_and_Risk_Assessment_for_Treated_Wood_Waste.6ac4f667.2237.pdf

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Certain wood wastes are treated with preservatives or coatings like listed above.

One of the main sources for organic chlorine is varnish containing Polychlorinated biphenyl (PCB).

To get an idea of what the maximum chlorine content in treated wood might be, a brief calculation with following assumptions is made:

Wood size:	0.0254 m x 1 m x 1 m (1 inch thickness)
Varnish thickness on wood:	100 µm, coated both sides
Specific weight wood	700 kg/m^3
Specific weight varnish	900 kg/m^3
Calculated weight wood	17.8 kg
Calculated weight varnish on treated wood	90 g
Percentage of varnish on wood	0.5%

The chlorine content of PCB varies from 19% to 71% depending on PCB configuration[2]. In building materials up to 33 g/kg of PCB's have been found[3] (e.g.in caulking materials). Assuming the unrealistic case of 71% chlorine and 33 g/kg of PCB in varnish this would result in a chlorine content of 2.3% in the varnish.

The wood content in the different waste streams of the TNG design fuel varies from 0% to 58.20%. The waste stream with the highest wood content is CRW.

Assuming that all wood waste in CRW is treated with a varnish containing 33 g/kg PCB, the contribution of this PCB to the chlorine concentration of CRW would be less than 0.01% (58.2%x0.5%x2.3%).

<u>Conclusion</u>
Even in a worst case scenario the chlorine contribution of PCB's from TWW to the overall chlorine concentration of the waste is negligible. As a result there is no need to raise the combustion temperature to 1,100°C because of processing TWW.

---

[2] Polychlorinated biphenyl (PCB) is an organic chlorine compound with the formula $C_{12}H_{10-x}Cl_x$. There are 209 configurations with 1 to 10 chlorine atoms.

[3] CHARACTERIZATION OF POLYCHLORINATED BIPHENYLS IN BUILDING MATERIALS AND EXPOSURES IN THE INDOOR ENVIRONMENT; KM Coghlan, MP Chang, et. al.; Environmental Health and Engineering, Inc., Newton, MA, USA

Intended for
The Next Generation NSW Pty Ltd

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THE NEXT GENERATION NSW PTY LTD
PROJECT DEFINITION BRIEF

RAMBOLL

THE NEXT GENERATION NSW PTY LTD
PROJECT DEFINITION BRIEF

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ACC	Air Cooled Condenser
APC	Air Pollution Control
BAT	Best Available Technology
BFR	Brominated Flame Retardants
C&D	Construction and Demolition
C&I	Commercial and Industrial
CCA	Copper, Chromium, Arsenic
CCTV	Common Camera Surveillance System
CEMS	Continuous Emissions Monitoring System
CEN	European Committee for Standardization
CMS	Control and Monitoring System
CRW	Chute Residual Waste
EfW	Energy from Waste
EPA	Environment Protection Authority
EPL	Environment Protection Licences
FGT	Flue Gas Treatment
HBr	Hydrogen Bromide
HCl	Hydrogen Chloride
IED	Industrial Emissions Directive
ISO	International Organization for Standardization
LOSP	Light Organic Solvent Preservatives
LP	Load Point
MCR	Maximum continuous flowrate
MRF	Material Recovery Facility
NCV	Net Calorific Value
NH_3	Ammonium Hydroxide
NO_x	Nitrogen Oxide
O&M	Operation and Maintenance
PAC	Powdered Activated Carbon
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PVC	Polyvinyl Chloride
SNCR	Selective Non- Catalytic Reduction
SO_2	Sulphur Dioxide
SWF	Specified waste fractions
TNG	The Next Generation
TWW	Treated Waste Wood
WEE	Electronic waste

1. INTRODUCTION

The purpose of this document is to define the key design parameters which are to be used in the documents for the new Waste-to-Energy plant owned by The Next Generation (NSW) Pty Ltd (hereafter TNG).

TNG, a stand-alone company, has been formed by Dial a Dump Industries and Genesis Xero Waste Facility to develop a low carbon electricity generating plant that will be fuelled by waste derived fuels.

The project can be divided into the following primary systems, which will be described below in this order:

- Delivery, tipping and feeding
- Furnace/boiler
- Flue gas treatment (APC)
- Turbine/Condensers
- Ancillary equipment
- Control and monitoring system
- Electrical systems
- Civil works and layout
- Operation

2. KEY FACTS OF THE PLANT

2.1 General

The proposed Development involves the construction and operation of an Electricity Generation Plant (the proposed Facility). The proposed Facility will generate electrical power from unsalvageable and uneconomic residue waste which would otherwise be land filled.

Regulatory Standards

The proposed Facility will be compliant with NSW Emissions Requirements and in line with the NSW EfW Policy.

Calorific Value of Fuel

The design fuel has been calculated based on the expected waste fractions and has a Net Calorific Value (NCV) of 12.3 MJ/kg (equivalent to 12,300 kJ/kg).

Based on the design fuel NCV the Facility will have a nominal capacity to treat 552,500 tpa (34.53 t/h, 2 streams, 8,000 h) of fuel.

Composition and NCV will vary for each individual fuel fraction. The Facility is designed to operate efficiently within an NCV range to maximise operational flexibility and high efficiency. The combustion diagram is based on an NCV range from minimum 8.5 MJ/kg to maximum 16.5 MJ/kg.

Electricity Generation output

To maintain the planned generating capacity with the proposed NCV range the fuel requirement can vary from approximately 405,000 to 675,500 tpa with an optimum expect throughput of 552,500 tpa when the fuel waste on an annualised basis has a Net Calorific Value (NCV) of 12.3 MJ/kg

The proposed Facility has a capacity to generate net 68.65 Mega Watts of electrical energy (MWe).

Fuel Source

The Fuel will be sourced from the neighbouring Genesis MPC, which will enter the proposed Facility via conveyor and the private connecting road under-pass culvert.

Fuel will be provided only by Facilities where bona fide resource recovery processes have been undertaken in accordance with the NSW EfW Policy guidelines and where fuel quality is consistently demonstrated.

In all cases quality control procedures engaged by the Genesis Recycling Facility will be employed to ensure,

(a) compliance with the NSW EPA Energy from Waste Policy in respect of the extent of the resource recovery required to have been carried out ,

(b) consistent fuel quality and the exclusion of unacceptable materials from the fuel residue waste stream.

Planning and Construction approval limited to Stage 1

Preliminary approval was previously sought for a two stage 4 line concept plan with the second stage [lines 3 and 4] having effectively 50% capacity of the two stages taken together.

The staged proposal based around a Facility engineered and designed to accommodate the second stage build met with community expressions of concern about size and scale.

In order to mitigate any confusion which may have had arisen in the community the proponent's response to submissions lodged in December 2016 made clear that the submission was in respect only of a stage 1 application for approval.

The supporting reports and modelling by expert consultants however continued to reflect potential impacts on the environment, on amenity, on health and upon the community *as if* both stages of the facility had had been completed and were operational.

Accordingly, the proponent makes a request pursuant to Regulations under the EPAA legislation to formally amend its application to limit it only to an application for development consent for stage 1 only.

Construction and operation will take place as follows:

- **Stage 1** will include the complete construction of the Tipping Hall and Waste Bunker and combustion Lines 1 and 2 comprising of two independent Boilers, Flue Gas Treatment (FGT) systems, Stack as well as one Turbine and one Air Cooled Condenser (ACC) and all other auxiliary equipment including two emergency generators.

The proponent will submit at a later time a fresh application in respect of two additional combustion lines [Lines 3 and 4].

The fresh application for a stage 2 build will only be submitted for assessment once the Department of Planning and Environment is satisfied that stage 1 is operating satisfactorily and the required additional amount of residual waste fuel is demonstrated to be available to the Stage 2 TNG facility.

Proposed Technology

The technology proposed for the Facility is a moving grate system with water and air cooled grate bars. This system offers the most flexible and cost effective solution for the fuel mix being considered.

The proposed turbine exhaust cooling system for the Facility is an Air Cooled Condenser. ACCs are considered to be the preferred option as they do not require water and do not generate an effluent discharge.

Except under exceptional and limited climatic conditions there will normally be no visual plume impact through the ACC, as there would be for an evaporative cooling tower.

The flue gas treatment system is designed to achieve the emission limits as required by the European Industrial Emissions Directive and complies with NSW emissions guidelines.

The flue gas treatment system will consist of a Selective Non- Catalytic Reduction (SNCR) of NOx, semi-dry system with hydrated lime and activated carbon reactor and fabric filter.

Without any changes to the main process, the Facility will be configured so that it will be possible to export electricity and heat to nearby consumers.

Operation of the Facility will generate three types of solid waste by-products:

- bottom ash;
- boiler ash; and
- flue gas treatment residues (APC residues).

The facility will produce no excess effluent during operation.

2.2 Fuels

A moving grate system offers TNG the greatest flexibility in the range of waste fuels that may be processed at the Facility.

The following fuel types have been identified as the main sources of fuel for the Facility;

- Chute Residual Waste (CRW) from the Genesis Plant Output
- General Solid Waste [non putrescible] after resource recovery- currently Landfill Facility Direct Input
- Material Recovery Facility waste (MRF) from bona fide resource recovery facilities [currently also Genesis Landfill Facility Direct Input]
- Floc waste from car and metal shredding and resource recovery carried out by others;
- Commercial and Industrial (C&I) residual after resource recovery carried out by Genesis or by others operating bona fide resource recovery facilities
- Other specified waste fractions (SWF) compliant with EFW Policy

As the NCV of waste fuels vary depending on type, the facility will operate within a range of NCVs to support operational flexibility.

2.2.1 Design Fuel

A number of elements have been taken into account in arriving at a Design Fuel.
These include,

(i) The availability within the Sydney Metropolitan area of wastes and residual wastes of the types which comply with the EFW Policy

(ii) The quantities of wastes and the relative proportions or fractions of residual wastes of the types which comply with the EFW Policy

(iii) The Calorific Values of the fractional components of the residual waste streams

The availability of appropriate waste streams is derived from an analysis carried out by MRA Consulting dated 13th July 2017.

MRA also modelled by reference to the NSW Energy from Waste Policy, the quantities in tonnes of qualifying waste streams either currently received by the Genesis Facilities or those that would be anticipated to be received by the Genesis Facilities if by the time the TNG project was approved and commissioned.

The constituent fractions of the fuel types were derived from the independently conducted audits of the waste streams currently managed by Genesis Facilities. The composition audits are found in Annex 1.

The calorific values of the fractional components of the waste streams were provided by Ramboll, based on the outcomes of the disposal based audit: C&I waste stream in the regulated areas of New South Wales, published May 2015, NSW EPA.

Based upon the fuel types listed above, a design fuel composition has been developed.
This is based on typical values for each of the proposed fuels and an estimated fuel mix.

Input fuel will always be mixed as part of the normal operational process to produce as homogenous an input as possible.

Design Fuel Content

During the assessment process attention was drawn to the differing nomenclature of waste categories used in NSW and those in parts of Europe and to the difficulties to which this could give rise when assessing inputs and outputs of facilities otherwise comparable in terms of size and engineering design.

Residual Waste [left over after resource recovery] forms the input fuel stream for the facility which is proposed.

The principal source of that fuel waste input stream has been identified as the adjacent Genesis Recycling Facility operated by a sister corporation to the proponent.

The Genesis Facility operated by the DADI Group is the holder of two Environment Protection Licences [EPLs].

The Genesis resource recovery Facility is licensed pursuant to EPL 20121 to accept the following material types:

- Wood waste
- Garden waste
- Building and demolition waste
- Waste tyres
- Soils
- General solid waste (non-putrescible)

In the NSW Waste Industry this type of waste is often described as Construction and Demolition (C&D) waste. It is one of the broadest categories of waste descriptions to be found in the Protection of the Environment Operations Act 1997 (POEO Act).

The Genesis Landfill operates pursuant to EPL 13426 and is licensed to accept
General Solid Waste

These types are more closely defined by reference to Part 3 Definition of Division 1 Waste Classifications.

> Part 3 - Definitions
> Division 1 Waste classifications
> 49 Definitions of waste classifications
>
> (1) In this Schedule:
> General solid waste (non-putrescible) means waste (other than special waste, hazardous waste, restricted solid waste, general solid waste (putrescible) or liquid waste) that includes any of the following:
> (a) glass, plastic, rubber, plasterboard, ceramics, bricks, concrete or metal,
> (b) paper or cardboard,
> (c) household waste from municipal clean-up that does not contain food waste,
> (d) waste collected by or on behalf of local councils from street sweeping,
> (e) grit, sediment, litter and gross pollutants collected in, and removed from, stormwater treatment devices or stormwater management systems, that has been dewatered so that it does not contain free liquids,
> (f) grit and screenings from potable water and water reticulation plants that has been dewatered so that it does not contain free liquids,
> (g) garden waste,
> (h) wood waste,
> (i) waste contaminated with lead (including lead paint waste) from residential premises or educational or child care institutions,
> (j) containers, having previously contained dangerous goods, from which residues have been removed by washing or vacuuming,

(k) drained oil filters (mechanically crushed), rags and oil absorbent materials that only contain non-volatile petroleum hydrocarbons and do not contain free liquids,
(l) drained motor oil containers that do not contain free liquids,
(m) non-putrescible vegetative waste from agriculture, silviculture or horticulture,
(n) building cavity dust waste removed from residential premises, or educational or child care institutions, being waste that is packaged securely to prevent dust emissions and direct contact,
(o) synthetic fibre waste (from materials such as fibreglass, polyesters and other plastics) being waste that is packaged securely to prevent dust emissions, but excluding asbestos waste,
(p) virgin excavated natural material,
(q) building and demolition waste,
(r) asphalt waste (including asphalt resulting from road construction and waterproofing works),
(s) biosolids categorised as unrestricted use, or as restricted use 1, 2 or 3, in accordance with the criteria set out in the Biosolids Guidelines,
(t) cured concrete waste from a batch plant,
(u) fully cured and set thermosetting polymers and fibre reinforcing resins,
(v) fully cured and dried residues of resins, glues, paints, coatings and inks,
(w) anything that is classified as general solid waste (non-putrescible) pursuant to an EPA Gazettal notice,
(x) anything that is classified as general solid waste (non-putrescible) pursuant to the Waste Classification Guidelines,
(y) any mixture of anything referred to in paragraphs (a)–(x).

In Europe it is common practice to refer to C&D Waste as being source separated on site.

The effect of this is to broadly separate out brick concrete and timber materials leaving the remainder as residue. This is generally a manual process carried out by unskilled labour.

The residue left over from that process is then added together with other waste streams as C&I waste to form the fuel waste for EfW plants.

By contrast in NSW, C&D waste is not source or site separated with those processes being highly mechanised and specialised and taking place at centralised waste collection facilities of which Genesis is one.

What in Europe is named C&D waste and that same named material in NSW does not yield a simple comparison. Descriptors of the residue waste by reference to their origin or source is to be eschewed.

The proponent also became aware during the public consultation process of a significant degree of concern by members of the public regarding what they considered might be the potential contents of the building and demolition waste given what appears to be a quite broad classification in Part 3 definitions in the POEO Act cited above.

In order to address community concern and also to ensure that any comparison of similar facilities was carried out on a like for like basis, the proponent undertook to identify not only the origin waste streams but more importantly the contents of the residue waste stream after resource recovery had been completed.

In order to do this the Genesis facility commissioned a series of independent Waste Audits carried out by NSW EPA accredited Waste auditors (audits are found in annex 1) to identify and establish with precision the physical compositional attributes of

- CRW
- MRF residual
- Floc Waste

In case of C&I waste Ramboll has used the fractional analysis according to “Disposal based audit: C&I waste stream in the regulated areas of New South Wales, published May 2015, NSW EPA” and existing data on the composition of these fractions to assess the composition of

- C&I
- SWF

Concurrently with the carrying out of the compositional analysis, samples from the audited waste were submitted to a NATA approved laboratory and analysed for a range of chemical constituents.

The Audit results and the Laboratory reports are appended at Appendix 1.

The residue waste streams which were audited were created as a result of resource recovery procedures and under the current configuration of sorting and processing were [as residue wastes] specifically destined to be landfilled.

Normally it would be expected that this process would concentrate any percentages of materials of concern.

Despite this the Audit reports note in particular, the absence of special wastes (asbestos) from the audited samples. The audit also demonstrates a general absence of a range of miscellaneous items of concern to the community such as car batteries gas cylinders and fire extinguishers.
The focus of the Genesis separation processes is to generate high quality recovered products meeting appropriate standards for safety and consumer use.

As a result the Genesis procedures are already very refined and are highly effective at removing all materials which are designated to be removed.

This result together with the Genesis, Quality Assurance measures provide a continuing high degree of confidence that unacceptable hazardous materials or electronic waste will be entirely excluded from the fuel waste stream.

CCA treated timber and painted wood were identified for the purposes of the audits of CRW and MRF residuals as hazardous. It is noted that in MRF residual the percentage of CCA treated and painted timber amounted to 0.16% to 0.44% by weight.

The audits were conducted of the residual waste streams (which are currently committed to landfill) and were therefore not subject to the exclusionary quality assurance processes which Genesis currently applies to its recovered wood-waste products – hence the detection of CCA timber in the waste stream.

There are two approaches to this issue,

(i) The first of these is to apply the quality assurance processes currently operated by Genesis in respect of its recovered wood-waste products to the residual fuel waste stream which would then be confidently expected to reduce even further in the CRW and MRF waste streams the fractional constituent of CCA treated or painted timber.

(ii) The second of these is to consider the fractional constituent present in the CRW and MRF residual streams as a component of the entire annual residual fuel waste stream of the TNG facility.

It should be noted that full scale tests have previously shown that processing up to 10% of CCA treated wood concurrently with other fuels had no deleterious effect on the quality of emissions[1].

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[1] Ministry of Environment and Food of Denmark, Environmental Project No. 1654, 2015
“Vurdering af metalholdigt affald til forbrænding” (Abstract in English)
http://mst.dk/service/publikationer/publikationsarkiv/2015/mar/vurdering-af-metalholdigt-affald-tilforbraending/

In relation to the TNG proposal the proportions by weight of CCA treated and painted timbers are able to be identified in the CRW and MRF waste stream Audits. From this information the quantities of these materials expected to be present in the CRW and MRF streams on an annual basis is able to be calculated

These particular materials identified in small quantities in CRW and MRF are however expected to be absent from the balance of the eligible residual waste streams identified in the report by MRA Consulting.

When CRW, MRF and the balance of the eligible residual waste fractions are taken together the percentage by weight which the CCA components will be significantly less than 1% by weight.
This presents as being of no consequence to the emissions output of the facility.

It was also noted that a high degree of homogeneity is evident in the sampled materials resulting from the extensive degree of processing to which the materials are subject during resource recovery.

The high degree of homogeneity present in the local waste fuel as a result of centralised process is not present in European residual waste fuels where sorting separating and processing is not centralised. To that extent European plants depend to a much greater degree on in-facility waste mixing which occurs as the waste is tipped and then fed to the incinerators. Nevertheless the same mixing procedures for waste delivered before feeding to the plant will be applied for this facility.

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	CRW	MRF	Floc Waste	Mixed C&I	Specified Waste	Design Fuel Mix
Fuel Mix	**19.90%**	**12.06%**	**14.73%**	**40.93%**	**12.37%**	**100.00%**
Compositional Analysis						
Paper/Cardboard	3.76%	22.00%	0.39%	20.42%	0.00%	11.82%
Wood/Timber	64.55%	3.09%	2.98%	16.87%	85.65%	31.16%
Plastic	7.38%	29.04%	21.42%	16.69%	0.00%	14.96%
Metal (Ferrous and non-ferrous)	1.88%	4.63%	1.41%	3.34%	0.00%	2.51%
Organic (not wood/timber)	11.78%	32.21%	15.71%	23.21%	14.35%	19.82%
WEE (electronic waste)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Hazardous	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Glass	0.11%	4.34%	0.00%	1.70%	0.00%	1.24%
Other* (including earth and building materials)	10.53%	4.69%	58.09%	17.77%	0.00%	18.49%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

* Other defines earth and building materials including:
- Insulation
- Carpet/underlay
- Compounds (excl. plastic and metal)
- Asphalt
- Inert incl. non-hazardous building waste

	CRW	MRF	Floc Waste	Mixed C&I	Specified Waste	Design Fuel Mix
Chemical Analysis						
Carbon (C)	38.54%	44.18%	23.45%	25.66%	36.96%	31.53%
Hydrogen (H)	4.61%	6.09%	4.17%	3.32%	4.66%	4.20%
Oxygen (O)	25.20%	19.29%	7.99%	18.10%	33.09%	20.02%
Nitrogen (N)	0.77%	0.42%	0.96%	0.73%	0.56%	0.71%
Sulphur(S)	0.18%	0.07%	0.26%	0.16%	0.22%	0.18%
Chloride (Cl)	0.37%	0.32%	0.52%	0.06%	0.09%	0.23%
Ash	14.72%	19.04%	49.50%	21.04%	4.63%	21.70%
Water (H2O)	15.60%	10.59%	13.15%	30.92%	19.78%	21.43%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
NCV MJ/kg	14.71	18.79	11.00	9.41	13.24	**12.30**

Table 1 Proposed design fuel analysis, as received basis

The analysis above defines the design fuel of the Facility. Suitable ranges for various key components such as the moisture, ash and energy content of the fuel are discussed in section 2.2.2. Based on the above design compositions, NCV of the nominal design fuel mix is calculated to be 12.30 MJ/kg.

2.2.2 Fuel Range

The homogenisation which results from the intense resource recovery processes together with the process of mixing fuels prior to incineration contributes to a more efficient burn process and an overall less chance of unexpected spikes during the incineration.

The minimum and maximum fuel ranges as basis for calculation and design of the plant are shown in Table 2 within this range the facility will still operate efficiently.

		Minimum	Maximum
Nitrogen(N)		0.42%	0.96%
Sulphur(S)		0.07%	0.26%
Chloride (Cl)		0.06%	0.52%
Ash		4.6%	49.5%
Water(H_2O)		10.6%	30.9%
NCV	MJ/kg	8.5	16.5

Table 2 Fuel range

2.3 CRW fractions and chemical analysis to be processed at TNG

The percentage components of CRW received at Genesis as indicated by the recent independently conducted audit is shown here.

To have a clear picture of the expected composition of the CRW waste to be processed at TNG (referred to as "DADI_CRW_Waste_Audit_Report_April_2017_050517_Draft"), 42 samples of the CRW waste stream were collected. These samples were then individually analysed to determine the macroscopic composition and the calorific value.[2]
In addition the chemical components were analysed (referred to "hrl 170505 Full Report"). [3]

The majority (64%) of CRW is wood timber. There are also substantial amounts of non-organic (12%), other (earth and building materials including insulation, carpet/underlay, compounds (excl. plastic and metal), asphalt and inert incl. non-hazardous building waste 11%) and Plastic (7%). These four materials make 94% of CRW. The rest is paper/cardboard (4%) and metal (2%).

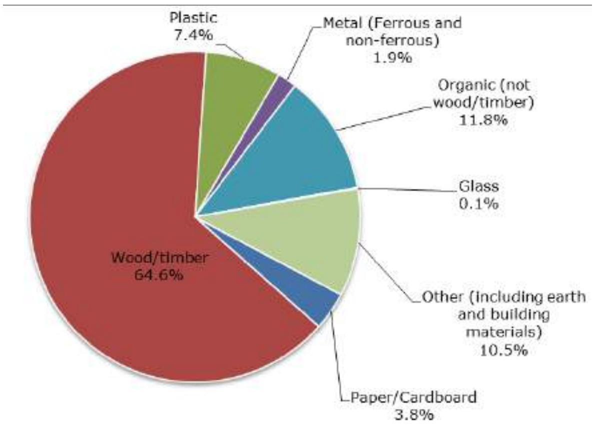

Figure 1 Average macroscopic composition of "CRW" TNG

The net wet calorific value were analysed for each material (referred to "hrl 170505 Full Report", table 3, part 1). The calculated NCV is 14.7 MJ/kg.

Chemical Analysis of CRW TNG

The chemical profile of CRW TNG is summarised in Table 3.

	unit	TNG
Carbon (C)	%	38.5
Hydrogen (H)	%	4.6
Nitrogen (N)	%	0.8
Sulphur (S)	%	0.2
Chloride (Cl)	%	0.4
Oxygen (O)	%	25.2
Ash	%	14.7
Water (H_2O)	%	15.6
NCV	**MJ/kg**	**14.7**

Table 3 Chemical Analysis CRW TNG

[2] Reference Chute Residual Waste: Composition Audit for Dial A Dump Industries, by ec Sustainable, dated April 2017
[3] Reference Analysis of waste samples, Report No. 170505 for Environ Consulting Services, by HRL Technology Group Pty Ltd, dated 01 June 2017, see Appendix 1

2.4 MRF fractions and chemical analysis to be processed at TNG

The percentage components of MRF Residual Waste received at Genesis as indicated by the recent independently conducted audit is shown here.

To have a clear picture of the expected composition of the MRF waste to be processed at TNG (referred to as "DADI_MRF_Residuals_Audit_Report_April_2017_120517_Draft"), 31 samples of the CRW waste stream were collected. These samples were then individually analysed to determine the macroscopic composition and the calorific value.[4]
In addition the chemical components were analysed (referred to "hrl 170505 Full Report"). [5]

There are three major materials in MRF. These are Organic (32%), plastic (29%) and paper/cardboard (22%). These three materials make 83% of MRF. The rest is other (earth and building materials including insulation, carpet/underlay, compounds (excl. plastic and metal), asphalt and inert incl. non-hazardous building waste), glass, HEEE and metal (each about 4.5%) and wood (3%).

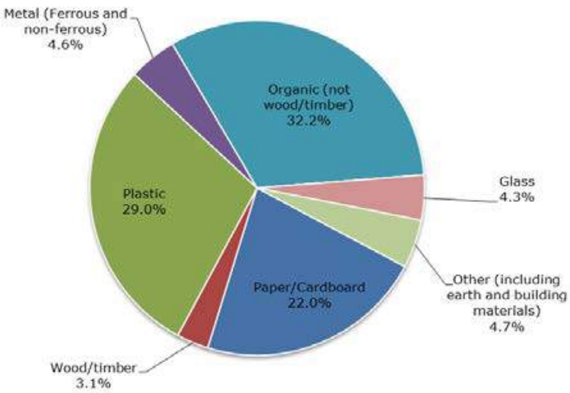

Figure 2 Average macroscopic composition of "MRF" TNG

The net wet calorific value were analysed for each material (referred to "hrl 170505 Full Report", table 3, part 2). The calculated NCV is 18.8 MJ/kg.

Chemical Analysis of MRF TNG

The chemical profile of MRF TNG is summarised in Table 4.

	unit	TNG
Carbon (C)	%	44.2
Hydrogen (H)	%	6.1
Nitrogen (N)	%	0.4
Sulphur (S)	%	0.1
Chloride (Cl)	%	0.3
Oxygen (O)	%	19.3
Ash	%	19.0
Water (H_2O)	%	10.6
NCV	**MJ/kg**	**18.8**

Table 4 Chemical Analysis MRF TNG

[4] Reference MRF Residual Waste: Composition Audit for Dial A Dump Industries, by ec Sustainable, dated April 2017

[5] Reference Analysis of waste samples, Report No. 170505 for Environ Consulting Services, by HRL Technology Group Pty Ltd, dated 01 June 2017, see Appendix 1

2.5 Floc Waste fractions and chemical analysis to be processed at TNG

The percentage components of Floc Waste received at Genesis as indicated by the recent independently conducted audit is shown here. To have a clear picture of the expected composition of the floc waste to be processed at TNG (referred to as “floc waste TNG”), 17 samples of nearby floc waste producers were collected. These samples were then individually analysed to determine the macroscopic composition, the chemical components and the calorific value. [6]

The following results refer to dry basis (db): The majority (58%) of shredder floc is inert material. There are also substantial amounts of non-polystyrene plastics (21%) and textiles (11%). These three materials make 90% of shredder floc. The rest is rubber/leather (5%), wood waste (3%), metal (1%), polystyrene (1%) and paper/cardboard (0.4%).

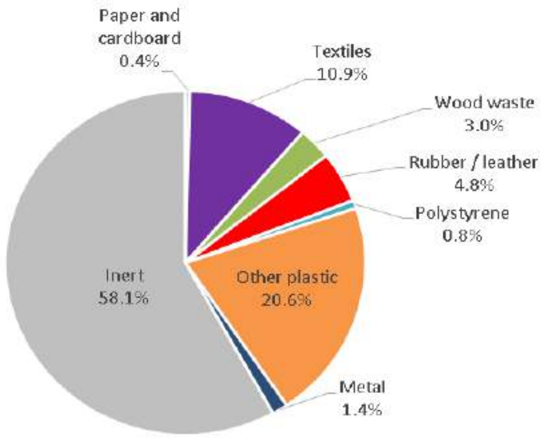

Figure 3 Average macroscopic composition of “floc waste TNG” (dry basis)

The analysed net calorific value of the 17 samples varies from 7.8 to 15.7 MJ/kg (as received). The average value is 11.0 MJ.

Chemical Analysis of floc waste TNG

The chemical profile of “floc waste TNG” is summarised in Table 5.

	unit	TNG
Carbon (C)	% (db)	27.0*
Hydrogen (H)	% (db)	4.8
Nitrogen (N)	% (db)	1.1
Sulphur (S)	% (db)	0.3
Chloride (Cl)	% (db)	0.6
Bromine (Br)	% (db)	0.01
Oxygen (O)	% (db)	9.2
Ash	% (db)	57.0
Water (H_2O)	% (ar)	13.2
Total PAH	mg/kg (db)	20
Total PCB	mg/kg (db)	14
NCV	**MJ/kg**	**11.0**

Table 5 Comparison of “floc waste TNG”

*Note: Value corrected to allow for uncertainties of the chosen analytical method

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[6] Reference Audit of potential feedstock for The Next Generation energy-from-waste facility for Dial A Dump Industries, by apc waste consults, dated August 2016, see Appendix 1

2.6 C&I fractions and chemical analysis to be processed at TNG

The percentage components of C&I received at Genesis is shown here.

There are five major materials in C&I. These are Organic (23%), paper/cardboard (20%), plastic (17%), other (earth and building materials including insulation, carpet/underlay, compounds (excl. plastic and metal), asphalt and inert incl. non-hazardous building waste 18%) and wood/timber (17%). These three materials make 95% of C&I. The rest is glass and metal (total 5%).

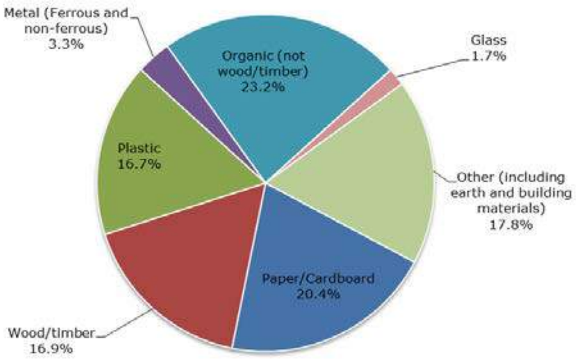


Figure 4 Average macroscopic composition of "C&I" TNG

The calculated NCV is 9.5 MJ/kg.

Chemical Analysis of C&I TNG

The chemical profile of "C&I TNG" is summarised in Table 6.

	unit	TNG
Carbon (C)	%	25.66
Hydrogen (H)	%	3.32
Nitrogen (N)	%	0.73
Sulphur (S)	%	0.16
Chloride (Cl)	%	0.06
Oxygen (O)	%	18.10
Ash	%	21.04
Water (H_2O)	%	30.92
NCV	**MJ/kg**	**9.4**

Table 6 Chemical Analysis C&I TNG

2.7 Special waste fractions and contaminants

2.7.1 The effect of waste separation and the resultant waste homogenisation

The Genesis Quality assurance processes are demonstrably effective at largely excluding PVC from C&D resources recovered for re-sale. Currently those quality assurance processes separate and remove PVC from recovered materials and the separated PVC forms part of CRW.

Despite this concentration of PVC in CRW, the PVC component by weight was shown in the recent audits to be only approx. 0.65% by weight, resulting in a chlorine content of 0.37% in the CRW. If the same PVC separation process was applied to the CRW as are currently applied to resource recovery then even this small component could be reduced significantly.

In all other waste fractions the chlorine content is between 0.06% and 0.52%. There is therefore a high degree of confidence that any single waste fraction and the waste in total as an average will not contain more than 1% chlorine.

2.7.2 Treated Waste Wood (TWW)

TWW can be defined as wood that has been treated with at least one of the following:

- Copper, Chromium, Arsenic (CCA)
- Copper Organics
- Creosote
- Light Organic Solvent Preservatives (LOSP)
- Micro-emulsion
- Paint / stain
- Varnish

Several studies are available on the impact of processing TWW in an EfW plant. The most important results are summarized below:

- Thermal treatment is suitable for all types of TWW as there is an effective control of the emissions.
- Co-incinerating of wood with the above mentioned substances along with the basic waste brings an increase of the average arsenic content in the waste, whereas the concentrations of copper and chromium do not differ significantly from the basic waste. Full-scale tests with co-incineration of impregnated wood, has not shown significant increase of arsenic emissions to air. Air emissions of arsenic (and trace metals in general) are mainly dependent on the Air Pollution Control technology and only to a small degree on the input concentration.

Nevertheless,

TWW represents a significant proportion of the waste wood received at Genesis and which is then separated and excluded during the processes of resource recovery currently operating there.

The Genesis Quality assurance processes described in Appendix 2 produce a recovered wood-waste for the purposes of reprocessing and then sale.

TWW is absent from the materials recovered for re sale. This is verified by independent laboratory analysis routinely carried out at Genesis attesting to the chemical profile of the wood. Typical reports are shown at Appendix 2.

Diversion of TWW [when it is separated from re-usable wood-wastes] away from the residual waste fuel stream will ensure that TWW will continue to be disposed of at landfill.

In the event that a quantity of TWW is not recognised and therefore not removed from the waste stream before the fuel waste enters TNG given the very low overall percentage of TTW in the fuel waste stream it is probable that the concentration of arsenic overall will not measurably increase.

If there was to be any increase in arsenic content this would primarily be evidenced in the residues from the flue gas cleaning process, and to some extent the concentration in the bottom ash

2.7.3 Shredder residue (floc waste/shredder floc)

Processing floc waste in EfW facilities is widespread and a preferred recovery option in Europe.

According to the Australian Federal Chamber of Automotive Industries the reuse and recovery rate of end-of-life vehicles in Australia is 75% (data published 2011) which obviously represents the metals.

In Australia the current recycling practice for the end-of-life vehicles is to drain fluids and to dismantle for saleable parts (wheels, batteries, engines, alternators, body panels, etc.). Approximately 65-75% of the rest of the vehicle are ferrous and nonferrous metals.
The percentage components of Floc waste received at Genesis as indicated by the recent independentl audit is shown below.

Chemical analysis of European floc waste
The composition of floc waste can vary widely depending on the input to the shredder, on the shredder process, the floc removal (wet or dry) as well as the amount of water-spray used for dust abatement. The following table shows the variation of the composition of European floc waste.

Parameter		Average	Range
Moisture	%-Weight	6.7	0.1 - 18
Ash	%-Weight	52.7	25 - 80
NCV	MJ/kg	13	7 - 20
C	%-Weight	32.6	20 - 47
H	%-Weight	4.1	2 - 6
N	%-Weight	0.9	0.2 – 1.8
O	%-Weight	7	3 - 11
S	%-Weight	0.6	0.1 – 1.4
Cl	%-Weight	1.8	0.5 - 3

Table 7 Range and average chemical composition of Floc Waste Europe

As the above table shows, the variation in composition is significant. The main factors contributing to the variation are the water and the ash content. The water content depends on the process (as described above) or the transport conditions (open containers, rain).

The measured ash depends on two factors: the sampling and the material fed to the shredder. The feed material often contains sand/dirt or is very rusty. As a result the ash of floc waste always has a very high SiO_2 (quartz sand) and Fe_2O_3 (rust) content.

[7]The effects of co-processing floc waste with other waste streams/sources have been evaluated in several European studies. These studies have concluded the following benefits:

- By incinerating 10% shredder residue along with the basic waste, there is an increase of metals in bottom ash when compared to incinerating basic waste only. The primary increase can be assigned to the elevated metal content in the incoming waste, which, to a large degree, can be extracted and recycled. There is a slight increase of trace metal content, even after the sorting process, but actual full scale tests show no indication of increased concentration of trace metals.

[7] Ministry of Environment and Food of Denmark, Environmental Project No. 1654, 2015
"Vurdering af metalholdigt affald til forbrænding" (Abstract in English)
http://mst.dk/service/publikationer/publikationsarkiv/2015/mar/vurdering-af-metalholdigt-affald-til-forbraending/

- The concentration of trace metals in flue gas cleaning residues is increased when co-combusting shredder residue. But full scale tests show, that there is no increase of trace metal in the emissions compared to incinerating basic waste only.

Comparison of “floc waste TNG” with European values

The chemical profile of “floc waste TNG” is summarised in Table 8 and compared with the European values.

	unit	TNG	Europe
Carbon (C)	% (db)	27.0*	32.6
Hydrogen (H)	% (db)	4.8	4.1
Nitrogen (N)	% (db)	1.1	0.9
Sulphur (S)	% (db)	0.3	0.6
Chloride (Cl)	% (db)	0.6	1.8
Bromine (Br)	% (db)	0.01	0.02
Oxygen (O)	% (db)	9.2	7.0
Ash	% (db)	57.0	52.7
Water (H_2O)	% (ar)	13.2	6.7
Total PAH	mg/kg (db)	20	-
Total PCB	mg/kg (db)	14	120
NCV	**MJ/kg**	**11.0**	**13.4**

Table 8 Comparison of “floc waste TNG” and average European values

*Note: Value corrected to allow for uncertainties of the chosen analytical method

In general the chemical profile of the “floc waste TNG” and European values are considered to be comparable. The main difference is that the chlorine and sulphur contents are lower. The average PCB value for TNG is substantially lower than in Europe, however the European value is based on only one source in the 1990ies.

Subject to the following,

(a) the concentration of chlorine and sulphur of “floc waste TNG” being substantially lower than European floc; and

(b) the chlorine content is below 1% and even lower than assumed in the design fuel;

The results of the NATA laboratory analysis of 17 samples of floc waste carried out following a recent compositional floc audit [8] (and which could be considered as typical of floc waste being processed in the TNG facility) show, that “floc waste TNG” is comparable to European floc waste.

There is a long-term positive experience in processing floc waste in Europe in EfW plants. Having a comparable composition of this waste in Australia supports the utilization in the TNG facility.

Conclusion

There is no evidence of any compounds present in the TNG Floc which is not otherwise catered for in the facility design.

[8] Reference Audit of potential feedstock for The Next Generation energy-from-waste facility for Dial A Dump Industries, by apc waste consults, dated August 2016,, see Appendix 1

2.8 Waste mixing

The mixing and homogenisation of the different waste streams remains an important aspect of the operation of a waste-to-energy plant and therefore it is given a very high importance. When the waste is tipped in to the bunker it has to be picked up by the crane grab so to keep the delivery area free and allow further waste deliveries. During times with low delivery it is the duty of the crane driver (or in the case of an automatic crane of the automation system) to thoroughly mix the waste by picking it up and dropping it in a different place of the storage area in the bunker. This ensures a thorough mixing of the different waste fractions. To be fed to the combustion system the waste is again picked up by the crane grab.

As a result any waste is picked and offloaded at least 2 to 3 times before being fed into the combustion process and therefore is well mixed. As a conclusion it is reasonable to assume that the contaminant concentrations of the different waste streams will be well homogenised when being fed to the combustion process.

2.9 Performance

The Facility is designed to have a thermal input of 235.96 MW (117.98 MW for each combustion line) at the design point. The Facility has an assumed net average annual electrical efficiency of 29.1%. The Facility is designed to export 68.66 MWe (29.1% x 235.96 MW). High net electrical efficiency is a priority for TNG and there are a number of options which have been incorporated to maximize the efficiency.

The export voltage will be set to match the requirements of the local high voltage electricity grid.

		Stage 1	
Items	**Units**	**Total**	**Per stream (based on 2 streams)**
Gross Power	MW_e	76.0	
Auxiliary load	MW_e	7.3	
Power Export	MW_e	68.7	
Net Efficiency	%	29.1%	
Fuel NCV	MJ/kg	12.30	
Thermal load	MW_{th}	235.96	117.98
Availability	%	91.3%	
Waste Throughput (based on assumed availability)	t/h	69.06	34.53
	tpa	552,500	276,250

Table 9 Overall Facility Performance (LPN, Design point)

2.10 Combustion Diagram

A combustion diagram is used to show the correlation of throughput in tons/hour, the calorific value in kJ/kg and the thermal output in MW for the plant. Combustion diagrams are a useful tool to identify the operational area where all guarantees, environmental and functional requirements are fulfilled.

Continuous operation shall preferably be at loading points near the nominal loading point to have an efficiently operating plant. Continuous operation outside the limits of the diagram is not possible.

Figure 5 shows the combustion diagram for one line of the proposed TNG facility.

As shown in the diagram the nominal design point (Load Point, LPN) is 34.53 tons per hour at a NCV of 12,300 kJ/kg (which is equivalent to 117.98 MW).

The line (LP6) – (LP1) represents 100% thermal load and the plant will mostly be operating along this line, in practice done by operating the boiler on a fixed steam flow rate set point (MCR: 144.7 t/h steam flow at boiler outlet). This implies that the amount of waste is reduced if the calorific value exceeds 12,300 kJ/kg and similarly increased if the calorific value decreases.

The diagram allows a range for the calorific value between 8,500 kJ/kg (line between (LP2) and (LP3)) and 16,500 kJ/kg (line between (LP5) and (LP6)). This allows variations between +34% and -31% of the nominal value of 12,300 kJ/kg.

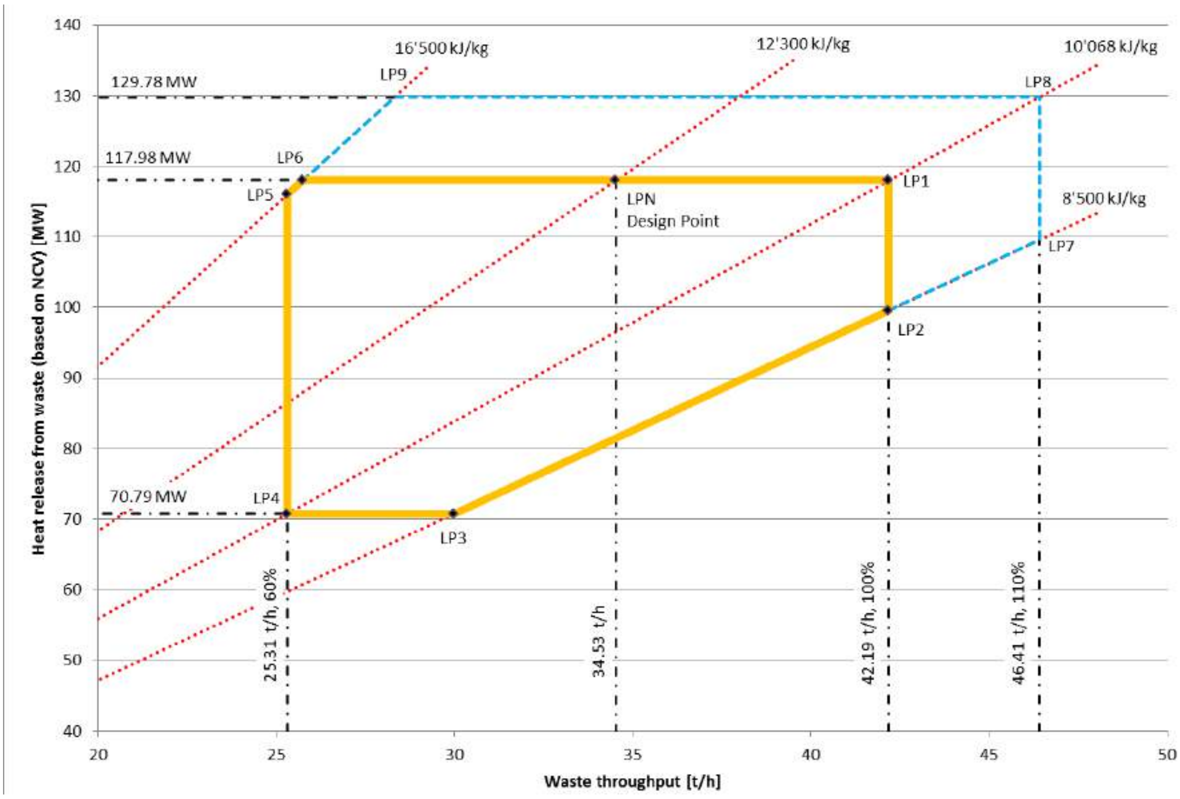


Figure 5 Combustion diagram for 1 Line

For short time overload (during less than one hour) a throughput of 46.41 tons per hour, corresponding to 110% of the nominal throughput is allowed.

The minimum amount of waste throughput is 25.31 tons per hour represented by the line (LP4) – (LP6), corresponding to 60% of the nominal throughput (mechanical load).

To maintain the planned generating capacity with the proposed NCV range the fuel requirement could vary from approximately 405,000 tpa ((LP4), (LP5): 2 streams, availability 8,000 h) to 552,500 tpa ((LP1), (LP2): 2 streams, availability 8,000 h).

However, it must be noted that operation on either the maximum or the minimum amount of waste is only possible during a very short period of time in order to absorb variations in the amount of waste and the calorific value of the waste. Continuous operation outside the limits of the diagram is not possible.

Inside the area made up by the lines (LP1), (LP2), (LP3), (LP4), (LP5) and (LP6) the plant shall be able to be in continuous operation.

The line (LP8) – (LP9) is the maximum short time thermal overload (129.78 MW), which is 110 % of the nominal thermal load. The area constituted by the lines (LP1), (LP8), (LP9) and (LP6) represents a thermal load of 100–110 % of the nominal load, is designed to manage inevitable fluctuations from the preferred operational line (LP1) – (LP6). Continuous operation at thermal overload is not possible.

The line (LP3) – (LP4) is the minimum allowable thermal input (fuel firing) where all guarantee values have to be fulfilled without use of the auxiliary gas burners. The line is representing 60 % of the nominal thermal load (70.79 MW).

2.11 Reference facilities

In order to compare technology, size and feedstock composition of the TNG facility several European reference plants have been chosen. The following table lists the chosen reference plants with their location, size and technology.

Facility / Location	Country	Commission year	Capacity t/a	NCV MJ/kg	Furnace / Boiler	Supplier Furnace / Boiler	APC	Supplier APC
TNG	AU	-	2 x 276'250	12.30	Grate	HZI	Semi dry (lime)	-
Grossräschen	DE	2008	1 x 246'000	12.50	Grate	AEE	Semi dry (lime)	LAB
Heringen	DE	2009	2 x 148'500	12.60	Grate	AEE	Semi dry (lime)	LAB
Premnitz	DE	2008	1 x 150'000	13.00	Grate	AEE	Semi dry (lime)	Lühr
Hannover	DE	2005	2 x 140'000	13.50	Grate	AEE	Semi dry (lime)	LAB
Knapsack	DE	2009	2 x 150'000	15.00	Grate	AEE	Semi dry (lime)	Lühr
Ferrybridge	UK	2015	2 x 256'500	13.50	Grate	HZI	Semi dry (lime)	HZI
Riverside	UK	2011	3 x 195'000	9.60	Grate	HZI	Semi dry (lime)	HZI
TIRME Mallorca	ES	2009	4 x 104'000	10.00	Grate	HZI	Semi dry (lime)	HZI

Table 10 Reference Facilities

The reference plants in Europe process a wide variation in their feedstocks, despite these variations the emissions profile show both consistency and a stable profile. This demonstrates a technological capacity of the EFW plants to withstand a wide range of variance.

The moving grate technology and semi dry flue gas treatment which is proposed for TNG is judged to be most suitable for the fuel waste composition which has been identified by the audits and is proposed

Following several key design parameters are listed and discussed in relation to the design parameters of TNG.

Plant capacity

The mechanical throughput of TNG is comparable with the plant in Grossräschen (DE). The plant capacity proposed for TNG being the thermal capacity (throughput x CV) is identical with Ferrybridge (UK). TNG therefore is in no way an exceptionally large plant.
The waste fractions comprising the design fuel at Ferrybridge UK and identified for TNG as a result of the waste Audit procedure demonstrate comparable fuel streams.

In terms plant size, of fuel capacity and waste fraction components Ferrybridge UK and the TNG proposed plant are directly comparable.

Calorific value

The calorific value defines the combustion characteristics of the waste. Generally it can be said that - except for very low CV below 8 MJ/kg - the higher the CV, the more difficult to maintain an ideal combustion process. With a CV of 12.3 MJ/kg TNG falls in the medium range between i.e. Knapsack with 15 MJ/kg or Riverside with 9.6 MJ/kg.

Chemical waste composition

Within the waste composition the most important parameters are:

- Moisture (limits the controlled ignition of the waste)
- Inert (ash) content (limits homogenous combustion and burnout)
- The larger of Chlorine or Sulphur content (is the limiting factor for the APC system)
- C/O ratio (high C/O ratio is an indicator for high plastic content which limits homogenous combustion and burnout)

The chemical waste composition of TNG design waste is shown below in stock diagram to demonstrate that TNG operates well within the range of comparable facilities, namely the listed reference plants.

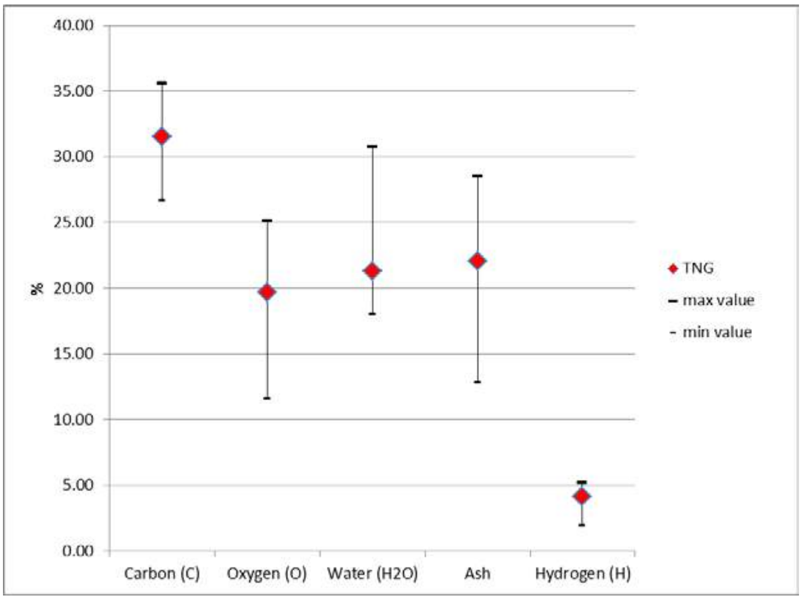


Table 11 Chemical composition of the facilities

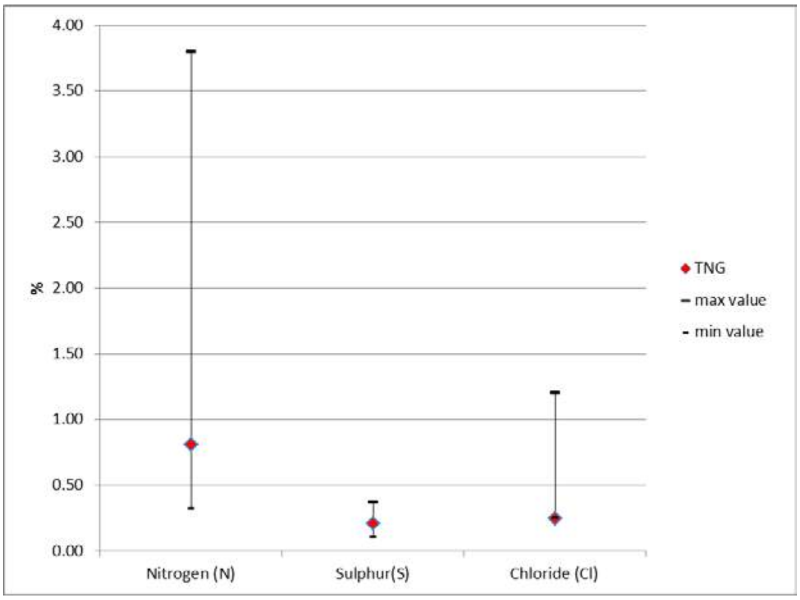


Table 12 Chemical composition of the facilities

For all these aspects TNG is well within the range of all the reference plants.

Feedstock composition

The following table compares the feedstock of the TNG facility with the reference plants.

	Specified Waste						Mixed C&I						MRF	MSW
		paper/card	plastic	textile	vegetation	wood		paper/card	plastic	textile	flock waste			
TNG	**12.0%**	-	-	x	-	x	**76.0%**	x	x	x	x	**12.0%**	x	-
Grossräschen	**9.8%**	x	x	-	x	x	**83.2%**	x	x	x	x	**7.0%**	x	x
Heringen	**13.6%**	x	x	x	x	x	**62.4%**	x	x	x	-	**24.0%**	x	-
Premnitz	**14.3%**	x	x	x	x	x	**57.0%**	x	x	x	x	**28.7%**	x	-
Hannover	**9.0%**	x	x	x	x	x	**75.3%**	x	x	x	x	**15.7%**	x	x
Knapsack	**10.0%**	x	x	x	x	x	**90.0%**	x	x	x	-	**0.0%**	x	-
Ferrybridge	**10.0%**	n.a.	n.a.	n.a.	n.a	x	**30.0%**	n.a.	n.a.	n.a.	n.a.	**60.0%**	x	x
Riverside	**n.a.**	x	x	x	x	x	**n.a.**	x	x	x	-	**n.a.**	x	-
TIRME Mallorca	**n.a.**	n.a.	n.a.	n.a.	n.a	n.a.	**n.a.**	n.a.	n.a.	n.a.	n.a.	**n.a.**	x	x

Table 13 Reference Facilities – Fuel Mix

In summary it can be said that the feedstock composition of the TNG facility is well within the range of the reference plants.

Summary

All relevant design parameters of TNG are well within comparable plants which are successfully in operation. As a result it can be said that the technology option pursued, being moving grate technology with semi dry flue gas treatment, was selected based on its capacity to handle a wide range of fuel types and variation of feed stock and is fully suitable for this application.

2.12 Availability Requirement

The plant is designed to ensure operation minimum availability of 8,000 h/a. 8,000 h/a is a usual availability standard within the EfW industry and a Standard guarantee required in EfW contracts. This allows for 760 hours a year of operational management that may include inspection stops, a maintenance period and some hours of unplanned stop of main components. The total number of hours per year is divided as follows:

Plant availability:	8,000 h
Scheduled plant stop, 14 days:	336 h
Scheduled inspection, 2 days:	48 h
Unplanned stops:	376 h
Total:	8,760 h

To meet the overall availability of 8,000 h/a, each system/component in the plant will have a significantly higher availability or redundancy.

The operator will ensure that fully redundant solutions are developed and implemented for all relevant equipment/components, in particular the components that lead to plant shut-down, in case of failure of the particular component. This also includes appropriate consideration of redundancy in relation to electrical and control and monitoring system. To a high extent all parts will be able to be maintained without stopping the plant / boilers, this is achieved by applying process bypass options (for example turbine bypass), and/or duplicate components (for example feed water pumps or multiple fabric filter chambers).

3. ENVIRONMENTAL STANDARDS

3.1 Background

The Facility design has been developed to align with the relevant environmental, operational and safety requirements of Australian and NSW Regulatory Framework. Key performance requirements have been used to inform the development of the design and operation of the TNG Facility.

The main statutory instruments are summarised in Table 14:

FRAMEWORK LEVEL	PLANNING INSTRUMENT
Legislation and Regulations	▪ Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth) ▪ *Environmental Planning and Assessment Act 1979* ▪ Environmental Planning and Assessment Regulation 2000 ▪ *Protection of the Environment Operations Act 1997* ▪ Protection of the Environment Operations (Waste) Regulation 2014 ▪ Protection of the Environment Operations (Clean Air) Regulation 2010 ▪ Waste Avoidance and Resource Recovery (WARR) Act 2001 ▪ Water Management Act 2000
Environmental Planning Instruments – State	▪ State Environmental Planning Policy (State and Regional Development) 2011 ▪ State Environmental Planning Policy (Infrastructure) 2007 ▪ State Environmental Planning Policy (Western Sydney Employment Area) 2009 ▪ State Environmental Planning Policy No. 33 – Hazardous and Offensive Development ▪ State Environmental Planning Policy No. 55 – Remediation of Land ▪ State Environmental Planning Policy No. 64 – Advertising and Signage.
Environmental Planning Instruments – Local	▪ Blacktown LEP 2015
Local Planning Policies	▪ Blacktown DCP 2006

Policies and Guidelines – State	▪ NSW State Rivers and Estuary Policy (1993); ▪ NSW State Groundwater Policy Framework Document (1997); ▪ NSW State Groundwater Quality Protection Policy (1998); ▪ NSW State Groundwater Dependent Ecosystems Policy (2002); ▪ NSW Energy from Waste Policy Statement 2015 ▪ Waste Avoidance and Resource Recovery Strategy (WARR) 2014 – 2021 ▪ Aquifer Interference Policy (2012); ▪ Department of Primary Industries Risk Assessment Guidelines for Groundwater Dependent Ecosystems (2012); and ▪ Guidelines for Controlled Activities (2012). ▪ Waste Classification Guidelines (EPA, 2014) ▪ Environmental guidelines: Composting and Related Organics Processing Facilities (DEC) (2004) ▪ Environmental guidelines: Use and Disposal of Biosolid Products (NSW EPA)

Table 14 Legislative Framework

The implementation of the relevant legislative and policy framework is achieved through the following key processes:

- Environmental Impact Statement (and supporting documents) and the associated Development Approval (granted under the *Environmental Planning and Assessment Act 1979*).
- Environment Protection Licence (issued under the *Protection of the Environment Operations Act 1997*)

The granting of Environment Protection Licences (EPL's) for Waste-to-Energy plants would be carried out by the Environment Protection Authority (EPA). The EPL requirements effectively drive key performance design decisions, and the EPL itself sets out operational requirements in respect of the environmental performance of the process, including the process emissions.

The starting point for the environmental performance of the Facility has been the compliance with legislative standards which are required of Waste-to-Energy plants in Europe. The European Industrial Emissions Directive IED 2010/75 EC has also been used as the basis for the development of the NSW Energy from Waste Policy, which is the legislative framework for the proposed Facility.

Furthermore the environmental permits sets out which waste types can be treated and gives directions to the reception, handling and storage of waste.

3.2 Proposed basic design parameters

The NSW EfW policy states "The process and air emissions from the facility must satisfy at a minimum the requirements of the Group 6 emission standards within the Protection of the Environment Operations (Clean Air) Regulations 2010". The EU regulations for EfW plants (part of the Industrial Emission Directive) is generally considered to be the most stringent requirements for EfW plants worldwide. Therefore the IED standards, including emissions, process performance and design and emissions monitoring will form the starting point for the process design along with the current Best Available Technology (BAT) reference note.

3.2.1 Process guarantees

In accordance with the decision to commence design on the basis of achieving compliance with the IED (above), process guarantees will be set to ensure compliance with the IED, as a minimum.
These will be expected to be included in the EPL issued in respect of the Facility and form licence conditions.

3.2.2 Emissions monitoring requirements

The Facility will be designed to meet the emission limits contained within the Chapter IV and Annex VI of the Industrial Emissions Directive (Directive 2010/75/EU) for waste incineration and waste co-incineration plants.

3.2.3 Continuous emission monitoring

Emissions from the stack will be monitored continuously by an automatic computerised system and reported in accordance with NSW EPA protocols.

Sampling and analysis of all pollutants will be carried out to NSW Approved Methods, European Committee for Standardization (CEN) or equivalent standards (e.g. International Organization for Standardization (ISO), national, or international standards). This ensures the provision of data of an equivalent scientific quality.

This monitoring has four main objectives;

1. to provide the information necessary for the facilities automatic control system to ensure safe and efficient facility operation;
2. to warn the operator if any emissions deviate from predefined ranges; and
3. to provide records of emissions and events for the purposes of demonstrating regulatory compliance.
4. to provide information and reassurance to the community that environmental and health standards are not being compromised. This is critical in maintaining a social licence to commence and continue operation.

The following parameters will be monitored and recorded continuously at each stack using a Continuous Emissions Monitoring System (CEMS);

(1) oxygen;
(2) carbon monoxide;
(3) hydrogen chloride;
(4) sulphur dioxide;
(5) nitrogen oxides;
(6) ammonia;
(7) VOCs (volatile organic compounds);
(8) Particulates; and
(9) Flue gas volume

In addition, the water vapour content, temperature and pressure of the flue gases will be monitored so that the emission concentrations can be reported at the reference conditions required by the IED or as required by the NSW EPA.

The continuously monitored emissions concentrations will also be checked by an independent auditor at regular interval or as required by NSW EPA.

The following parameters will be monitored by means of spot sampling at frequencies agreed with the relevant regulator.

(1) dioxins and furans;
(2) mercury;
(3) cadmium and thallium; and
(4) heavy metals.

The methods and standards used for emissions monitoring will be in consistent with the IED or as directed by NSW EPA.

There will be duty CEMS (one per line) and one hot stand-by CEMS per two lines. This will ensure that there is continuous monitoring data available even if there is a problem with one of the duty CEMS systems.

Over time sampling methods and technology will advance and will be updated. It is expected that the EPL issued in respect of the facility by the NSW EPA will reflect ongoing obligations to update both technology and methodology in line with these advances.

3.2.4 Noise

There will be a general sound pressure level requirement of max. 85 dB(A) for noise emissions inside the plant.

Most equipment within the plant will fulfil the 85 dB(A) requirement without further measures, except for the turbine during bypass operation, some larger pumps and fans and possibly conveyers for bottom ash transport, air coolers and steam condensers.

Where possible such equipment shall be place in dedicated noise areas (rooms) or be acoustically insulated/covered by noise hoods.

Item No.	Noise Source	Assumed Noise Level SWL dB(A)
1	Stacks	91
2	Turbine Hall	88
3	Tipping Hall	85
4	Air Cooled Condenser (ACC)	102
5	Transformer	102
6	Compressor	97
7	Boiler Area	85
8	Flue Gas Treatment	98
9	ID Fans	100
10	Silo's & Bag Storage	85
11	Bottom Ash Handling	93

Table 15 Noise requirements in various areas and development zones

4. WASTE AND RESIDUE LOGISTIC

4.1 Reception Hall and Bunker Storage Capacity

Checking and auditing the various fuels forms are critical in ensuring consistent fuel quality.

General Solid waste [non putrescible] comprising building and demolition waste and commercial and industrial waste received first at the Genesis Facility is generally described as being either,

(a) Unprocessed and therefore subject to Genesis resource recovery processes and quality assurance measures
(b) Pre- processed [resource recovery by others] upon receipt subjected to Genesis quality assurance measures

Unprocessed waste or waste which has not been subject to resource recovery will **not** be delivered direct to the EfW Facility.

Processed waste which has been subjected to resource recovery at Genesis and relevant quality assurance processes will be delivered to the EfW Facility from Genesis via an electrically driven covered conveyor system or by truck via the internal road network connecting Genesis with the EFW Facility.

Pre-processed Waste streams which have been subjected to resource recovery by others will in all cases also be subjected to Genesis quality assurance measures designed to ensure that unacceptable, inappropriate or hazardous materials are excluded from the fuel waste stream.

Upon arrival at a Genesis Facility, all waste fuels delivered by truck will be weighed, visually checked with CCTV and if necessary sampled. During unloading, facility operators will carry out further visual checks of the fuel waste.

Fuel waste will be emptied onto the floor where it will visually inspected for the presence of any nonconforming material specific approved work practice directions.

Any deviation from the fuel specification will be noted. If the non-conformance is minor and can be rectified immediately then it will be, in accordance with specific work directions.

If the non-conformance is significant, the nonconforming or unacceptable materials will be segregated and isolated within the Tipping Hall later being removed to the Genesis Plant for further resource recovery or for disposal by landfilling as may be appropriate.

In order to avoid payment of the higher costs of disposal by landfill and a continuing suspension of a right to supply there will be significant commercial pressure upon suppliers to conform to published standards.

Cleared waste will be stored inside the bunker. Sufficient storage for 5-7 days at full load will be provided to provide a buffer to cater for disruptions in fuel supply or with unplanned outages of the Facility. The fuel will be mixed in the bunker using the overhead cranes to ensure maximum homogeneity in the fuel.

The EfW facility will operate continuously, 24 hours a day and 7 days a week, however waste Fuel will only be delivered to the site within the operators' specified times during the week days.

The tipping hall which will be kept at negative air pressure ensuring a constant inward flow of fresh air.

The types of waste proposed to be used as fuel at the TNG facility are known to have a low propensity for odour but the negative air pressure will ensure that any risk of odour escape is obviated.

The bunker is an important component of any Waste-to Energy plant as it functions as the recipient and storage of the waste supply. The waste will be delivered by trucks (rear tipping).

The tipping hall will provide adequate space, to accommodate access and queuing areas able to accommodate any variation in the flow of vehicles, including during periods with adverse weather. The tipping hall will also be of sufficient width to ensure easy access for all types of trucks.

The bunker and tipping hall are significant civil works items and therefore the volume of the bunker and the area of the reception hall and number of unloading bays need to be balanced against costs and with due attention to the need to minimise queuing and waiting time for vehicles.

There will be one bunker with one compartment serving two incineration lines. The bunker will have a maximum capacity of approximately 34,475 m^3. The bunker will have an approximate footprint of 30 m x 47 m, with a stacking height up to 30 m. Even at the maximum throughput the bunker size described in Table 16 is sufficient to provide 5.9 days storage. Fill and removal of material will be via the waste cranes.

Facility & Fuel parameters			
		LP1	LPN
Fuel flow (2 combustion lines)	t/day	2,025	1,657
Assumed Fuel Density	t/m^3	0.35	
Volumetric fuel flow	m^3/day	5,786	4,734
Bunker parameters			
Length	m	30	
Width	m	2 x 48.5 = 97	
Height	m	30	
Maximum fuel stacking height	m	30	
Bunker capacity (with stacking), waste volume	m^3	68,950	
Maximum number of days storage	days	11.8	14.6

Table 16 Bunker Design Data (Parameter for the 2 bunkers together)

4.2 Number of unloading bays

It is assumed that all trucks will be walking floor type, although it may be possible to take tipping bulkers if required. It is assumed that the average unloading time for a 22 tonne load is 12 minutes, which is the total time occupying a bay, including reversing and leaving.

Table 17 indicates that in case of the maximum fuel throughput NCV (10 MJ/kg) and accounting for variability and peak flows, there would be a short term maximum of 17 deliveries per hour, requiring a minimum of 4 delivery bays.

Parameter	Unit	Design fuel, average flow	Maximum fuel throughput peak flow
Fuel NCV	MJ/kg	12.3	10
Peak hourly fuel	t/h	132	374
Delivery capacity	t/h	22	22
Peak deliveries	Deliveries /h	6	17
Unloading time per bay	minutes	12	12
Minimum bays required	(rounded up)	2	4

Table 17 Unloading bays requirement

To provide flexibility in operations (i.e. bunker management) the design layout has allowed for 16 delivery bays.

4.3 Trucks (size and frequency)

The waste will be transported to the plant in predominately semi-trailers, trucks and dog trailers. Likewise, the bottom ash and the residual products from the flue gas cleaning will be picked up in semi-trailer trucks.

Trucks are anticipated to carry an average load of 22 tonnes. The plant will operate 24 hours a day, seven days a week. The proposed plant is to have a maximum total capacity of 675,000 tonnes per annum. The planned nominal operational input of 552,500 tonnes per annum will result in 69 trucks per day with capacity for a peak of a maximum of up to 84 truck deliveries per day associated with input waste material.

Tonnes p.a.	Weeks per Year	Days per Week	Truck Capacity (t/veh)	No. of Trucks (per day)	Truck Movements (per day)	Hours per Day (hrs)	Truck Movements per Hour (veh/hrs)
675,000	52	7	22	**83**	166	24	7
552,500	52	7	22	**69**	138	24	6

An additional 20 truck movements per week are expected for miscellaneous deliveries such as hydrated lime, activated carbon and other materials required for the various processes involved in the power generation. Assuming these will be trucks with an average load of 22 tonnes, delivered over a standard 5 day week, results in a demand for up to 2 additional trucks per day.

Tonnes p.a.	Weeks per Year	Days per Week	Truck Capacity (t/veh)	No. of Trucks (per day)	Truck Movements (per day)	Hours per Day (hrs)	Truck Movements per Hour (veh/hrs)
12,150	52	5	22	**2**	4	24	0.2

The total ash residue waste (APC Residues and Bottom ash) for worst case fuel will be in the order of 225,870 tonnes per annum (please refer to Chapter 6.10.5, table ash production). As a worst case, it is assumed that this waste is to be carried on trucks with an 18 tonne capacity, removed over a 12 hour period, 6 days a week. On this basis, the removal of ash residue equates to an additional 40 ash truck per day, as outlined in Table below.

Tonnes p.a.	Weeks per Year	Days per Week	Truck Capacity (t/veh)	No. of Trucks (per day)	Truck Movements (per day)	Hours per Day (hrs)	Truck Movements per Hour (veh/hrs)
225,850	52	6	18	**40**	80	12	6.7

Table 18: shows the estimated average and peak road deliveries by type, assuming the worst case scenario that all fuel and consumable deliveries, and residue removal from site takes place by road.

		Fuel (NCV 10MJ/kg)	Consu-mables	APC Residues	Bottom Ash	Total
Average mass flows	t / a	675,000	12,150	25,850	200,000	913,000
	t / week	12,981	234	497	3,846	17,558
	t / d (Mon-Sun)	1,855	46	83	641	2,625
	per h	77	1.9	3.5	26.7	109
Average deliveries	per a	30,682	552	1436	11,111	43,781
	per week	590	10.5	27.5	214	842
	per day	**84**	**2**	**4.5**	**35.5**	**126**

Table 18 Total Traffic Flows on worst case fuel

4.4 Effluent discharge

Under normal operating conditions, no effluent is disposed of to the sewer or stormwater systems but returned to the Facility for re-use.
In this way, the liquid effluent produced on site will either be evaporated or absorbed into the bottom ash discharger via the process water system.

Liquid effluent will consist of boiler blow down, boiler water treatment, swilling down water, occasional maintenance discharges and drain water from contaminated areas.

The re-use of the different water streams within the process results in a liquid effluent free EfW facility during normal operation.

5. BOILER / FURNACE

5.1 EfW grate technology

The EfW plant is based on advanced moveable grate mass burn technology.

A moving grate EfW incineration facility has been preferred due to the robustness and its proven ability to treat a very wide range of wastes. EfW grates show little technical processing sensitivity to the vast majority of variations normally seen in wastes e.g. physical dimensions and chemical composition.

5.2 “Vertical” and Horizontal “Tail-End” Boiler

An important consideration is the fundamental boiler concept. The Facility will use of a 5-pass horizontal boiler incl. vertical economiser pass as shown in Figure 6**.**

Below the most important topics with regard to the design of the boiler/furnace are discussed.

In principle, the boiler is either designed as a so-called “vertical boiler”, i.e. a boiler with vertical passes in both the radiation and the convection parts (incl. the economiser), or as a so-called horizontal, “tail-end” boiler where the boiler has one or more vertical radiation passes followed by a horizontal convection pass with pre-evaporator, superheater, evaporator and economiser sections, see Figure 6.

The horizontal boiler type (the “tail-end”) is characterised by the radiation pass being followed by a horizontal convection pass and economiser.

The “vertical” boiler is characterised by the radiation pass being followed by one or two vertical convection passes and an economiser.

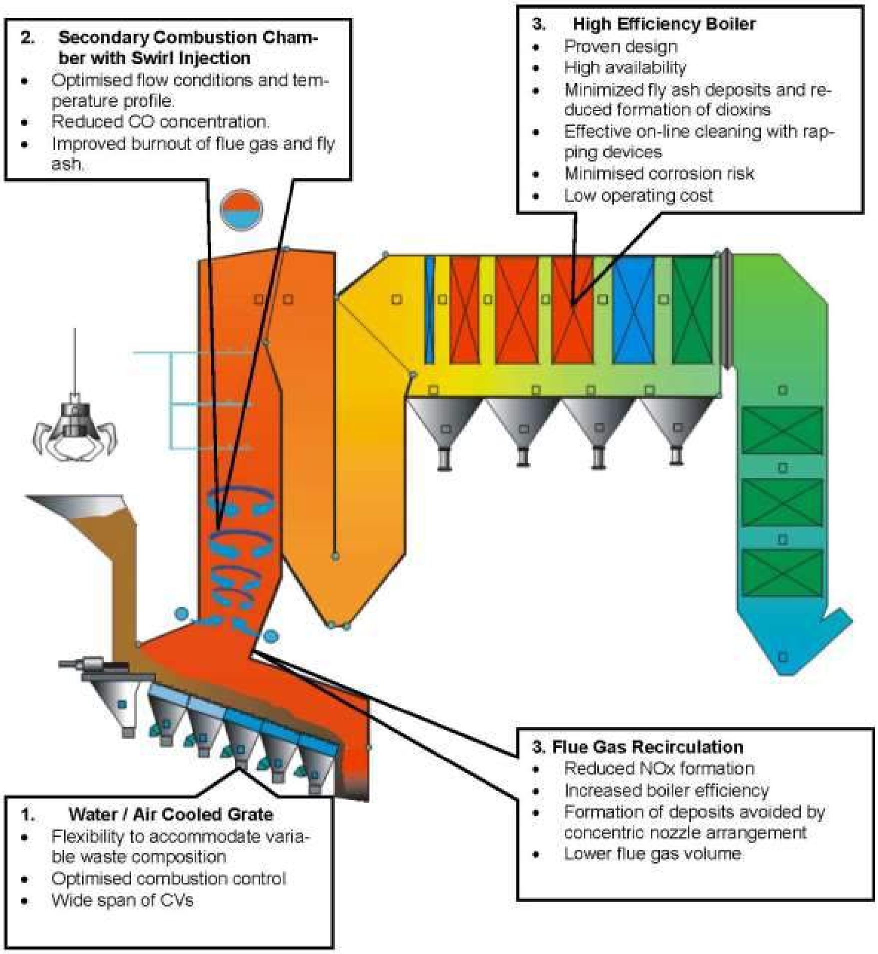


Figure 6 5-pass boiler configuration

Cleaning, Operation and Maintenance

The horizontal convection pass is equipped with a mechanical rapping device, which at a pre-set frequency (typically 4-6 cleaning sequences of 2-5 minutes per day) raps the tubes in the convection pass and thereby removes dust and ash from the tube bundles which fall into the collection hoppers.

A water spray cleaning system is installed in the vertical radiation parts. The radiation part is without baffle walls as it ensures a more conservative or spacious design of the boiler. The boiler is dimensioned for moderate flue gas velocities (3.5 – 5.5 m/s, lowest in the first pass).

The temperature in the cross section at the inlet to the convection part is an important factor and should not exceed 625°C at the beginning of the operation time after manual boiler cleaning.

The convection part consists of superheater sections, the evaporator and the economiser. In between the superheater sections water injections are used to control the temperature of the live steam.

The economiser, evaporator and superheater sections are designed as fully de-mountable tube bundles dedicating special attention to easy replacement of the super heater section subject to the highest thermal load.

The following maintenance and operating conditions speak in favour of selecting a horizontal convection pass:

- A smaller extent of fouling due to more effective cleaning. Soot blowing and shot ball cleaning generally do not result in a uniform cleaning of entire tube sections.
- With the horizontal “tail-end” boiler very long operating intervals between manual boiler cleanings can be achieved. Thus, a guaranteed, continuous operating time of up to 8,000 hours for horizontal boilers against 4,500 hours for vertical boilers leads to less downtime.
- Mechanical cleaning with rapping devices is a considerably gentler and effective and also simpler method compared to steam or compressed air soot blowing. Maintenance of the rapping devices is primarily limited to replacement of parts, which are accessible from the outside of the boiler.
- The horizontal boiler will have a better working environment at the manual cleaning process of the pipe bundles. In a horizontal boiler, the manual cleaning can be performed in an up-right position, whilst in a vertical boiler; the cleaning must be made lying down, thereby exposing the worker to dust and ashes.
- There is no steam consumption for the cleaning and hence no reductions in the power production or operational problems with the turbine due to momentary relatively large steam consumption for soot blowing.
- Generally, fewer corrosion and erosion problems can be expected of a mechanically cleaned horizontal convection pass, mainly because of a smaller extent of fouling and ash deposition and because the protective oxide coating of the tubes is not damaged when using this cleaning method.
- Future replacement of tube bundles in the superheater is easier.

Thermal Conditions

A higher thermal efficiency (0.5-1 %) can be expected of the horizontal boiler as the smaller extent of fouling leads to a better heat transfer of the super-heater tubes of the boiler.

Construction and Operating Costs

A boiler with a horizontal convection pass is more expensive than a boiler with a vertical convection pass.

As, however, the average annual operating and maintenance costs during the life time of the facility are normally expected to be lower for the horizontal boiler the full life cost of the horizontal is generally expected to be lower than the vertical boiler.

Summary
From the above it can be concluded that the horizontal boiler is technically the best and most efficient solution and also the most environmentally beneficial. It requires, however, a bigger up-front investment than a vertical boiler solution
As a result of these considerations the Facility will use of a 5-pass horizontal boiler incl. vertical economiser.

5.3 Combustion control system

Given the thermal output increases with greater waste throughout (see Figure 7 combustion control system), a cooling system is used to condense the steam from the turbine exhaust for re-use. Large variations of the calorific value (CV) may require an adaptation of the parameters of the different control loops. The adaptation of all control parameters is executed manually by the adjustment of one single input value. This is the so called 'CV- correction'; a feature that is fully integrated in the control system. The CV-correction effects an automatic adjustment of up to ten parameters of the combustion control system.

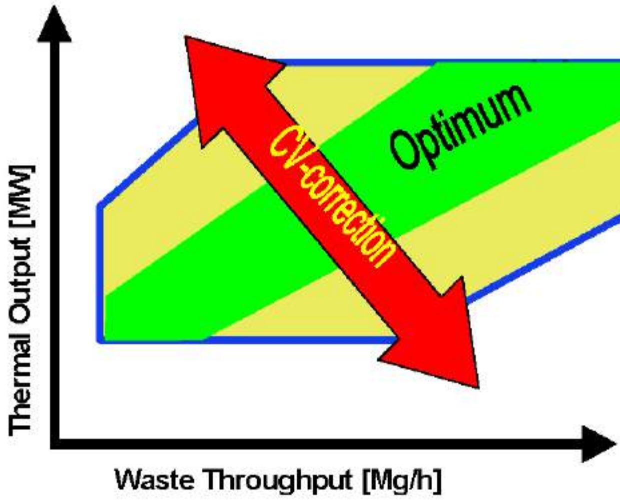


Figure 7 Combustion control system

5.4 Furnace and Secondary Combustion Chamber

The furnace and secondary combustion chamber shall comply with the 2s retention time and 850°C temperature requirements of the IED and be equipped with auxiliary burners.

5.5 Steam Parameters and Corrosion

Steam parameters have been fixed at 70 bar/430ºC, as this allows for high energy efficiency and at the same time keeping the risk of corrosion at an acceptable level.

Corrosion is a significant issue in waste fired boilers. Corrosion increases with higher temperatures. Steam parameters for boilers are therefore determined to achieve the optimal balance between boiler corrosion and plant efficiency.

In addition to the risk of high temperature corrosion in the superheaters, experience has shown that there is a risk of corrosion in the evaporator part of the boiler, particularly where the unprotected membrane tube walls in the first and second passes of the boiler are exposed. Therefore Inconel[9] cladding are foreseen at some parts of membrane walls furnace, membrane walls top of pass 1 and 2 and some tubes of superheater 3.2

[9] Inconel alloys are oxidation and corrosion resistant materials well suited for service in extreme environments subjected to pressure and heat.

5.6 Combustion Air Excess (λ)

All systems are designed for all load situations according to the combustion diagram, Figure 5. The combustion air systems are designed to ensure a correct amount of excess air in the flue gas, both in order to ensure high combustion efficiency and to avoid a reducing (corrosive) atmosphere, incomplete burnout of the flue gases etc.

5.7 Primary Air Intake

Maintaining a negative air pressure in the tipping hall is critically important to avoid odour problems from the waste bunker. Therefore, all primary air required for the combustion process are drawn from the bunker. During stand still negative air pressure is maintained and air goes directly to stack.

5.8 Secondary Air Intake

Secondary air shall be drawn from the top of the furnace/boiler hall, and will be injected into the furnace and at the inlet to the first boiler pass through 2 rows of nozzles.

5.9 Flue Gas Recirculation

To increase the overall efficiency of the boiler and reduce NO_X formation (by reducing the amount of excess air) it is beneficial to recirculate the flue gas. Further by flue gas recirculation the flue gas treatment plant will have to treat less flue gas increasing the removal efficiency.

5.10 Feed Water Pumps

The feed water pump is a critical component that secures operation and needs redundancy in case of failure. It is especially important to avoid boiling off all water in the water-steam system, thus avoiding damaging the pressure part in worst case conditions. The Facility will have 2 x 100% feed water pumps for each line (one pump in operation, one in stand-by mode).

5.11 Make-up Water System

A water treatment plant, producing the make-up water for all combustion limes, is able to fill the tank in 72 hours with all combustion lines in operation whilst maintaining Plant supply at MCR.
The capacity of the make-up water tank shall be 125% of the volume required to completely fill one boiler including superheaters.

5.12 Proposed Design Data

For proposed overall design data refer to table below.

Waste-to-Energy with waste utilization Preliminary Process and Design Data Boiler / Furnace		
Plant Component / Parameter	**Value / Description**	
Input and Output		
Gross Heat Release	117.98 MW_{th}	
Throughput nominal	34.53 t/h	
Calorific Value nominal	12.30 MJ/kg	
Steam flow 100 %, at 70 bara, 430 °C	144.7 t/h	
Steam pressure nominal	70 bara	
Steam temperature nominal	430 °C	
Flue gas Temperature		
Flue gas temperature exit boiler	Nom 170 °C	
Bottom ash Handling System		
Water content bottom ash nominal	19 %	
Max. Ignition loss bottom ash	5 %	
Max. TOC bottom ash dry	3%	
Bottom ash Bunker parameters (per stage)		
Length	m	13
Width	m	47
Height	m	9 (included 7m below ground level)
Maximum ash stacking height	m	9
Ash bunker capacity	m^3	5,499
Bottom ash flow (2 combustion lines)	t/day	641 (see Table 18)
Assumed Bottom ash Density	t/m^3	1.8
Volumetric Bottom ash flow	m^3/day	356
Maximum number of days storage (at LP1)	days	15.5

6. FLUE GAS TREATMENT

6.1 Flue Gas Cleaning System

The flue gas will be cleaned in the Flue Gas Treatment plant to control emissions of acid gases, particulates, dioxins and furans and heavy metals.

The semi-dry flue gas cleaning process is designed to remove acidic gaseous contaminants by chemical absorption with hydrated lime. Heavy metals and organic contaminant compounds (i.e. dioxins and furans) are reduced by adsorption on activated carbon. Features of this system are illustrated in Figure 8.

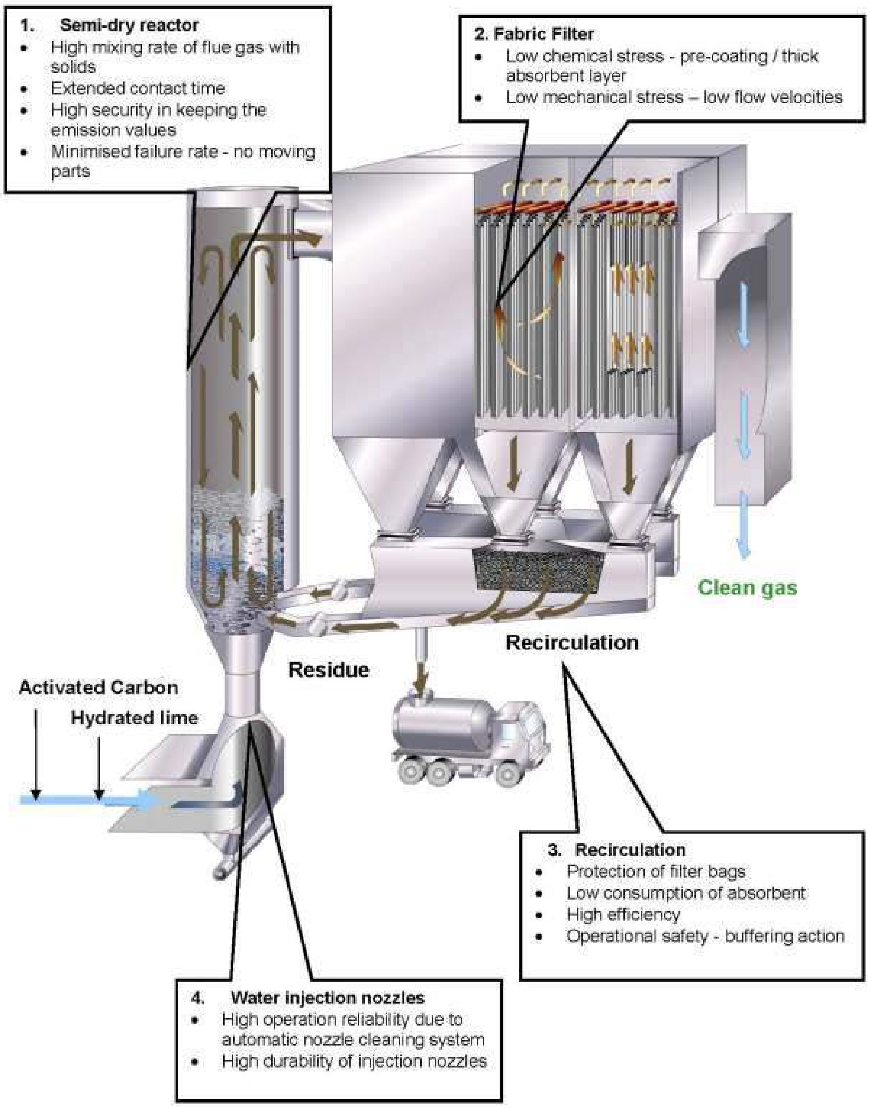


Figure 8 Semi-dry Flue Gas System

In this process the flue gas and solids move turbulently through the semi-dry reactor with partial inversion of the solid flow. The pollutants react with the injected hydrated lime and the activated carbon at a temperature of approximately 145 °C.

The separation of solids from the flue gas takes place in the fabric filter downstream of the reactor. Precautions are considered for water contacted parts, generally water-proof insulation is applied. All maintenance and inspection areas are encased in order to protect against rain during maintenance work.

The flue gas cleaning process is characterised by the following features:

- Flexible to load changes and changes in gas contaminant concentrations;
- Efficient use of adsorbent and minimised residue quantities;
- Designed for high Hydrogen Chloride (HCl) and Sulphur Dioxide (SO_2) inlet concentrations;
- Dry injection of Calcium Hydroxide ($CaOH_2$) and Powdered Activated Carbon (PAC);
- Separate injection of water for conditioning and reactivation of recycled lime particles;
- Compact design; and
- Low manpower requirement.

6.2 Nitrogen Oxide (NO_x) Removal System

The NO_x Removal system is a selective non-catalytic reduction.

With an SNCR system, ammonia water is injected into the first pass of the boiler at a temperature level of approximately 900°C. Here the chemical reaction takes places, converting NO_X to harmless N_2 and water.

The system requires 2-3 levels of injection nozzles in the first pass of the boiler and a system based on water or air to atomize ammonia water into the boiler. With a SNCR system the requirement of 200 mg/Nm^3 NO_x can be comfortably reached.

The SNCR technology can be optimised to reach 120 mg/Nm^3 for a sophisticated SNCR (as daily average). The increased efficiency comes with a modest increase of CAPEX and additional consumption of ammonia.

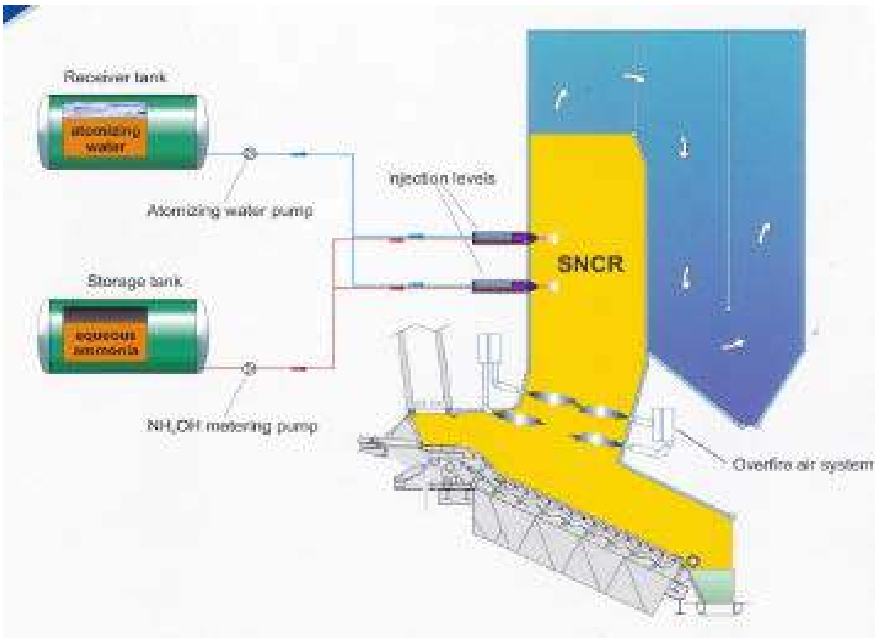


Figure 9 Schematics, SNCR system.

6.3 **Acid Gas Management**

6.3.1 Chlorine

In view of the APC design the chlorine content of the waste is a relevant consideration.
The main contribution to the chlorine content of the waste is PVC. PVC (C_2H_3Cl) itself contains approx. 57% of chlorine.

In municipal waste typically approximately 50% of the chlorine comes from PVC, in C&I waste the contribution of PVC to the overall chlorine content can be expected to be higher.

The Audit reports note in particular a low percentage of PVC from the audited samples notwithstanding that the Audits were carried out in respect of the residue from mixed waste processing [which is material which is currently landfilled].

Genesis Quality Assurance measures already target the removal of PVC from the waste stream during the production of recovered wood-waste and timber products.
The Audit result together with the Genesis, Quality Assurance measures provide a continuing high degree of confidence that PVC will be almost entirely excluded from the fuel waste stream.

In the EU regulation the following is stated: "*If **hazardous waste** with a content of more than 1 % of halogenated organic substances ...".*

The NSW EfW Policy states: "*If **a waste** has a content of more than 1% of halogenated organic substances...*". In NSW, PVC is **not** considered a hazardous material.

The waste composition proposed for the Facility is well within the range of other facilities operating in Europe. Many facilities in Europe have average chlorine concentrations of above 1% (some even 1.7%) and all categorised as facilities with a necessary furnace temperature of 850°C according to EU regulation.

During the combustion process PVC is fully decomposed to CO_2, hydrogen chloride and water vapour. HCl is an acid gas which has been given specific design attention in the proposed Facility.

The HCl will be eliminated by the Air Pollution Control system which is designed, controlled and operated to capture such substances even when occurring as a spike. The chosen APC technology for this facility is standard in modern WtE plants with comparable feedstock and with continuously very low emissions.

6.3.2 How the Acid Gas treatment works.

The flue gas treatment plant is a semi-dry process consisting of a reactor and a downstream bag filter. The reactor is a cylindrical vessel with a Venturi-like inlet nozzle and lateral outlet at the top.

The raw gas enters the reactor centrally from below through the inlet nozzle. Just above the nozzle hydrated lime, activated carbon, recycled solids and water are injected. The water evaporates and cools the flue gas to approx. 145°C, which is an optimum reaction temperature for the absorption of the acid gases and adsorption of mercury and organic compounds (poly-aromatic hydrocarbons, dioxins, furans, etc.). The gas entrains the solids thus forming a fluidised bed. Due to the intensive gas solids contact within the fluidised bed the acid gases are effectively removed. The gas and solids then leave the reactor at the top of the vessel and enter the subsequent bag filter where the solids are removed. For an optimum use of the hydrated lime the solids separated in the bag filter are recirculated into the reactor.

According to the following chemical reactions the hydrogen chloride (HCl), hydrogen fluoride (HF) and the sulphur oxides SO_2 and SO_3 are chemically absorbed.

$$Ca(OH)_2 + H_2O + SO_2 + \frac{1}{2} O_2 = CaSO_3 + 2 H_2O$$

$$Ca(OH)_2 + H_2O + SO_3 = CaSO_4 + 2 H_2O$$

$$Ca(OH)_2 + 2 HCl = CaCl_2 + 2 H_2O$$

$$Ca(OH)_2 + 2 HF = CaF_2 + 2 H_2O$$

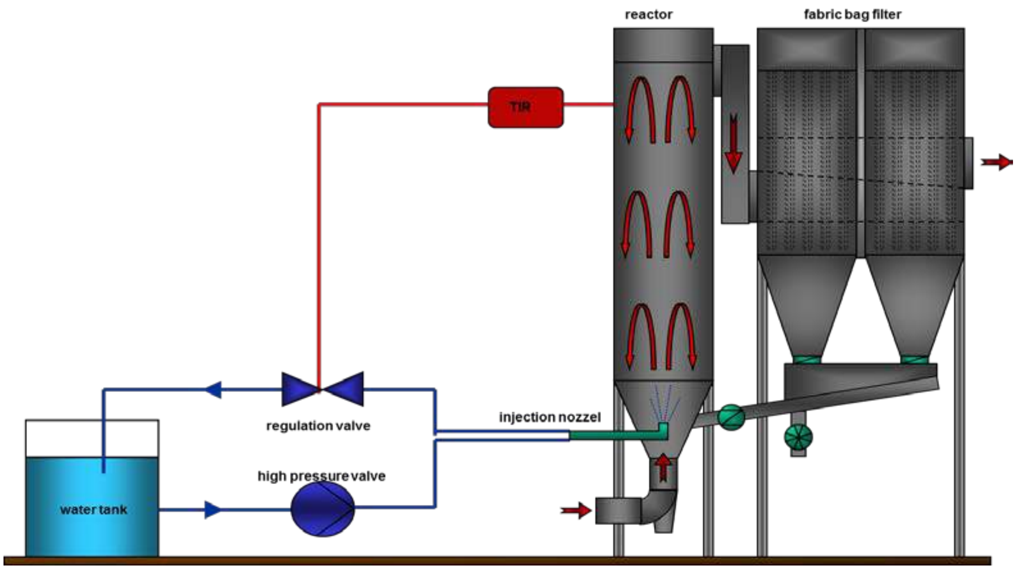
The semi-dry process therefore allows removing the acid gases and simultaneously neutralizing them. The resulting products are well known and harmless salts as $CaSO_4$ (gypsum), CaF_2 (Calciumfluorid) and $CaCl_2$ (sea salt).

These salts as well as the activated carbon are removed in the baghouse filter, recirculated to the process and partly removed for disposal.

6.3.3 Control loops of the flue gas treatment system

The **four following control loops** ensure constantly low emissions:

- The first loop controls the amount of circulated solids in order to maintain a stable fluidised bed. The density of the fluidised bed is monitored by means of the pressure drop.
- The second loop controls the flue gas temperature at the exit of the reactor by means of the process water injection
- A third loop controls the injected amount of fresh absorbent based on measurements of the clean gas concentrations (feed backward) and the raw gas concentrations (feed forward)



With the raw measurement upstream the reactor analyses the following parameters:
- HCl (hydrochloride acid)
- SO_2 (sulphur dioxide)
- Gas flow

Based on the measured values and the gas flow the feed-forward controller calculates the necessary hydrated lime. The concentrations of HF and SO_3 are very small compared to HCl and SO_2 and necessary for the calculation.

Following further values from the continuous measurement system at in the stack are used for the hydrated lime dosing
- HCl
- SO_2

Based on these values at the stack, the feed-back part of the hydrated lime dosing is calculated by comparing the current emission values with the target values. In case of deviations an adjustment of the hydrated lime dosing is activated.

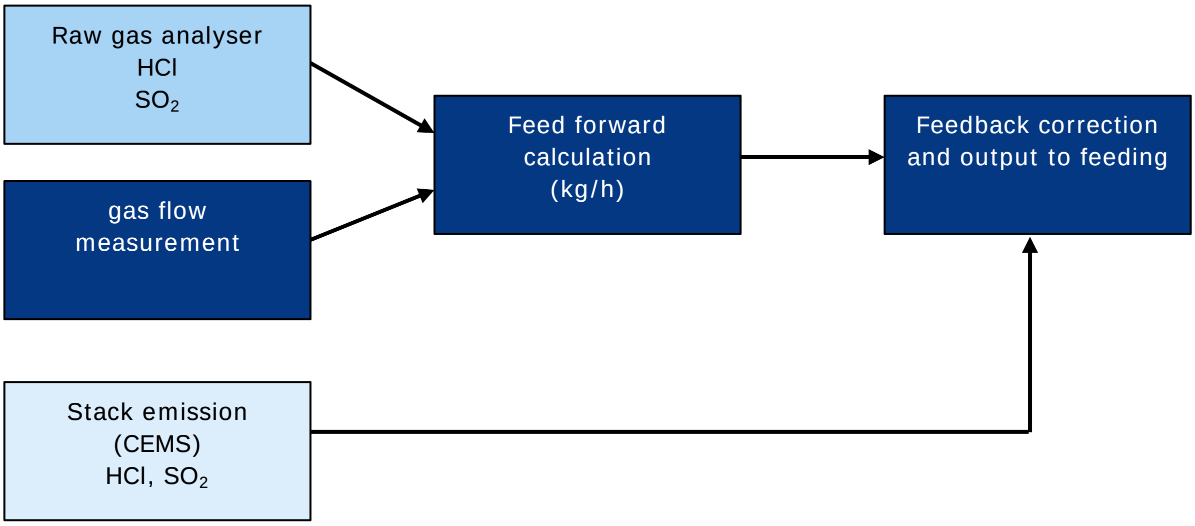
- The fourth loop ensures a constant dosing of the activated carbon according to the current flue gas flow.

6.3.4 Control logic for hydrated lime

Raw gas analyses allow a faster and smother control of the additive feeding compared to plants with simple feedback control. The aim of the feedforward control is to dose the additive according to the incoming pollutant load. The raw gas input includes the main pollutants HCl and SO_2; other components in minor concentrations (e.g. HF, HBr, SO_3) are not measured since they count not significantly for the additive consumption.

The feedforward calculation is an addition for the calculated lime consumption for HCl and SO_2 (included the expected stoichiometric factor for excess lime). This value (in kg/h of lime) is converted into the set point (speed) of the dosing screw considering the dosing capacity of the feeding device.

The set point for the feeding device is than corrected with the output of the feedback controller; in case the set point for stack emissions (e.g. 8 mg/m^3 if the ELV is 10) is exceeded, the feedback control requires more additive until the emission is again below the set point.



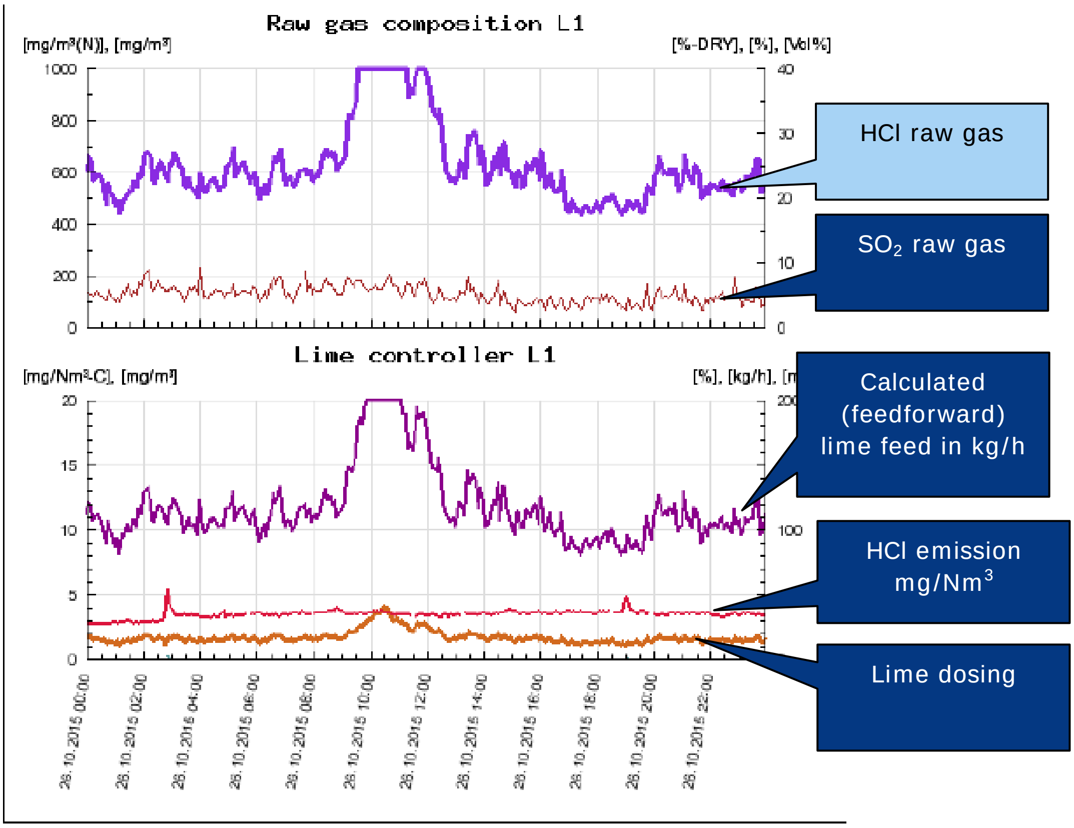
In case of a malfunction of the raw gas analyser, the operator can either run the plant with a default value for the raw gas concentration (e.g. the observed average) or without the feedforward part of the control logic (just using the feedback controllers). With this setup the emissions are maintained below the required limits, but there might be slightly higher lime consumption.

6.3.5 Achieved emission quality

An example from a EfW plant semi-dry FGT in UK shows the result of the combined feedforward – feedback additive control logic. All data points are 5 min average values

Turbulent day with an HCl raw gas peak

- At approx. 9 am, a huge HCl raw gas peak occurs
- The feedforward logic adds simultaneously more lime into the system
- The HCl emission value is nearly not affected by this raw gas peak; HCl and SO_2 emissions are "low as normal"



6.3.6 Separation of heavy metals

During the combustion process metals with a high evaporation temperature like chromium, nickel or copper mainly remain in the bottom ash. Metals with a low evaporation temperature as mercury, cadmium and arsenic evaporate in the combustion chamber and partly condensate at lower temperatures in the boiler area. When entering the Air Pollution Control System (at a temperature of below 150° C) all heavy metals except mercury are predominantly present as particulates and therefore easily removed by the baghouse filter.

6.3.7 Separation of mercury and other volatile heavy metals

Mercury completely evaporates at a temperature of 357°C and remains gaseous in the flue gas even at lower temperatures. All other heavy metals have a much higher evaporation temperature (arsenic 613°C (sublimation), cadmium 765°C, zinc 907°C, lead 1740°C, etc.) and therefore are present as particulates. Mercury and any other traces of volatile heavy metals are adsorbed on the activated carbon and are thereby effectively removed from the flue gas.

Mercury is present in the flue gases in two forms: The majority is present as ionic mercury (mainly as a chloride after reacting with HCl) and a small part as elemental mercury. Both ionic as well as elemental mercury are easily adsorbed by activated carbon and removed from the flue gas via the downstream fabric filter. It is known that sulphur impregnated of the activated carbon improves the adsorption of elemental mercury. The reaction is known as chemisorption (chemical absorption) according to the following reaction: Hg + S → HgS

Long term experience in Waste to Energy facilities has shown that there is no visible effect using sulphur impregnated of the activated carbon under normal operating conditions. The reason is that the proportion of elemental mercury is small compared to ionic part and additionally the SO_2/SO_3 content in the flue might have an impregnating effect on the carbon.

6.3.8 Separation of dioxins and furans

Dioxin and furans are omnipresent in urban environment. Dioxins and furans are mainly formed during combustion (residential heating's, fireplaces, open burning of waste, motors, and industrial processes) and emitted to the environmental. As a result dioxins are also present in waste. The average concentration in Municipal solid waste is 50 ng/kg (as toxic equivalent).

Dioxins and furans are not thermally stable and fully destroyed at temperatures above 400°C. During waste combustion dioxins and furans therefore are fully destroyed as a result of the high temperature (over 1'000°C) in the furnace. However they can be reformed (so called "de novo synthesis") at temperatures between 200 and 350°C in in the final part of the boiler. Necessary conditions for this de-novo synthesis are solid products of incomplete combustion (soot) and relevant accumulation of fly ash to enable "breeding" of dioxins and furans over an extended period (hours) in these solid deposits.

As a result the following measures have been chosen for TNG to reduce the reformation of dioxins and furans:

- Combustion with sufficient residence time above 800°C in order to destroy these compounds
- Combustion control to reduce products of incomplete combustion and therefore limit reformation
- Boiler design to minimize accumulation of fly ash
- filter systems operating at a temperature below 200 °C

Any remaining traces of dioxins and furans are removed from the flue gas by injection of activated carbon. Dioxins and furans are absorbed on the activated carbon simultaneously with the volatile heavy metals. The necessary quantity of carbon is determined by the necessary mercury removal and therefore available in high excess ratio for the adsorption of dioxins and furans.

Dioxin and furan removal by activated carbon injection has been applied in WtE facilities for over 20 years with excellent results, enabling the facilities to remain well below the required limit of 0.1 ng/Nm^3 any time.

6.3.9 Bromine

Bromine is most commonly use in brominated flame retardants (BFRs) in building materials, textiles and electronic supplies. Waste has a bromine content of 0.003% and 0.006%. In WtE plants BFRs will decompose and form mainly hydrogen bromide (HBr).

HBr is removed from the flue gas in the same way as HCl, i.e. by absorption and neutralization by lime. In case of TNG the in stack concentrations for gaseous bromine can be assumed to be below 2 mg/Nm^3.

6.3.10 Asbestos

Asbestos is a natural fibrous mineral used as construction material with good insulating and fire resistance properties. Asbestos has melting point of > 1500°C and is chemically resistant to acids. For technical applications the fibres typically have a length of 10-20 mm and a diameter of approx. 3 micrometres. When Asbestos is processed the fibres tend to break and release fine fragments with a fibre length above 5 micrometres. The health hazard of asbestos lies in the inhalation of these particles, not in the chemical properties of asbestos.

Materials containing asbestos will be separated during the recycling process and will go to landfill. In case some material should remain in the waste stream and end up in the furnace it will not burn, vaporize or vitrify due to its high melting temperature. Depending on the form of asbestos following will occur:

- Tightly bounded asbestos (i.e. in concrete bound materials) will remain bonded and leave the furnace via the bottom ash in larger pieces.
- In case of non- or only slightly-bonded asbestos materials most of the material will remain on the grate and then also leave the furnace with the bottom ash. In the bottom ash extractor it will be quenched with water and embedded in the clay-like matrix of the bottom ash and not be further released.
  A minor part of fibres might be entrained with the flue gas. Larger fibres will deposit in the boiler and be removed with the boiler ash. Very fine particles will be entrained to the flue gas treatment and then fully removed by the baghouse filter. Baghouse filters in semi-dry systems have excellent removal efficiency of near to 100% for particles larger than 0.1 micrometre. As asbestos particle will never have a diameter below 3 micrometres it will be fully removed and leave the plant via the APC residues.

As a result it can be said that even if asbestos enters the facility by mistake it will be fully removed and leave the plant either with the bottom ash or APC residues.

6.3.11 Start-up procedure after a shut-down of the semi-dry system

The kind of applied procedure depends on the duration of the interruption. In case of short interruptions only the filter bags cleaning and the residues recirculation are stopped

In case of interruptions that are not longer than approx. 3 days (to be checked with the designer) the residues remain inside the filter hoppers and in the pneumatic recirculation line. In case of longer shut-downs the residues must be discharged completely and replaced by fresh hydrated lime before the next start-up.

6.4 ID-fan

The ID-fan is designed for boiler operating at 110 % MCR in a fouled condition after 8,000 hours of operation. In order to keep the wear and noise level down the air fan speed shall be below 80% of the maximum speed for which the fan is designed for sustained operation. The ID-fan is electrically driven.

Spare capacity of air and flue gas systems with respect to flow rate is necessary for several reasons. The ID-fan shall always have sufficient capacity to ensure negative pressure in the furnace, also during short term variations. During the life time of the plant the waste composition, quality and quantity might change, leading to different requirements of air and flue gas flows.

6.5 Stack

Neutralised flue gases will be emitted to atmosphere via a stand-alone stack for each line.
The final stack height was selected based on a combination of compliance of ground level concentrations and reference to the US EPA document "Guideline for Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations)" (US EPA Good Engineering Guideline).

Treated flue gases will be emitted to the atmosphere via-flues within a standalone stack, located to the south of the Flue Gas Treatment Areas.

The stack will be built to the minimum height necessary to ensure adequate dispersion of the emissions and excessive concentrations of any air pollutant in the immediate vicinity of the stack (as defined through air quality dispersion modelling). The US EPA Good Engineering Guideline states the general rule of thumb for good engineering practice stack height is ‘Height of building + 1.5 times the lesser of building height or projected width’.

With height being the less of these two dimensions; a stack height of 125 m was initially identified. Dispersion modelling was then used to refine and identify a project specific stack height, based on achieving compliance with ground level concentrations. Dispersion modelling found that a stack height of between 80m and 100m would be suitable. A final stack height of 100m was selected due to consistency with the good engineering practice guide and modelled emissions concentrations at ground level.

6.6 Potential upset conditions

Upset operating conditions can occur for a limited number of reasons each of them resulting in the increase of certain emissions. The following table identifies potential incidents the root cause, the consequence in emissions and the possible remedy.

Incident	Root cause	Consequence in emission	Indication	Remedy
Failure of lime dosing	Dysfunction of the dosing device, the pneumatic conveying system or clogging of lime in the silo or ducts.	Gradual increase of HCl and SO2 emissions over time (within 15-20 minutes). Due to the remaining lime in the system and the in system there is sufficient time for the operator to take necessary actions.	Alarm caused by increased HCl and SO_2 emission in stack.	- Restart lime dosing system - actuate anti-clogging system in silos - Switch to the reserve dosing and conveying system
Failure of activated carbon dosing	Dysfunction of the dosing device, the pneumatic conveying system or clogging of activated carbon in the silo or ducts.	Gradual increase of mercury emissions over time (within several hours). No relevant increase of dioxins and furans emissions due to remaining active carbon in the system and high recirculation rate.	Alarm caused by no usage of activated carbon	- Restart lime dosing system - actuate anti-clogging system in silos - Switch to the reserve dosing and conveying system
Failure of filter bags	Gradual wear of bags (mainly seam), wrong installation, manufacturing defect(s) of bags or cages.	Gradual increase of dust and heavy metals during in short spikes whenever cleaning of bags is in operation (note: the complete rupture of a bag is in extremely rare incident)	Dust peaks during online cleaning, alarm as a result of increasing dust emissions in stack	- Monitoring the emission to detect relevant filter compartment - replacement of damaged bag (possible during continuous operation of the plant)
Failure of SNCR system	Breakdown of pumps, failure of piping, clogging of nozzles	Increase of NOx emission	Alarm due to increased NOx emissions	- Change to standby pump - repair piping - Unblock nozzles (possible during continuous operation of the plant)
Insufficient combustion conditions	Low combustion temperature, dysfunction of the primary or secondary air system, of the grate or the pusher, blockage in the feed hopper	Increase of CO and VOC emissions	Alarm due to low furnace temperature and/or increased CO/VOC emissions	- Start auxiliary burners - if root cause cannot be solved during operation then normal shutdown of plant

As mentioned above, during upset conditions certain emissions will increase, sometimes even above the required emission limit. While during normal operation the emissions remain well below the required limit an increase will be immediately detected by the emission monitoring or other monitoring systems system.

The evaluation of operational results shows that in case of upset operation conditions there might be an increase of the emissions above the required limit by a factor of 2 to 3. In case the upset condition remains for more than 4 hours, the plant has to be shut down. For further evaluations a conservative approach assuming a factor of 10 for every individual emission during upset condition has been chosen.

6.7 Chosen Emission Standard

Under the EfW Policy Statement the stack emissions from the facility are required, as a minimum, to meet the Group 6 standards of concentration set out in the *Protection of the Environment Operations (Clean Air) Regulation 2010* ("the Clean Air Regulation"). The Clean Air Regulation sets emission standards for various industrial activities and those that are applicable to an EfW facility are outlined in Table 19.

Pollutant	Standard (mg/Nm^3)	Source	Activity
Solid Particles (Total)	50	Electricity generation	Any activity of plant using liquid or solid standard fuel or non-standard fuel
HCl	100	General standards	Any activity or plant
HF	50	Electricity generation	Any activity of plant using liquid or solid standard fuel or non-standard fuel
SO_2	No applicable standard		
NO_2	500	Electricity generation	Any boiler operating on a fuel other than gas, including a boiler used in connection with an electricity generator that forms part of an electricity generating system with a capacity of 30 MW or more
Type 1 & 2 substances (in aggregate)	1	Electricity generation	Any activity of plant using non-standard fuel
Cd or Hg (individually)	0.2	Electricity generation	Any activity of plant using non-standard fuel
Dioxins or furans	$1x10^{-7}$ (0.1 ng/m^3)	Electricity generation	Any activity of plant using non-standard fuel that contains precursors of dioxin or furan formation
VOC	40 (VOC) or 125 (CO)	Electricity generation	Any activity of plant using non-standard fuel
Cl_2	200	General standards	Any activity or plant
H_2S	5	General standards	Any activity or plant

Reference conditions defined as dry, 273.15 K, 101.3 kPa and 7% O_2 for all air impurities when burning a solid fuel, with the exception of dioxins and furans where the required O_2 concentration is 11% for waste incineration.

Table 19: POEO Clean Air Regulation Standards of Concentration

However, the proposed flue gas treatment will be designed to employ Best Available Technology and achieve the emission limits specified by the European *Industrial Emission Directive IED 2010/75/EU*. The IED emissions limits (refer Table 20) are generally more stringent that the Clean Air Regulation limits. The proposed technology is based on existing facilities operated throughout Europe, which are designed to meet the IED limits.

The European limit values for emissions in waste incineration plants are defined within the IED. The specific emission limits for WtE are found in Annex VI, part 3 of the Directive.

Parameter	Daily Average	Half Hour Average	Units
Continuous measuring			
Total Dust	10	30	mg/Nm^3
Total Carbon (TOC)	10	20	mg/Nm^3
Inorganic chlorine compounds (HCl)	10	60	mg/Nm^3
Inorganic fluorine compounds (HF)	1	4	mg/Nm^3
Sulphur dioxide (SO_2)	50	200	mg/Nm^3
Oxides of nitrogen (expressed as NO_2)	200	400	mg/Nm^3
Carbon monoxide (CO)	50	100	mg/Nm^3
Discontinuous measuring			
Dioxins and Furans	0.1	ng/Nm^3	average of 6-8hours
Hg	0.05	mg/Nm^3	average of 0.5-8hours
Cd+Tl	0.05	mg/m^3	average of 0.5-8hours
Total of heavy metals	0.5	mg/m^3	average of 0.5-8hours

All emissions are dry basis, 11% O_2 and at normal temperature and pressure.

Table 20 IED Emission Limits for an Incineration

6.7.1 Continuous Emission Monitoring System (CEMS)

Consistent with the requirements of the EfW Policy Statement, there will be continuous measurements of NO_x, CO, particles (total), total organic compounds, HCl, HF and SO_2. This data will be made available to the EPA in real-time graphical publication and a weekly summary of continuous monitoring data and compliance with emissions limits will be published on the internet.

Further, the emission monitoring shall comply with the requirements of European Industrial Emissions Directive. Continuous monitoring is therefore installed for the pollutants CO, HCl, SO_2, NOx, NH_3, VOC and particulates. Auxiliary parameters are also measured: Flue gas flow rate, temperature, pressure, moisture content and oxygen.

6.7.2 Shut down of plant in case of non-compliance with emission limits

The facility will be designed and operated in accordance with the IED directive. The directive states in § 46.6 that *"... the waste incineration plant ... shall under no circumstances continue to incinerate waste for a period of more than 4 hours uninterrupted where emission limit values are exceeded. The cumulative duration of operation in such conditions over 1year shall not exceed 60 hours. In according to the IED in case of non-compliance with the emission regulations the plant can only be operated a maximum*."

The plant will further be equipped with an automatic shutdown procedure in case of non-compliance with the emission limits according to the IED § 50.4c which states: "*Waste incineration plants ... plants shall operate an automatic system to prevent waste feed ...*

whenever the continuous measurements show that any emission limit value is exceeded due to disturbances or failures of the waste gas cleaning devices."

6.8 Plume Visibility

For the proposed semi-dry flue gas treatment, a stack exit temperature of around 120 °C and moisture of the flue gas of 15-18% is expected. Calculations show that that plume formation will not occur at ambient temperatures above 12 °C and a relative humidity of 75%.

The mean relative humidity (9am) is between 65 and 75% all year. In the months May to October the mean maximum temperature is 17-23 °C, which is well above the 12 °C threshold. The mean minimum temperatures of May-Oct are 7-11 °C, indicating that there will be a number of hours where plume visibility is possible.

It can be concluded from the temperature and humidity data that a plume will not be visible the vast majority of the time.

Even under the most adverse weather conditions any water vapour which is visible will be light (not dense) and it will disappear quickly.
Visible water vapour will most likely occur only at night and in early morning hours in the coldest 6 months of the year and have very limited height.

6.9 Consumables Handling

The Facility will use various raw materials during operation. Primarily, these include hydrated lime, ammonium hydroxide, activated carbon, Low Sulphur gas oil and water. These will be delivered to the Facility in bulk transportation vehicles (except for water, Low Sulphur gas oil and oil). The minimum on site storage capacity will be set to reflect the process requirements and local delivery capability. Table 22 shows the approximate consumable requirements.

Various smaller amounts of materials are used for the operation and maintenance of the Facility. These are:

- hydraulic oils and silicone based oils;
- low Sulphur gas oil emptying and filling equipment;
- boiler water dosing chemicals.

All liquid chemicals stored on site will be kept in bunded controlled areas with a volume of 110% of stored capacity.

6.10 Residue Handling

The facility will generate the following residues:

- Bottom ash
- Boiler ash
- APC residue;
- Ferrous material residue;
- Staff waste;

6.10.1 Bottom ash

Bottom ash is the burnt-out residue from the combustion process. Bottom ash from the grate is quenched with water and moved by conveyor to the enclosed ash storage bunker where it is stored prior to being transported off-site. The conveyor passes under a magnetic separator to remove ferrous materials.

6.10.2 Boiler ash

The characterisation of boiler ash is dependent upon in which boiler pass it is accumulated in. Boiler ash of the horizontal pass will be conservatively disposed of with the APC residues. The composition of the ash from the first vertical passes is similar as the bottom ash and can be disposed of with the latter.

6.10.3 Air pollution control (APC) residue

Flue Gas Treatment residues, also known as APC residues, comprise fine particles of ash and residues from the FGT process. APC residue is collected in bag filters and will contain fly ash and reaction products from the hydrated lime scrubber and spent activated carbon. Due to the heavy metals involved in FGT, this material is classified as restricted solid waste. It will be stored in dedicated enclosed silos located adjacent to the flue gas area before being transported via a sealed tanker to an appropriate offsite disposal facility.

6.10.4 Ferrous material residue

Ferrous metals will be removed from the bottom ash by means of magnetic separators and discharged to into bins which are then transported offsite to metal recycler.

6.10.5 Mass Balance

The residue production from the Facility has been estimated and presented within Table 21:

Parameter	Units	Design fuel	Worst case fuel
Fuel NCV	MJ/kg	12.30	10
Ash content	%	21.49	24
Fuel Flow	tpa	552'500	675'000
Bottom ash (dry)	tpa	118'732	162'000
Bottom ash (wet)	tpa	146'583	200'000
FGT/APC residue	tpa	21'900	25'850
Combined ash and residue	tpa	168'483	225'850

Table 21 Residue production

Raw material	Process	Typical usage (tpa)
Hydrated Lime	Flue gas treatment – acid gases	9,900
Ammonium hydroxide (25% solution)	Flue gas treatment – NO_X reduction	1,100
Activated carbon	Flue gas treatment – dioxins/ heavy metal	210
Low Sulphur gas oil [10]	System firing	950

Table 22 Consumable requirements

[10] Based on 10 starts per year per boiler (assuming 2 boilers), each start using 43 t gasoil. 10% has been added to the total figure to account for other uses e.g. maintaining the temperature above 850°C. Delivery size is nominal.

6.11 Water Balance

Based on the water balance from a typical EfW facility, the average process water requirement is likely to be 11.63 m^3 per hour for the overall plant. Based on 8,000 operating hours a year this equates to approximately 93,000 m^3 per year for the overall plant. The primary requirement for water is to provide make-up for the boiler and steam cycle (to replace that which is blown down) and the FGT plant.

6.12 Proposed design data

For proposed overall design data please refer to table below.

Waste-to-Energy with waste utilization Preliminary Process and Design Data Flue Gas Treatment	
Plant Component / Parameter	**Value / Description**
Raw Flue Gas	
Referring to flue gas downstream the boiler.	
Nominal data [1)]	
Flue gas flow rate, dry flue gas at 11% O_2	279,900 Nm^3/h
Temperature	170 °C
Pressure	– 1,000 Pa
H_2O	14.5 % vol.
O_2	7.4 % vol., dry
Dust	1,850 mg/Nm^3, 11% O_2, dry
Σ Cd + Tl	3 mg/Nm^3, 11% O_2, dry
Σ Sb+As+Pb+Cr+Co+Cu+Mn+Ni+V	70 mg/Nm^3, 11% O_2, dry
HCl	900 mg/Nm^3, 11% O_2, dry
SO_2 and SO_3 (as SO_2)	530 mg/Nm^3, 11% O_2, dry
HF	20 mg/Nm^3, 11% O_2, dry
NO_x as NO_2 [3)]	200 mg/Nm^3, 11% O_2, dry
NH_3 [3)]	3 mg/Nm^3, 11% O2, dry
N_2O	~ 0 mg/Nm^3, 11% O_2, dry
Hg	0.7 mg/Nm^3, 11% O_2, dry
Dioxins and furans (tox. equivalent 2,3,7,8 TCDD) [3)]	5 ng/Nm^3, 11% O_2, dry
[1)] Nominal values to be used as reference for guarantee values (at nominal) of consumables, residues, and energy production and consumption etc. Values apply at boiler exit [2)] Wet flue gas at actual O_2 content [3)] after SNCR-deNOx	
Emission limits, Outlet stack	
Emission limits	Clean Air Regulation Group 6, and where more stringent, IED 2010/75/EU (Please refer to Chapter 3)
Absorbents/adsorbents silos	
Minimum capacity, lime	7 days' consumption + 30 tonnes
Minimum capacity, activated carbon	20 days' consumption + 30 tonnes
Silo for Flue gas Treatment residue	
Minimum capacity	5 days' production at nominal conditions

7. TURBINE/CONDENSERS

7.1 Energy recovery, water steam cycle

The Facility will be capable of exporting approximately 68.65 MW of electricity, amounting to about 549,200 MWh per annum of electricity. For the export of electricity there will a separate connection to the electricity distributed network.

The Substation will be designed for both stages by taking into account two connection points for each turbine generator and also ability to make a new connection for the second turbine generator in readiness for any stage 2 build without shutting down the stage 1 facility.

The Facility will have one turbine for each stage which will serve two streams each. The principle of water steam cycle is sown below in Figure 10.

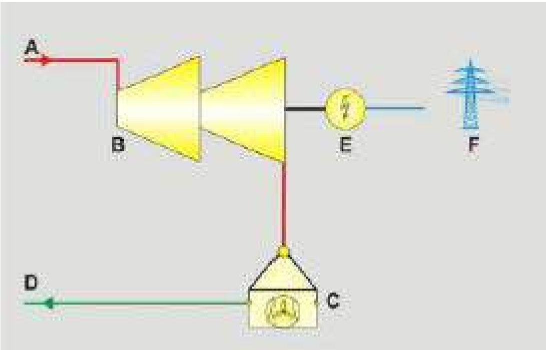


Figure 10 Steam Turbine set generating electricity

By means of a pressure controlled steam extraction, low pressure steam is taken for internal consumers in the plant. The expanded steam is then led to an air-cooled condenser to completely condensate the steam. Also part of this cycle are general steam and condensate systems, water treatment and feed water preparation systems as well as a closed-loop cooling system for all general cooling purposes of the plant.

7.2 Condensing System

The EfW plant will require a cooling system to condense the steam from the turbine exhaust for re-use. A BAT assessment has concluded that the use of ACC represents BAT for this installation based on its geographical location.

ACCs condense steam from the turbine exhaust by transferring heat to the air. The steam travels down the inside of finned metal tubes whilst air is blown by fans across the outside of the tubes. As the steam loses heat it cools and then condenses. The condensate is collected in a condensate tank below the ACC unit and then pumped to a feed water tank ready for recirculation back to the boilers.

7.3 Power Generation

As previously mentioned the steam parameters are 70 bar at 430ºC. With these parameters processing of 34.53 tonnes/hour with at a calorific value of 12,300 kJ/kg the plant has a thermal power of 117.98 MW per combustion line.

The estimated nominal steam turbine power output is 76 MW (gross power). The net power output is estimated at 68.7 MW.

The power generation from the Facility is presented within Table 9. The Facility will be designed to export 68.7 MWe in stage 1 and a further 68.7 MWe in stage 2 a total of 137.3 at full operation to the grid.

7.4 Turbine

The steam turbine shall be designed to swallow 110% of the maximum boiler steam production. This allows for sufficient turbine capacity for slight overshoots and variations in steam flow, as well as givens margin if the boiler is performing better than expected.

In order to achieve a flexible operation of the plant and for safety reasons and for start-up/shutdown it is necessary to provide the plant with a possibility of operation without passing the steam through the turbine: This is done with a turbine bypass system.

The turbine bypass system function is designed to allow operation of the combustion during maintenance on the turbine without having to shut down the complete Facility.

Bypass operation is used, when the turbine cannot receive the steam due to internal malfunction (turbine trip) and maintenance works or at start-ups and shut-downs, where the condition of the steam is outside the operational range.

The bypass is able to swallow steam corresponding to 20-110% boiler load. During bypass operation (that is, operation without the steam turbine), a live steam reduction valve shall provide the necessary steam for deaerator and air preheating.

The bypass station produces slightly superheated steam of such conditions, that the condenser works properly in the whole load range.

Typical load point of bypass operation could be: steam turbine producing only house load (~2 MW) or steam turbine completely out of operation.

7.5 Export of heat

Without any changes to the main plant design, the Facility is configured so that it is possible to export heat to nearby consumers for space heating or cooling or hot water.
The turbine is constructed to export up to 20MW heat per turbine.

TNG is very interested to use this technical possibility and is actively exploring potential heat export possibilities.

7.6 Proposed design data

The proposed overall design data is summarised in the table below.

Waste-to-Energy with waste utilization Preliminary Process and Design Data Turbine / generator / condensers	
Plant Component / Parameter	**Value / Description**
Turbine design steam data	
Nominal (100%) Steam flow	Maximum continuous flowrate (MCR) in boiler combustion diagram
Steam flow nominal	144.7 tonnes/h
Steam flow rates possible	Island mode – 110% of boiler MCR
Steam pressure (inlet of Emergency shut-off valve, controlled by turbine inlet nozzle group)	70 bara
Steam temperature nominal at boiler exit	430 °C
Swallowing capacity for turbine	Corresponding to operation at 110% MCR
Swallowing capacity for bypass system	Corresponding to operation at 110% MCR
Island mode	
Electricity demand, Island Mode (preliminary for tendering)	3,0 – 6,0 MW (final value to be given during detailed engineering)
Turbine bleeds (design)	
	Approx. 5 bara to supply steam to: - air preheater - de-aerator Further bleeds foreseen for heat export if later required.
Turbine bypass station	
Steam downstream turbine bypass station Temperature	[Saturation + 5-10 °C]
Air cooled condenser	
Operation pressure	0.1 bara at 22°C ambient temperature and turbine operating at 100% MCR
Temperature inlet / outlet	46/46°C

8. ANCILLARY EQUIPMENT

8.1 Waste Cranes

Two duty and one standby waste crane with integrated weighing cells will be installed capable of operating in automatic as well as manual mode.

Full redundancy will be secured via two identical waste cranes that each alone is sufficient for feeding the hopper. The cranes shall be able to operate in automatic mode, feeding/mixing/moving, thus programmed for random homogenisation and mixing of waste when feeding is not required. The cranes shall be fitted with automatic weighing cells that feed data on the amount of waste placed in the hopper to the CMS system. A spare grab shall be present to ensure a high degree of reliability.

The waste crane grabs size and the speed of operation shall be appropriately sized to service two process lines with the duty cranes operated in semi-automatic mode, the regime being:

- The Contractor will define the unproductive time in the bunker management procedure;
- Maximum 30 minutes per hour to remove mixed waste from the bunker and feed the waste hoppers to enable the plant to operate at 100% MCR at the maximum fuel throughput as defined on the firing diagram (waste CV of 10 MJ/kg).;
- During the lorry and conveyor delivery time period the remaining time shall be sufficient to allow clearing of the tipping area and stacking, such that waste deliveries are not disrupted.
- Outside the main delivery time period the remaining time shall be sufficient to allow sufficient mixing and stacking and clearing of the tipping area.

8.2 Bottom Ash Cranes

Three bottom ash cranes will be installed with integrated weighing cells for run and standby operation, with the facility to operate both cranes simultaneously in either manual or automatic modes.

8.3 Component Cooling System

The component cooling system will supply the necessary amount of cooling water (water/propylene glycol mixture) at a specified pressure- and temperature level to the cooling water consumers connected to the system, for example the turbine.

The cooling system and its components are dimensioned for the maximum cooling need in the entire system at the most critical supply conditions.

8.4 Cranes and Ancillary Hoisting Equipment

To ensure efficient lifting of main equipment during operation and maintenance, two permanent cranes are installed:

- Workshop Crane, load capacity 5 tonnes
- Turbine Hall Crane; load capacity 72 tonnes
- Lifting hoists in boiler hall

Ancillary hoists will be installed in such a way that all major pieces of equipment and plant can be serviced and replaced efficiently throughout the plant where major equipment and components are installed.

It is important that maintenance and repair can be carried out efficiently at any given time to maintain the high plant availability. For this reason, cranes as well as galleries etc. are planned and established throughout the facility to ensure that all components can be serviced and replaced quickly and safely.

8.5 Proposed design data

For proposed overall design data please refer to table below.

Waste-to-Energy with waste utilization Preliminary Process and Design Data Ancillary Equipment	
Plant Component / Parameter	**Value / Description**
Waste	
Waste density within closed grab to be used for crane cycle calculations.	500 kg/m^3
Average density of the waste in the bunker before compression to be used for calculation of capacity	350 kg/m^3
Crane construction for waste cranes (both stages)	
Number of cranes	3 semi-automatic waste cranes
Crane capacity (per crane in semi-automatic mode)	
Charging waste hopper (nominal)	34.53 t/h
Compressed Air (per stage)	
General	
Total installed compressor capacity for process and instrument air	4x37% or 5x28% of total demand of one stage
Process and Instrument air	
Maximum size of particles:	0.1 µm
Maximum concentration of particles:	0.1 mg/m^3
Dew point:	-40 °C
Maximum oil content:	0.01 mg/m^3

9. CONTROL AND MONITORING SYSTEM

In order to control and monitor all the processes and components and to support automatic operation of the EfW Plant, a Control and Monitoring System (CMS) is required.

The CMS is an automated system used to operate the plant and ensure the safety of personnel and equipment. The CMS operates the Facility processes, machinery, and drives. It also covers information management, quality control, and mechanical and field device condition monitoring.

The CMS replaces the following equipment:

- Operator Level
- Server stations
- Process stations
- System network (redundant Ethernet network)
- Bus systems to Remote I/O stations
- Communication to HV system
- Link to Turbine package unit

The CMS consists of the following levels:

- Plant level: Process equipment, sensors, actuators, probes and analysis devices
- Automation level: Process control, automated devices and autonomous systems, safety systems (SIL = Safety Integrated Level)
- Process control level: Monitoring and controlling of process, data acquisition, programming tools
- Plant control level: Management, maintenance and supervision
- Interface to management systems and the office network.
- Interface for remote access
    - CEMS (Continuous Emission Measuring System)
    - Remote maintenance
    - Data and trends

The CMS will perform the dedicated control and monitoring tasks for specific equipment in the plant and support operator control of the said equipment, and support full-automatic and semi-automatic operation and control of the various process sections of the plant, and support plant operation staff in operation, control and monitoring of the entire plant. Furthermore, the CMS shall support plant operation staff in reporting to internal as well as external parties (e.g. supervising authorities) and support plant maintenance staff in planning, organisation and performance of maintenance of the plant. The CMS shall also enable automatic generation of environmental reports and provide maintenance schedules in accordance with license requirements.

The CMS overall configuration is illustrated in the topology drawing, Figure 11.

The CMS-system will be constructed with a number of operator stations from where operation and monitoring of all the facilities are performed. The operator stations shall mainly be located in the control room. If a specific process demands a local operation, it should be possible to place local operator screens at the process. The operator stations shall communicate with the process control stations through a safe redundant process network.

The process control stations will be established as autonomous processor-based units, which independently of any fault in the overall process network or operator stations shall be able to control, monitor and protect the facility equipment.

An engineering station will be established for configuration, programming, analysing, etc. the system. Furthermore, a common report server for operational and environmental reporting shall be established. Printing facilities, including colour laser printer, shall be available in the control room, to be used for printing of reports and documentation. A connection to the operation and maintenance system (O&M system) will be established, to update the O&M system with plant information, information from electrical components of the facility, for scheduling of preventive maintenance work. Access to the O&M system shall be provided from the control room and administration areas.

All electronic equipment, except monitors, keyboards and printers, will be installed in a dust-free and temperature-controlled environment. It is common to have an air conditioned server room close to the control room, where all the electrical equipment can be located safely.

A redundant control network for communication between all process stations will be established. It must be possible to access all information from each operator station. This process network will also be the interface to the network of the administrative system. The network must be constructed with intelligent firewalls, routers and switches to separate the process network with the administrative network. The network must be constructed with optical cable or cobber cable. Wireless network is not allowed, except for maintenance purpose (Service Laptops). The routers and the components on the network shall be based on the technology Simple Network Management Protocol (SNMP), which entails that diagnosis and operational information from the individual (SNMP) components can be transferred to further processing in the O&M system.

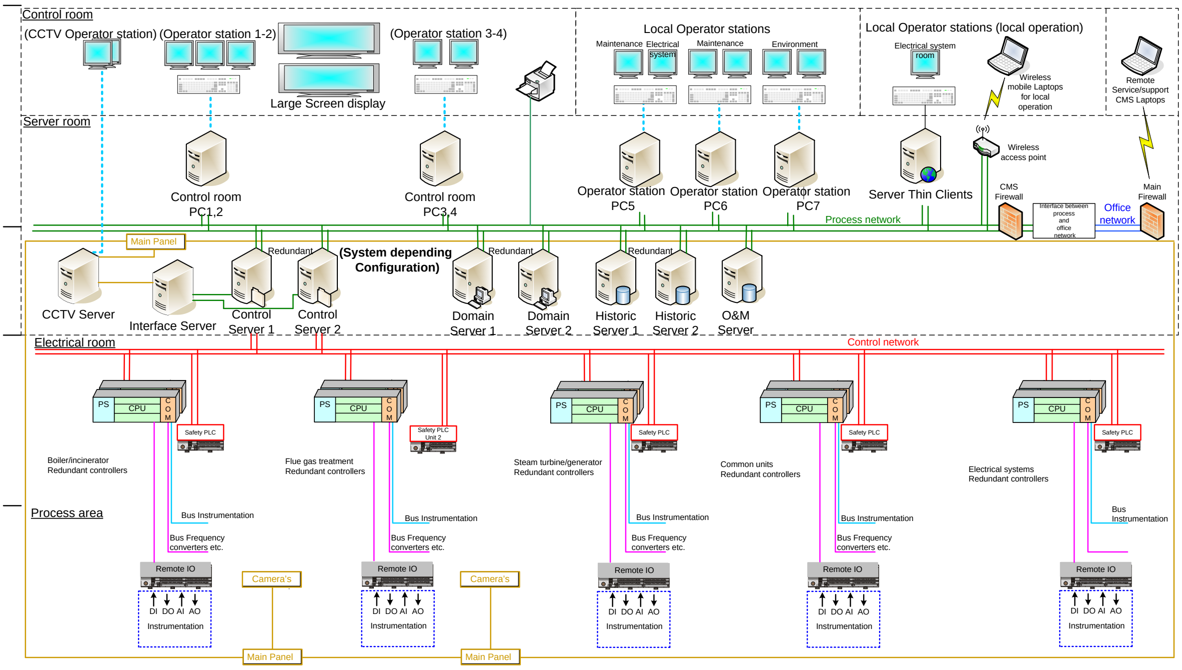


Figure 11 CMS configuration

9.1 Overall CMS Operation Philosophy

The following requirements regarding operation philosophy shall be observed:

- The total plant will be controlled and monitored from the operator stations in the control room. It shall be possible to carry out all control and monitoring functions by means of the operator stations. Under normal conditions it shall be possible for one operator to control and monitor the entire plant from the operator stations in the control room.
- Independent of the chosen level of operation and control, the CMS will ensure that the total plant can be controlled and operated in a secure and satisfactory manner. This includes personnel safety, plant safety and operational reliability. All operator actions shall be subordinate to the safety systems of the CMS. In case of faults in the plant, or in the CMS itself, partially or totally, the CMS shall ensure that the faulty part of the plant is brought into a controlled and secure condition.
- The operator will have full information from the entire plant available in the CMS, to help with decision making and issuing commands through the CMS. The operator is the person in charge and it is the obligation of the system to provide adequate and correct information, presented in an easily understandable manner. To do this, the CMS must be able to produce the following lists:
    - Presentation of the plant processes and object status
    - Indication of historical trends
    - Event and Alarm handling
    - Reporting system, for different reports.

Access shall be limited. It shall be possible to limit access to all or part of the system through the use of password protection.

9.2 CCTV

A common camera surveillance system (CCTV) with monitors in the control room, to which all cameras for the plant area are connected, shall be installed in the server room. It shall be possible to operate and select cameras from a position close to each operator stations in the control room.

10. ELECTRICAL SYSTEM

10.1 Electrical Installation

The following voltage levels shall be in use in the Facility:

Rated operating voltage	Maximum voltage of equipment	Neutral treatment	Purpose
11 kV AC	12 kV	Insulated high resistance earthing	Generator voltage and high voltage distribution.
710/415/240 V AC	+10%,-6%	Solidly earthed	Mains power distribution.
110 V DC	110 V	Isolated	Control voltage only where 24 V cannot be used and only available with the written approval of the Company's Representative.
24 V DC	24 V	Earthed negative	Control voltage, fire alarms.
24 V AC	24 V	Safety insulation	Safety voltage for lighting.

Table 23 Plant voltage levels

The steam turbine generator is expected to generate electrical power at 11 kV and will be connected on to the Facility 11 kV power distribution system and to the distribution network operator's network through a step-up transformer.

The turbine generator will provide the electricity to operate the rest of the Facility.

Electricity will normally be exported to the grid, but the grid connection will also allow for import of electricity back to the turbine halls for start-up of the whole Facility.
In addition, it shall be possible to supply power from one Power Island to the other via appropriate switching, including all necessary synchronisation and automatic controls. This should enable either Power Island to supply the other, whether operating in island mode, in the event of an emergency, or as desired during normal operation. An appropriate power management system shall be provided enabling all the necessary functionality.

All switchgear, control gear and fuse gear will be located indoors, in metal-clad sheet steel cubicles with front access doors. The equipment will be selected from manufacturers' standard product range and be fully type tested in accordance with relevant Australian, European and International Standards.
The equipment will be rated to withstand the mechanical forces and thermal effects of the maximum prospective fault current at the point of application.
In normal operating conditions, the power requirements of the Facility will be supplied by the steam turbine generator with the balance exported to the grid.

In the event of a breakdown of the steam turbine generator, the power for the site parasitic load will be supplied from the grid.

It is anticipated that the steam turbine will be capable of operating in island mode. In the event of a loss of grid connection, this would allow the Facility to continue processing fuel with the auxiliary load supplied form the turbine generator.
Emergency diesel generators will also be available for safe shut down of the Facility in the event of a loss of grid connection and failure of the steam turbine to transfer to island mode operation.

10.2 Transformers

Following transformers are used in the facility:

- Power transformers – 132/11 kV;
- Auxiliary transformers – 11/0.415 kV or 11/0.71kV;
- Unit transformers – 11/11 kV

10.3 Protection

The protection system will be designed that in the event of faults occurring, the faulty plant is safely disconnected, whilst continuity of supply consistent with system stability is maintained. The selection and setting of protection devices for the auxiliary system will be based upon the following major requirements:

- Faults on facility items will be disconnected as quickly as possible to minimise damage;
- Faults external to major power sources, e.g. unit transformers, will only open the circuit breaker controlling these power sources after all other protection nearer the fault has failed;
- Faults internal to major power sources shall cause their circuit breakers to open as fast as possible to ensure that the transmission system can restore itself within the limits of stability;
- The protection will be designed to be stable in transient conditions such as motor starting and will not operate for current surges caused by faults external to the auxiliary system, for which the main generator would recover and the item of plant protected would not be damaged; and
- Protection of plant is designed to match the plant operating characteristics and provide discrimination with other plant.

All circuits will have lockable isolating facilities so that they can be disconnected and worked upon in complete safety.

10.4 Electrical Works

The Facility will include standard electrical equipment, selected based upon safety, reliability and quality. No single failure of a major part of the auxiliary plant should result in the total shutdown of the main generating plant.

Essential supplies systems will be provided to maintain unit output and to protect plant from damage, due to a loss of supply. The systems will be sized to enable the station to be shut down in a safe manner on loss of transmission supplies and afterwards to allow normal supplies to be re-instated following reconnection. Suitable earthing and lightning protection will be provided.

10.5 Emergency Power / UPS

It is critically important that failure of the grid or other power failure does not result in either damage to the plant or in excessive emissions to the atmosphere. Therefore, uninterrupted power supply (shall be supplied in order to maintain control of the plant at power supply failure) and emergency diesel generator (the UPS can only supply power for smaller components - primarily the CMS) are installed in order to slowly run-down the plant at failure of the grid. The diesel generator will require suitable housing / positioning to limit the risk of noise impacts.

The main emergency power supply shall be from the emergency generators and shall be sufficient to permit the re-start of all necessary Plant control systems and equipment following a full Plant trip to permit the safe shut-down of the Facility. The emergency diesel generators are specified in chapter 10.5.1.

In addition battery back-up emergency systems (DC, UPS), as required for the safe shut-down of Plant components, shall be supplied.

10.5.1 Emergency Power

The two emergency diesel generators shall supply emergency power to the selected items of Plant as required by TNG for the four incineration lines. They will not be used for shutting down and starting up the plant in the case of planned (scheduled) outages, or forced (unscheduled) outages.

The emergency generators shall be designed for continuous operation. In addition to providing emergency power supplies to essential users, the generators shall be designed for operation when:

1. synchronised to the grid;
2. synchronisation of the diesel generation set with the Site distribution system for testing purposes; and
3. automatic switching of the diesel generation set to the Site electrical connection so that the Site supply can be restored without disruption of the essential services.
4. Black start of one incineration line

In case of a complete breakdown of the normal auxiliary power supply, the emergency generators shall be sufficient to meet the electrical demand of at least the following consumers:

1. essential air conditioning, including boiler house/turbine hall chiller equipment and air conditions units for all main LV/HV switchgear/distribution rooms, Plant control room, relay rooms, and the CEMS rooms;
2. all drives and electrical devices necessary for the safe control and shut-down of the entire Facility and its associated systems;
3. 110 V DC and 240/415 V UPS systems;
4. Plant control room lighting and air conditioning systems;
5. radiator fan, diesel oil transfer pump and all other drives required for diesel generator operation;
6. ventilation fan of diesel engine room;
7. oil pump and turning devices for turbine shut down;
8. generator shut down heaters;
9. emergency lighting system, including in all main LV/HV switchgear/distribution rooms, central control/relay rooms, escape routes, exits, etc;
10. essential task and access lighting systems;
11. HV and LV switch-gear and switch-gear rooms;
12. weighing systems in weigh-bridge area;
13. Site access barriers;
14. passenger lifts, goods lifts;
15. Site fire pumps and fire detection, protection and alarm systems;
16. all other essential services/equipment/areas.

10.5.2 UPS

Supplies for protection, tripping, alarm, control, instrumentation, emergency drives, emergency lighting, communication equipment etc. as defined, shall be maintained by means of batteries for a period of not less than 1 hour in the event of loss of all normal means of supply.

Each DC system shall be supplied by one 100% battery and one associated 100% charger. Each charger shall be capable of simultaneously float charging the battery and supplying the total load.

The UPS requirements are:

	Parameter	Requirement
i	Output voltage	As required by the particular application
	Static tolerance	+ 1
	Dynamic tolerance	+ 4% for 100% load change
ii	Output frequency	50 Hz
	Tolerance	+0.2 to + 0.3% adjustable, synchronised to mains
iii	Harmonic distortion	<2% for linear load
		<5% for non-linear load
iv	Overload capability	150% for 1 min, 125% for 10 min
v	Short circuit current	2 x rated current for 10 seconds
vi	Ambient temperature range	0-40^{0}C
vii	Cooling	Forced ventilation (redundant)
viii	Noise level	60dB (A) max

Table 24 UPS requirements

11. CIVIL WORKS AND LAYOUT

11.1 Background

The capacity of the Facility cannot be treated in a single combustion system. A single combustion system of the required size cannot be supplied. Therefore, the Facility will be configured as a two combustion line system.

The Facility will comprise of two combustion grates and two boiler systems housed in one building and each boiler has its own independent Flue Gas Treatment system and connecting to one turbine enclosed in the adjacent Turbine Hall, connecting to one air cooling system and one emission Stack and the other auxiliary elements connecting the process.

In stage 1 the entire tipping hall, waste bunker, administration and workshop will be constructed as well as full sized underground infrastructure, substation, detention basins and back-up systems, to ensures no synergies or efficiencies of the facility are lost with the two stage approach and the external appearance is not altered between the construction of the two stages.

The Development will include the following elements:

- Combustion lines and associated boilers;
- Cooling systems comprising air cooled condenser units;
- Flue gas treatment systems, including residue and reagent storage silos and tanks;
- Emissions stacks and associated emissions monitoring systems;
- Steam turbines and generator housed within a turbine hall;
- Auxiliary diesel generators.
- Buildings:
    - tipping hall and waste bunker;
    - boiler hall;
    - turbine hall;
    - substation;
    - bottom ash collection bay;
    - workshop;
    - stack; and
    - control room, offices and amenities.

- Hard-standing, internal vehicular access roads, vehicle turning and waiting areas;
- Fuel reception and storage facilities, consisting of a tipping hall and vehicle ramps,
- Fuel storage bunker and cranes;
- Consumable Materials Handling and Storage area for raw materials including hydrated lime, ammonium hydroxide, activated carbon, Low Sulphur gas oil , oil, and water, bottom ash handling systems, compressed air systems;
- Process effluent storage tanks;
- Demineralised water treatment plants;
- Fire water and fire protection facilities;
- Administration and control buildings; and substation.

Associated and supporting components of the development will include:

- Subdivision of the land;
- Pedestrian footpaths and routes;
- Internal roadways and weighbridges (x 2);
- Direct underpass connection (Precast Arch and Conveyor Culvert) between the proposed Facility and the Genesis MPC;
- Staff car parking for 40 vehicles (including 3 visitor parking spaces);
- Water detention and treatment basin; and
- Services (Sewerage, Water Supply, Communications, Power Supply);
- Signage;
- CCTV and other security measures;
- External lighting; and
- Hard and soft landscaping and biodiversity measures.

The proposed buildings have varying footprints and heights, with the maximum height reaching 52 metres above ground level, and the stacks reaching 100 m. The indicative dimensions of the buildings and various components of the facility are outlined in Table 26.

Building	WIDTH (W)	LENGTH (L)	HEIGHT (H)
Tipping Hall	108	50	20
Waste Bunker	98	31	46 (included 7m below ground level)
Boiler House	50	58	43
Flue Gas treatment	50	57	34
Stack with two inner flues	Outer diameter 3.1		100
Turbine Hall	34	46	25
ACC	51	51	24
Bottom Ash collection area	50	16	17
Sub Station (4000m^2)	63	50	20
Office Block	15	31	11
Workshop	32	35	16.5
Control Room	10	38	38
Weighbridge (in)	40	16	10
Weighbridge (out)	38	15	10
Fire water Tank	14.7	13.7	9
East Amenities	32	6.5	8
West Amenities	19	6	4.5

Table 25 Main Building Dimensions for the Facility (meters)

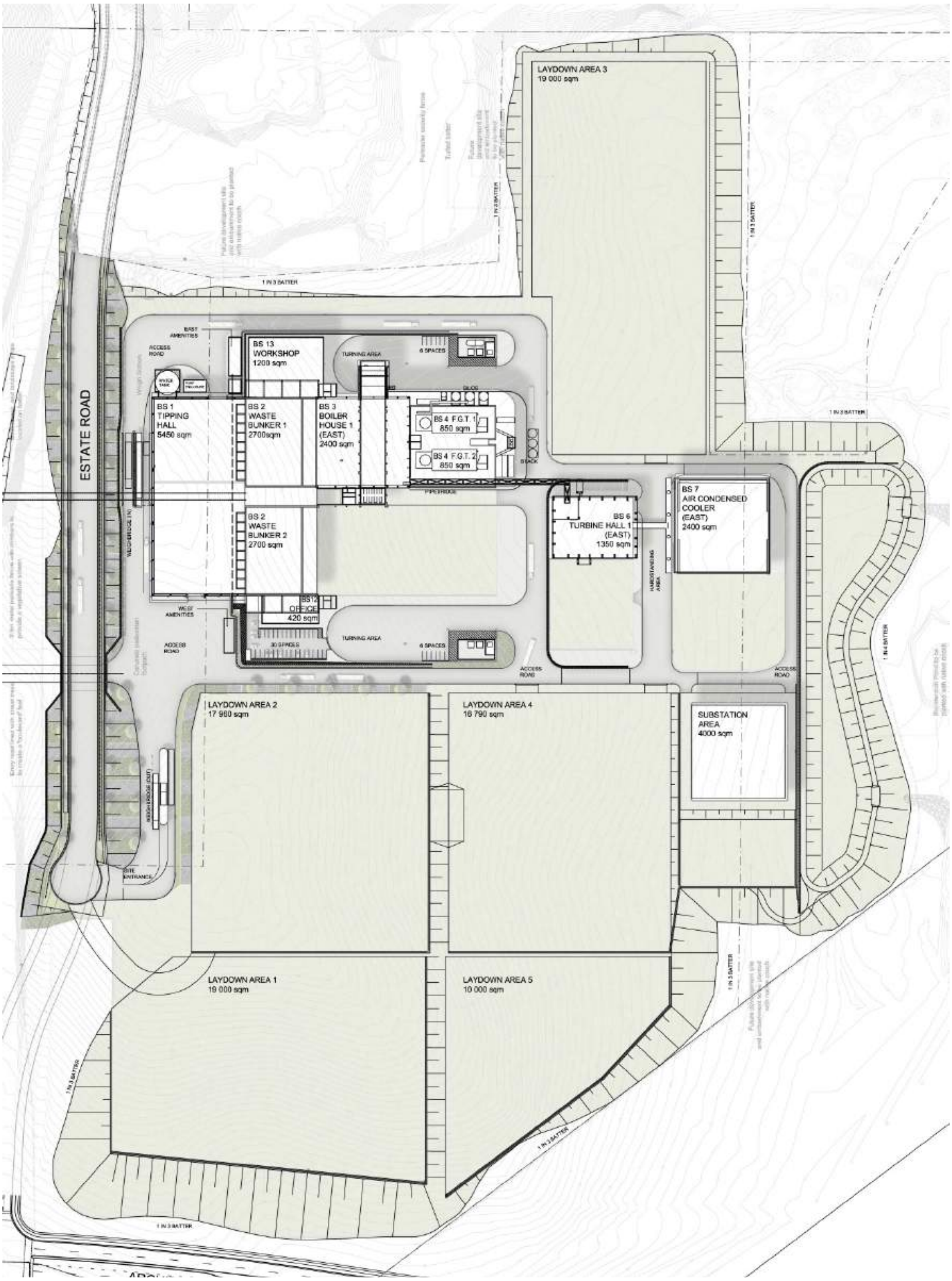


Figure 12 Site Layout

The above dimensions have been developed based in consultation with the technology provider (HZI) and the appointed construction company (Brookfield Multiplex) to ensure optimal functionality of the Proposed Development taking into consideration the unique site typography.

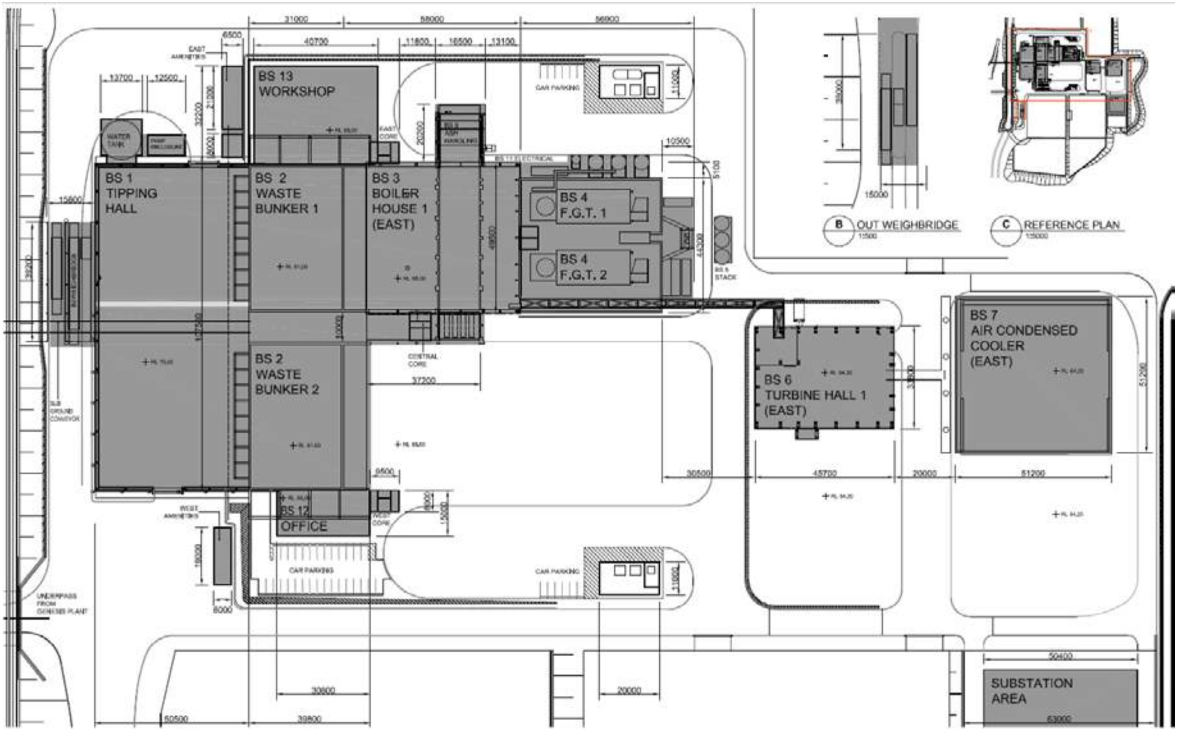


Figure 13 Building layout Stage 1

11.1.1 Site Layout

Traffic areas are designed in accordance with the national regulations. The design takes into account the peak vehicle movements and any associated queuing or standing time in order to avoid trucks/cars cueing onto the public road. Furthermore, the design will separate the heavy traffic from the light traffic for safety reasons.

11.1.2 Entrance/Weighbridge

The proposed Facility will provide two new weighbridges to be constructed within the boundary of the Site on Precinct Road (one on entry and one on exit).

Fuels from external transfer stations and recycling facilities will be delivered via road vehicle. These vehicles will enter the Site through the main entrance off Precinct Road which is being constructed as part of this proposal.

Once vehicles have entered the site they will proceed to the weighbridge where the quantity of incoming fuel is checked and electronically recorded. Vehicle loads will be inspected at the weighbridge to confirm the nature of incoming fuel and only authorised fuel will proceed to the fuel reception area.

Loads will be nominally 22 tonnes for all fuel types. Fuel can be sampled from the vehicle at the weighbridge. The weight of the outgoing vehicles will be recorded on a separate weighbridge as they leave the Site.

Fuel from the Genesis MPC will arrive at the proposed Facility in two ways as described below. The incoming fuel will be pre-weighed and its details recorded at the Genesis Xero Waste Facility before transported to the Facility:

- By a conveyor transport system which will carry the residual waste output of the Genesis MPC. It will travel via the culvert under Precinct Road and will eject directly into the storage bunker.
- Some vehicle transport from Genesis MPC will be required and when this occurs it will be via the archway under the Precinct Road (to be constructed as part of the DA consent). Vehicle transport via the culvert under Precinct Road will also be used in the event the conveyor is out of service.

Out bound movements along the road may include unrecyclable wastes that are extracted from mixed waste stream at the pre-sort stage prior to be feed into the recycling plant

11.1.3 Process Building

The layout of the facility has been informed by a range of operational requirements of key components including the furnace boiler and flue gas treatment that are required to have a linear arrangement.

Below a number of issues which have impact on the layout of the facility and which are reflected in the proposed layout of the plant:

<u>Tipping Hall:</u>

- Full enclosed tipping hall through individual tipping gates
- Number of tipping bays
- Width and geometry to allow for efficient use and safe traffic manoeuvring
- Inspection area

Waste Bunker:

- Volume (please refer to Chapter 4.1)
- Depth (ground conditions/foundation/required tipping height)
- Diversion (sorting)
- Direct view from control room into waste bunker
- Waste crane maintenance area

Boiler Hall:

- Boiler configuration (horizontal/vertical)
- Boiler support integrated in primary building structure
- Bottom ash storage below the horizontal part of the boiler
- Combustion equipment arrangement and accessibility

FGT area:

- Flue gas treatment equipment arrangement
- Consumables silos
- Residue silos

Turbine Hall:

- Arrangement of turbine and water-steam cycle equipment
- Crane accessibility
- Area needed for maintenance and laydown area for turbine casing/rotor etc.

Bottom Ash Handling:

- On-site storage
- Storage capacity
- Crane accessibility
- Safe loading

Workshops:

- Maintenance philosophy (own staff/external)
- Separate mechanical and electrical workshop
- Needed area (closely linked to philosophy)

General:

- Crane accessibility
- Area for operation and maintenance
- Escape routes

Control Room/Offices/Staff Rooms

- Reception area
- Toilet/welfare facilities
- Employee mess room and kitchenette area
- Lift and stair access to all floors of the plant
- Office areas and meeting rooms
- Control Room

12. OPERATION

12.1 Start-Up and Shut-Down

The Facility will be started and stopped automatically, but under the supervision of trained operators. This means that the control system will start the Facility in a controlled and safe manner, but the operator will have various "hold" points where checks are made before proceeding to the next stage.

The Facility will be started using fuel oil to reach safe combustion temperatures before any solid fuels are added. The flue gas cleaning system and emissions monitoring will be in operation before any solid fuel is added.

If the operator wishes to turn the Facility off, this is carried out in a controlled manner by reversing the start-up process. Solid fuel feeding is stopped, but the Facility continues to operate to ensure that all material is burnt and any flue gases are cleaned out of the system. Air flows are left on to allow the boiler to cool down before the Facility is fully shut off.

If any emergency condition is reached, or if a rapid facility shut down is required, the Facility will stop automatically in a rapid manner.

Fuel flows and air flows are stopped instantly which causes combustion to stop very quickly. The boiler can be depressurised via safety valves immediately if required. This system is fully interlocked to prevent manual intervention unless it is safe to do so.

The Facility is also protected in case of a complete loss of power, a "black plant" trip. In this case, the Facility will stop as under an emergency stop. The Facility will be provided with a secure electrical supply to provide power to essential consumers such as oil pumps, feedwater pumps, instrument air, fire pumps and emergency lighting. Control systems are supplied from a UPS system (Uninterruptable Power Supply) to ensure the operators are aware of what is happening.

12.2 Staff

The Facility will be operated and managed by suitably qualified and trained personnel. It is anticipated that a total of 55 staff will be employed of which 4 will be managers and 3 will be supervisors.

TNG is planning to entrust the operation to an internationally experienced EfW operator and has received bids from two world-wide respected EfW operators. As a conclusion there is no doubt that experienced experts are available and the plant will be run by an experienced and well trained operation team.

The shift teams will be led by experienced engineers who will have the responsibility for managing the operation of the Facility outside of office hours.

As detailed in Section 9 there will be a high degree of automation in the facility with the plant and key processes controlled from a central control room using a state of the art control system based on programmable logic controllers.

A fully automatic waste grab crane is to be installed which removes the need to man the grab crane except during peak waste delivery times. The weighbridge will also be fully automated with a vehicle recognition system and traffic barrier control system. Table 26 outlines the anticipated staff members required.

Role	Number of staff (Indicative)
	Overall Facility
Facility Manager	1
Operations Manager	1
Engineering Manager	1
Supervisor/Engineer – Mechanical	2
Supervisor/Engineer – Controls;	2
Supervisor/Engineer – Electrical;	2
Shift Engineers	6
Process Operatives	15
Day Team Supervisor	1
Weighbridge Operatives	2
Multi Skilled Labourers	9
Maintenance Technicians	10
Administrators	2
Compliance Manager	1
Total	**55**

Table 26 Staff required

13. R1 CALCULATION

The NSW Energy from Waste Policy Statement of Environment Protection Authority (EPA) states that:

"This Policy Statement is restricted in its scope to facilities that are designed to thermally treat waste for the recovery of energy rather than as a means of disposal. The net energy produced from thermally treating that waste, including the energy used in applying best practice techniques, must therefore be positive.
The R1 energy efficiency formula from the European Waste Framework Directive has been adopted with R1 to be ≥0.65 as the minimum total system efficiency threshold that must be met for a facility to qualify as an energy recovery facility.
Where these criteria are met, the facility will be licensed as 'Energy Recovery' under Schedule 1 of the Protection of the Environment Operations Act 1997, and therefore the waste and environment levy will not apply to waste received at the facility."

European Commission has produced a revised Directive on waste, which has replaced the old Waste Framework Directive (WFD) as of 20th October 2008. In this revised Directive, incineration facilities for municipal waste can be regarded as "Recovery" operations if the energy efficiency of the plant is greater than 0.65 for plants permitted after Jan 2009. Plants which do not meet this criterion are classed as "Disposal" operations and therefore lie on the same hierarchical level as landfill.
The definition of energy efficiency used in the revised Directive is:

$$\text{Energy Efficiency} = \frac{(E_p - (E_f + E_i))}{(0.97 \times (E_w + E_f))}$$

Ep	*means annual energy produced as heat or electricity. It is calculated with energy in the form of electricity being multiplied by 2.6 and heat produced for commercial use multiplied by 1.1 (units of GJ/yr)*
Ef	*means annual energy input to the system from fuels contributing to the production of steam (units of GJ/yr)*
Ew	*means annual energy contained in the treated waste calculated using the lower calorific value of the waste (units of GJ/yr)*
Ei	*means annual energy imported excluding Ew and Ef (units of GJ/yr)*
0.97	*is a factor accounting for energy losses due to bottom ash and radiation.*

The interpretation of the R1 formula has proved to be difficult. Accordingly, the European Commission set up an expert panel to discuss this. The panel has prepared a guidance note "for the use of the R1 energy efficiency formula for incineration facilities dedicated to the processing of Municipal Solid Waste", which has now been adopted by the European Commission.

We have therefore used the formula, interpreted in accordance with the guidance, to assess the energy efficiency of the Facility. The calculation is based on predicted design figures and predicted levels of fuel consumption and electricity usage.

The R1 efficiency is predicted to be 0.86 (based on gross generated power) which is well above the threshold for new incineration plants. Therefore, the Facility will meet the definition of recovery.

APPENDIX 1
DADI WASTE AUDIT REPORTS

eC Sustainable

REPORT PRODUCED FOR:
Dial A Dump Industries

Chute Residual Waste: Composition Audit

April 2017

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AUDIT CONDUCTED BY

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List of abbreviations

AWT	Alternative Waste Treatment (or Technology)
AS	Australian Standard
C&I	Commercial and Industrial
CRW	Chute Residual Waste
EPL	Environmental Protection License
EPS	Expanded Polystyrene
HAC	Hazard Assessment Check
NSW	New South Wales
OHSMS	Occupational Health and Safety Management System
LPB	Liquid Paperboard
PE	Polyethylene
PET	Polyethylene Terephthalate
PP	Polypropylene
PPE	Personal Protective Equipment
PS	Polystyrene
PVC	Polyvinyl Chloride
SWMS	Safe Work Method Statement
WEEE	Waste Electronic and Electrical Equipment
WHS	Work Health and Safety

1 Introduction

1.1 Background

The Next Generation NSW (TNG) is proposing to develop an energy from waste generation facility at Genesis Zero, a Dial-a-Dump Industries (DADI) waste facility at Eastern Creek. TNG is seeking planning approval for the facility.

The Genesis Zero site includes a landfill and a Materials Recovery Facility (MRF) and is licensed with Environmental Protection License (EPL) 20121 to receive general solid waste as defined in the Protection of the Environment Operations Act, *NSW*, 1997 (POEO Act). The materials removed from the mixed waste for recycling in the MRF include:

- Clean timber, particularly pallets.
- Metals, including ferrous (iron and steel) and non-ferrous.
- Mattresses.
- Plastics.
- Vehicle batteries.
- Fire extinguishers.
- Gas bottles.

The facility also rejects asbestos, with detection using a gun, as well as gypsum because it affects the optical sorting process in the MRF by whitening the waste.

The residual waste is disposed to the landfill via a chute. This is the Chute Residual Waste (CRW). There is approximately 300 tonnes of CRW generated per day. It is proposed to use this CRW, either alone or with other wastes, to fuel the proposed energy from waste facility.

In order to satisfy the NSW Environment Protection Authority (EPA) energy from waste policy requirements, NSW EPA requires some additional data to assess the application for approval as part of the planning process.

The NSW EPA, and its consultants, have raised a range of concerns. Notably these relate to:

- The quantity of the different constituent streams of waste available to qualify as eligible waste fuels;
- The content of certain elements of the eligible waste fuel streams;
- The procedural measures which will be in place to ensure consistency of that content.

This audit seeks to provide information that will assist in handling and mitigating these concerns.

1.2 NSW energy from waste policy

The NSW Energy from Waste Policy (NSW EPA, 2015) sets out the considerations and criteria that apply to recovering energy from waste in NSW. It ensures this energy recovery:

- Poses minimal risk of harm to human health and the environment.
- Will not undermine higher order waste management options, such as avoidance, re-use or recycling.

Under the policy, 'eligible waste fuels', are low risk materials able to be considered for use as a fuel due to their origin, low levels of contaminants and consistency over time.

1.3 Audit objectives

DADI engaged EC Sustainable to conduct an independent audit of the CRW. The objectives were to determine the composition of the CRW over a one week period using a representative sampling regime. The CRW composition data required include:

- Combustible and eligible waste fuel materials that will provide energy.
- Hazardous materials that may require management to prevent them from entering the energy generation process.
- Recyclable materials that could be otherwise processed as a higher order waste management option.

This report provides the results of the audit.

1.4 Document structure

This report provides:

- Section 2: the methods used to obtain the data
- Section 3: the results of the waste audit.
- Section 4: comments.

2 Project methods

2.1 What is a waste audit?

A waste audit is an examination of a particular waste stream including the waste materials within that stream. It includes using classification methods to determine the physical waste stream composition, measurement of the size of the waste stream and verification of other statistics related to the waste stream for planning and decision-making purposes.

2.2 Guidelines.

The audit followed applicable parts of guidelines, such as from NSW EPA in 2008 and 2010 and Office of Renewable Energy Regulator (2001).

2.3 Sample frame

The audit sample frame was designed to comprehensively cover a full week for the operating cycle of the MRF to match the generation of the CRW. Table 1 provides the audit sample frame.

Table 1 - Sample frame

Day	Date	Number of samples	Sample source times
Monday	24/04/2017	9	8:15AM, 9:15AM, 10:20AM, 11:20AM, 12:20PM, 13:45PM, 13:30PM, 15:25PM, 16:40PM
Tuesday	18/04/2017	6	9:55AM, 11:20AM, 12:30PM, 13:40PM, 15:00PM, 16:25PM
Wednesday	19/04/2017	9	7:20AM, 8:35AM, 9:50AM, 11:00AM, 12:15PM, 13:30PM, 14:40PM, 15:40PM, 16:30PM
Thursday	20/04/2017	9	7:30AM, 8:30AM, 9:30AM, 10:50AM, 12:20PM, 13:50PM, 14:20PM, 15:45PM, 16:30PM
Friday	21/04/2017	9	7:40AM, 8:40AM, 10:00AM, 11:00AM, 12:10PM, 13:25PM, 14:20PM, 15:20PM, 16:20PM
Saturday	22/04/2017	No CRW was generated	Facility open, but MRF not running
Sunday	23/04/2017		Facility closed
Total	**-**	**42**	**-**

Generally, the MRF operates from 7am to 5pm.

The sampling included selecting one sample per operating hour, up to nine (9) samples per day for the typical nine (9) operating hours. Tuesday 18 April had a shorter operating time due to the Easter shutdown. The MRF does not generally run on weekends, although the facility is open on Saturday.

2.4 Sampling methods

A target sample size of 100kg was used for the audit. This was designed to maximise the number of samples while ensuring each sample was of an adequate size based on the weight of single items in the sample. The single item weights in each sample are low with almost all material less than 2kg and most items less than 1kg.

Due to the MRF shutdown and start-up times of a combined 1 hour, it would not be practical to stop and start the facility to sample every hour because no CRW would be generated. Therefore, sampling was conducted during operation of the MRF.

The collection of approximately 100kg for each sample was conducted using a bulk bin placed over the flow of CRW down the chute that takes the CRW to the landfill. The CRW audited is therefore representative of the material that goes down the chute after processing in MRF.

The samples were delivered to EC Sustainable in a bulk bin by a forklift. The samples were sorted on the day of sampling, with the exception of the final sample on Wednesday that had to be partially stored overnight due to light safety. That sample was partially sorted on the sampling day, with the remainder of the sample stored in enclosed sealed 240L bins overnight to protect the sample.

ORER (2001) discussed visual audits of C&I waste, considering individual incoming loads not an on-going flow of waste after some processing. The CRW is a post-processing material and not an incoming material and the waste is highly mixed and in small particle sizes. Visual auditing methods would not be appropriate for accurate measurements. Physical weight based auditing provides a higher order method of accurate data collection compared to visual audits.

2.5 Sorting and data collection

2.5.1 Location

A safe undercover sorting site was provided by DADI adjacent to the MRF.

2.5.2 Sorting categories

Table 2 provides the sorting categories used in the audit. These categories are based on applicable components of relevant guidelines such as NSW EPA (2008 and 2010) and ORER (2001).

Table 2 - Sorting categories

Summary ^	Sorting category and number		ORER Guideline (2001) category	
			Name	Renewable eligible
Paper	1	Recyclable paper	Newspaper, magazines, mixed paper	Yes
	2	Disposable contaminated (soft) paper	Paper composite	Yes
	3	Cardboard	Cardboard	Yes
	4	Liquid paperboard (LPB)	Liquid paperboard	Yes 85%
	5	Nappies	Disposable nappies	Yes 90%
Wood/timber	6	Untreated wood – MDF board	Wood	Yes
	7	Untreated wood – All other		
	8	Treated wood – CCA treated		Potentially >
	9	Treated wood – lead painted		
Plastic	10	Recyclable plastic containers excl. EPS	Mixed plastics, PET, PE, PVC, PP, PS not EPS	No
	11	Other rigid plastics excl. EPS		
	12	Expanded Polystyrene (EPS)	Polystyrene (PS)	No
	13	Soft (films) plastics	Plastic film	No
	14	Composite plastics	Plastic composite	No
Metal (Ferrous and non-ferrous)	15	Recyclable metal containers	Not required	No
	16	Composite	Not required	No
	17	Other metals	Not required	No
Organic (not Wood/ timber)	18	Food/kitchen – vegetable	Kitchen organics - veg	Yes
	19	Food/kitchen – meat	Kitchen organics - meat	Yes
	20	Garden/ vegetation	Garden organics	Yes
	21	Textiles/rags	Textiles	No *
	22	Rubber	Rubber	No
	23	Leather	Not required	Potentially
WEEE	24	E-waste	Compounds (radios etc)	No
	25	Mobiles	Mobile phones	No
	26	Toners	Toner cartridges	No
Hazardous	27	Medical	Not required – additional potential combustibles, although hazardous	No
	28	Chemicals		
	29	Paint		
	30	Asbestos		
	31	Batteries car (vehicles)		
	32	Batteries other		
	33	Other hazardous		
Glass	34	Glass containers	Not required	No
	35	Glass other	Not required	No
Other (including Earth and Building Materials)	36	Insulation	Not required – additional potential combustibles	No
	37	Carpet/underlay		No
	38	Compounds (excl. composite plastic, composite metal, e-waste)	Compounds (radios etc)	No
	39	Asphalt	Not required	No
	40	Inert incl. non-hazardous building waste	Not required	No

^ Generally based on NSW EPA (2008 and 2010), with more detail on the C&D and wood materials due to the amount of that material in the CRW and less detail on materials not required in ORER (2001).

> Assumed not eligible in ORER (2001) as a precautionary approach due to the treatments, although all wood is eligible.

* Not from a consistent source of natural fibre based on the audit and therefore not eligible in ORER (2001).

The samples were sorted into two size fractions, with the whole sample sorted. This was for additional information in the raw data. This report analyses the whole sample results. The size fractions were: oversize (>25mm); and fines (<=25mm).

2.5.3 Sorting competency

EC Sustainable is a waste auditing organisation for the NSW EPA through the State Government panel contract for waste auditing services.

A team of trained sorting staff were used to collect and sort the material. All staff had WHS white cards, manual handling training, tetanus vaccinations, and Hepatitis A and B vaccinations. Staff were inducted by DADI at the site.

The audit managers had third party waste audit competency training from a third-party trainer. The waste audit competency training includes WHS awareness relevant to sorting and accurate identification of material types in each category.

2.5.4 Material weighing

The sorted material in each category for each sample was weighed. An accuracy of 10g was used for the weighing. Each weight was verified by a second person for accuracy.

2.5.5 Scale calibration

All scales were calibrated by a senior staff member each day before the commencement of the audit each day. Three weights (200g, 1kg and 5kg) were used. If scales failed to read within 1% of the dedicated weight (for example, a 1kg weight should read between 9.990 and 1.010kg), then the scale was removed and a conforming replacement used.

No scales failed the calibration checks and had been serviced by the supplier before the audit.

2.5.6 Removal of sorted material

The auditors placed the materials into a skip bin provided by DADI following sorting. The skip bin was emptied daily as required by DADI.

2.5.7 Weather conditions

Table 3 provides the weather conditions for the audit period. The weather was generally calm and dry with temperatures from 15 to 27 degrees Celsius. The temperature is higher than the average for late April. However, there is unlikely to be any unusual weather impacts on the audit results with no extreme data.

Table 3 - Weather data

Day	Date	Rainfall (24 hrs)	Temperature		Cloud cover (9am)	Wind (9am)
			9am	Maximum		
Monday	24/04/2017	0mm	17.9 °C	25.8 °C	0/8	SE, 4km/h
Tuesday	18/04/2017	0mm	17.5 °C	26.8 °C	0/8	Calm
Wednesday	19/04/2017	0mm	16.9 °C	24.3 °C	7/8	SW, 6km/h
Thursday	20/04/2017	0.2mm	17.9 °C	25.0 °C	1/8	S/SW, 4km/h
Friday	21/04/2017	0mm	15.7 °C	24.7 °C	4/8	Calm

Source: BOM, 2017, Station 67019, Prospect Reservoir.

2.6 Audit verification and monitoring

A dedicated management staff member was assigned the role of monitoring the audit.

This included factors such as:

- Monitoring WHS compliance and facilitating inductions and procedure management.
- Checking the correct sorting of material.
- Observing the correct sorting of materials.
- Witnessing the correct logging of weights.
- Conducting tests on equipment such as scales to ensure accuracy and trucks to ensure safety.
- Verifying correct data entry.

2.7 Work Health and Safety

To meet Work Health and Safety (WHS) obligations, an Occupational Health and Safety Management System (OHSMS) was developed for the audit. This included completing a safe work method statement and hazard assessment check process for both the collection and sorting tasks in the audit. All staff wore PPE as outlined in the Safe Work Method Statement (SWMS).

3 Results

This section provides the compositional results of the audit. The results are provided in this section for each day and a week average for:

- Detailed compositional results based on all categories of waste sorted.
- Combustible materials, based on the ORER Guidelines (ORER, 2001) with some additional data.
- Recyclable materials, based on fully commingled systems for higher order recovery.

The main confidence intervals are also supplied.

The audit involved sorting approximately 4.5 tonnes of CRW material across 5 days of generation, in 42 samples. The sample weights were characterised as shown below with the detailed weights per sample provided in the Appendix 1 raw data file:

- Minimum sample weight: 86.99kg.
- Maximum sample weight: 145.76kg.
- Average sample weight: 108.31kg.

The results for each day were based on the average of the percentage of each sample rather than the weight of each material in each sample. This averaging method has been used to factor every sample equally regardless of its mass. The mass of samples varied naturally based on the volume of the sample with the target being an estimated 100kg. Samples that were larger should not have more impact on the results, because they were larger due to natural variation in the volume selected.

The MRF may process varying amounts of waste in each hour throughout the day. The results are not factored against the actual generation tonnages.

3.1 Detailed compositional results

Table 4 provides the compositional results of samples from each day and an overall audited average based on the detailed sorting categories.

The data shows that the CRW materials in the week were mainly:

1. Untreated wood excluding MDF, 54.59% of the CRW.
2. Textiles/rags, 9.84% of the CRW.
3. Inert including non-hazardous building waste, 7.44% of the CRW.
4. Treated wood - CCA treated, 4.82% of the CRW.
5. Untreated wood - MDF board, 4.63% of the CRW.
6. Soft plastics (films), 3.12% of the CRW.
7. Other rigid plastics excluding EPS, 2.66% of the CRW, which is rigid plastic excluding containers.
8. Cardboard, 2.31% of the CRW.
9. Other metals, not containers, 1.50% of the CRW.
10. Composite plastics, 1.36% of the CRW.

The remaining material was 7.73% of the CRW.

Other rigid plastics excluding EPS would include PVC piping if it was in the samples, although there was not a high amount of PVC in the audit. PVC was not separately sorted, but is estimated to be less than 5% of the other rigid plastics excluding EPS category. This would amount to up to 0.13% of the overall CRW across the audit. Only a small number of examples were identified.

The waste was quite consistent by day. However, the main variations by day were:

1. Untreated wood excluding MDF on Tuesday, 62.67% of the CRW.
2. Textiles/rags on Tuesday, 4.43% of the CRW.
3. Inert including non-hazardous building waste on Monday and Tuesday, 11.82% and 3.13% of the CRW respectively.
4. Capet/underlay on Thursday, 3.48% of the CRW.
5. Asphalt on Thursday, 3.58% of the CRW.
6. Compounds (excluding plastic and metal) on Monday, 2.73% of the CRW which was a mattress and floor lino.

The CRW is a post-processing material. The waste is highly mixed because it has been stockpiled, loaded into the MRF, picked on a conveyor and transported out of the MRF technology down a chute. This processing assists to make the material more consistent than it would be between the incoming loads. Each incoming load is likely to have more variability than the CRW.

Table 4 - Results – all materials – detailed by day (% by weight)

Materials		Mon average	Tue average	Wed average	Thurs average	Fri average	Week average
Paper	Recyclable paper	0.65	1.07	0.99	0.42	0.87	0.78
	Disposable contaminated (soft) paper	0.75	0.28	0.74	0.21	1.01	0.62
	Cardboard	2.23	1.88	2.88	0.93	3.50	2.31
	Liquid paperboard	0.00	0.00	0.00	0.01	0.02	0.01
	Nappies	0.01	0.00	0.00	0.00	0.01	0.01
Wood/ timber	Untreated wood - MDF board	3.55	5.29	4.67	4.40	5.45	4.63
	Untreated wood - All other	47.90	62.67	55.20	59.02	50.86	54.59
	Treated wood - CCA treated	4.59	6.89	4.05	3.95	5.30	4.82
	Treated wood - lead painted	0.00	0.00	0.00	0.00	0.00	0.00
Plastic	Recyclable plastic containers excl. EPS	0.11	0.10	0.10	0.05	0.14	0.10
	Other rigid plastics excl. EPS	2.51	3.46	2.83	1.91	2.88	2.66
	EPS	0.06	0.11	0.02	0.04	0.18	0.08
	Soft (films) plastics	5.01	2.87	3.42	1.20	3.03	3.12
	Composite plastics	1.41	0.25	0.68	1.17	2.91	1.36
Metal (Ferrous and non-ferrous)	Recyclable metal containers	0.01	0.02	0.06	0.02	0.05	0.04
	Composite	0.50	0.00	0.09	0.33	0.64	0.33
	Other metals	1.38	2.14	1.15	1.19	1.87	1.50
Organic (not Wood/ timber)	Food/kitchen – vegetable <	0.01	0.00	0.00	0.00	0.01	0.01
	Food/kitchen – meat <	0.00	0.00	0.00	0.00	0.00	0.00
	Garden/ vegetation	1.72	0.67	1.50	1.13	1.24	1.30
	Textiles/rags	11.50	4.43	11.15	8.67	11.65	9.84
	Rubber	0.39	1.44	0.19	0.26	0.26	0.44
	Leather	0.00	0.35	0.16	0.09	0.00	0.10

< Food/kitchen waste was a negligible amount only registering to 1 decimal place rounded up. Food waste was only an incidental item from a worksite, like a lunch remnant, totalling 254g in the whole audit.

Table 4 (*cont.*) - Results – All materials – detailed by day (% by weight)

Materials		Mon average	Tue average	Wed average	Thurs average	Fri average	Week average
WEEE	E-waste	0.81	0.74	0.49	0.72	0.88	0.73
	Mobiles	0.00	0.00	0.00	0.00	0.00	0.00
	Toners	0.00	0.00	0.00	0.00	0.01	0.00
Hazardous	Medical	0.00	0.00	0.00	0.00	0.00	0.00
	Chemicals	0.00	0.00	0.00	0.00	0.01	0.00
	Paint	0.00	0.00	0.00	0.34	0.00	0.07
	Asbestos	0.00	0.00	0.00	0.00	0.00	0.00
	Batteries car	0.00	0.00	0.00	0.00	0.00	0.00
	Batteries other	0.00	0.00	0.00	0.00	0.00	0.00
	Other hazardous	0.01	0.00	0.00	0.00	0.00	0.00
Glass	Glass containers	0.00	0.00	0.00	0.00	0.00	0.00
	Glass other	0.06	0.21	0.11	0.08	0.10	0.10
Other (including Earth and Building Materials)	Insulation	0.28	0.00	0.00	0.00	0.00	0.06
	Carpet/underlay	0.00	0.00	0.00	3.48	0.24	0.80
	Compounds (excl. plastic and metal)	2.73	0.31	0.00	0.00	1.50	0.95
	Asphalt	0.00	1.69	0.00	3.59	0.89	1.20
	Inert incl. non-hazardous building waste	11.82	3.13	9.52	6.79	4.49	7.44
Total		**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

3.2 Combustible materials

3.2.1 Summary

Table 5 provides the summary categories for combustible materials including eligible was fuels in ORER (2001). Figure 1 provide the data graphically.

The data shows that 88.4% of the CRW materials were combustible:

- Combustible renewable, 64.3% of the CRW, which are eligible waste fuels in ORER (2001).
- Combustible non-renewable non-hazardous, 18.6% of the CRW, which are not eligible waste fuels in ORER (2001).
- Combustible non-renewable WEEE, 0.7% of the CRW, which are not eligible waste fuels in ORER (2001).
- Combustible hazardous, 4.9% of the CRW. Generally, these materials are not discussed in ORER (2001).

3.2.2 Detail

Table 6 provides the results for each sample source and an overall audited average based on the combustibility of the materials. This is based on previous audits conducted by DADI with some additions. Figures 2 and 3 provide the data graphically by week and days.

The combustible materials were mainly:

- Wood general, 54.59% of the CRW.
- Textiles, 9.84% of the CRW.
- Other plastic, 7.24% of the CRW.
- Wood treated, 4.82% of the CRW.

Non-combustible materials were mainly inert which included non-hazardous building waste.

Table 5 - Results – combustible materials – summary by day (% by weight)

Materials	Mon average	Tue average	Wed average	Thurs average	Fri average	Week average
Combustible						
Renewable non-hazardous (eligible waste fuels)	56.82	71.86	65.98	66.12	62.97	64.26
Non-renewable non-hazardous <	21.27	13.01	18.55	16.87	21.29	18.56
WEEE	0.81	0.74	0.49	0.72	0.89	0.73
Hazardous ^	4.60	6.89	4.05	4.29	5.31	4.89
Combustible sub-total	***83.50***	***92.50***	***89.07***	***88.00***	***90.46***	***88.44***
Not combustible						
Not combustible	16.50	7.50	10.93	12.00	9.54	11.56
Total	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

^ Treated wood, including CCA treated wood and lead painted wood, is not classified as renewable or eligible in this study. It is classified as combustible. The treatments used are non-renewable, although the wood component is renewable. This is a precautionary approach to avoid overestimating the renewable eligible waste fuels based on the guidelines, even though ORER (2001) treats all wood as renewable eligible.

> Non-renewable non-hazardous includes some materials that are not mentioned in ORER (2001), such as leather, that actually may be renewable. This is a precautionary approach to avoid overestimating the renewable eligible waste fuels based on the guidelines.

Figure 1 - Results – combustible materials – summary by day (% by weight)

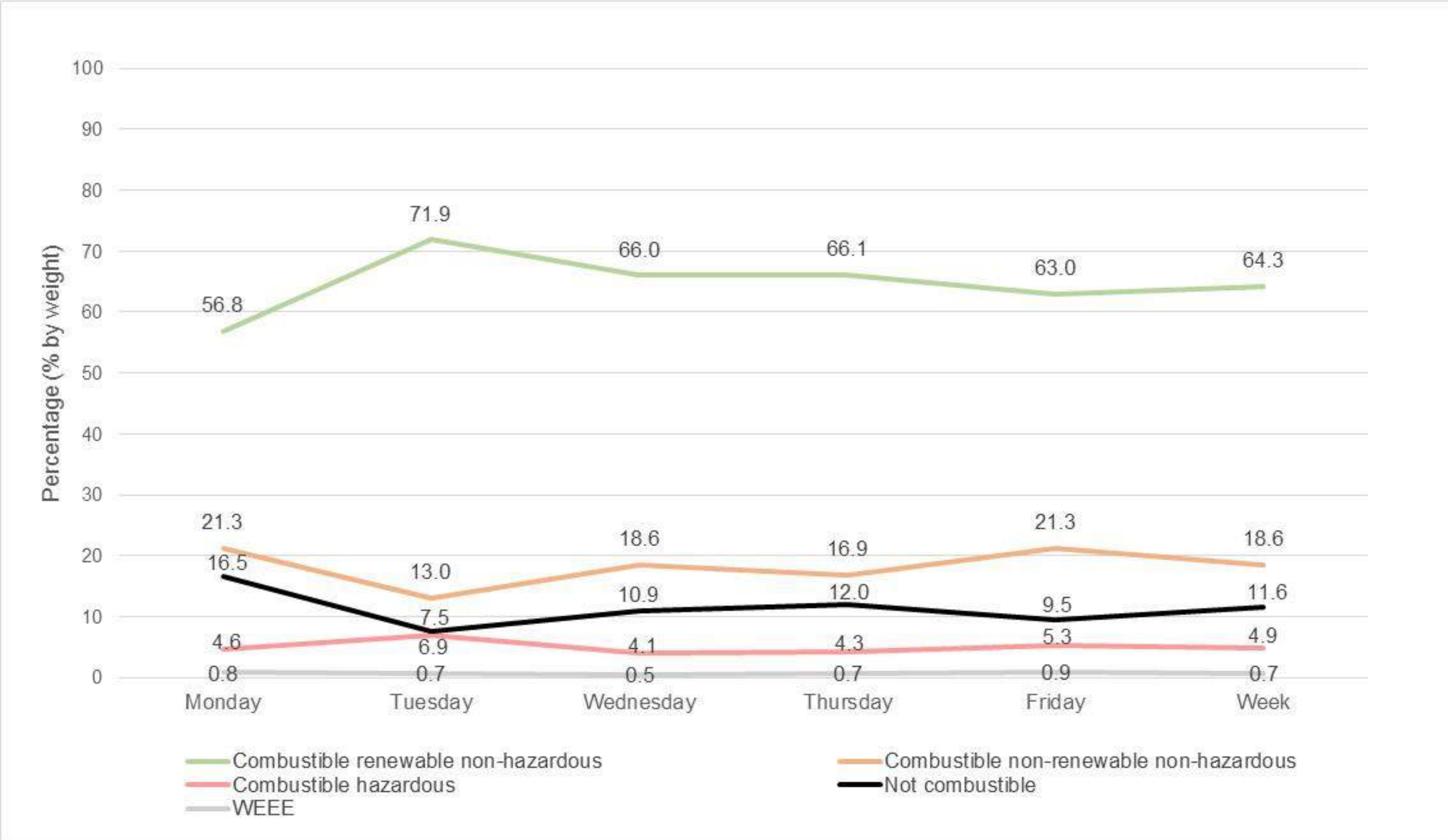
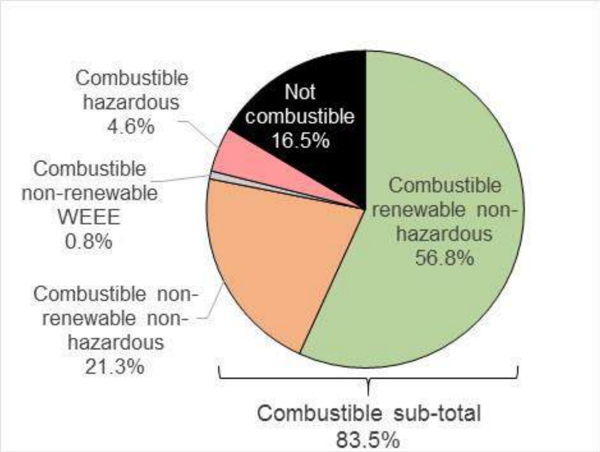
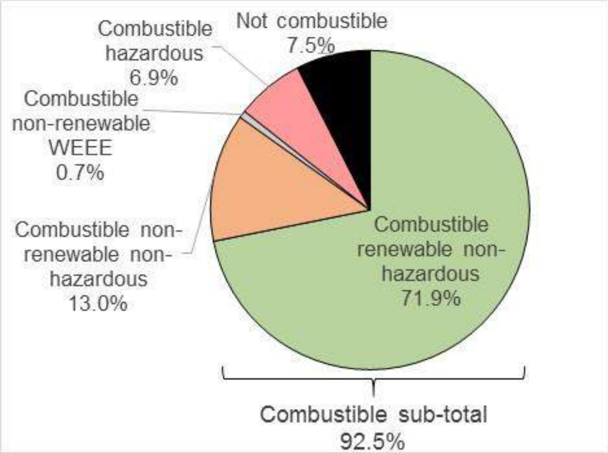


Figure 2 - Results – combustible materials – summary by day (% by weight)

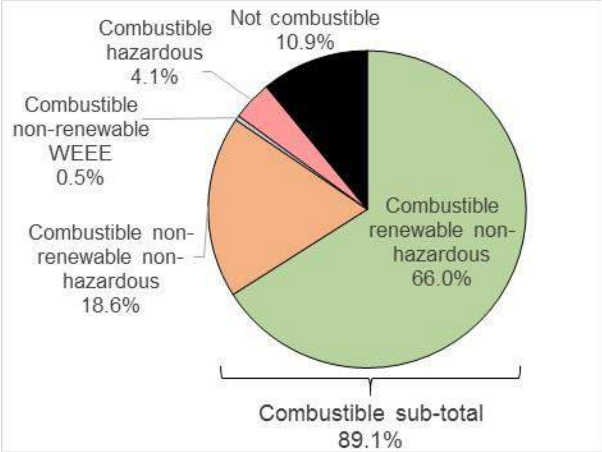
Monday average



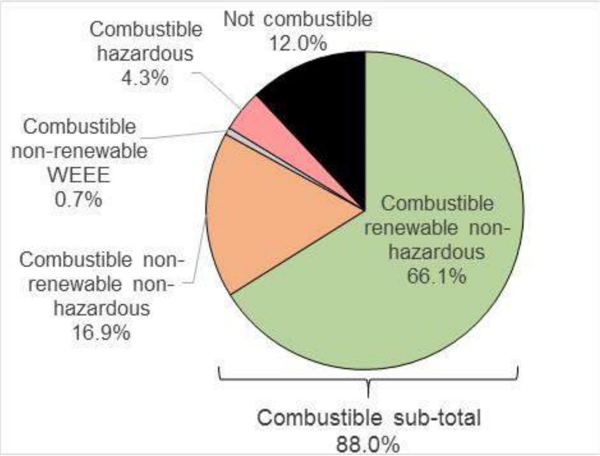
Tuesday average



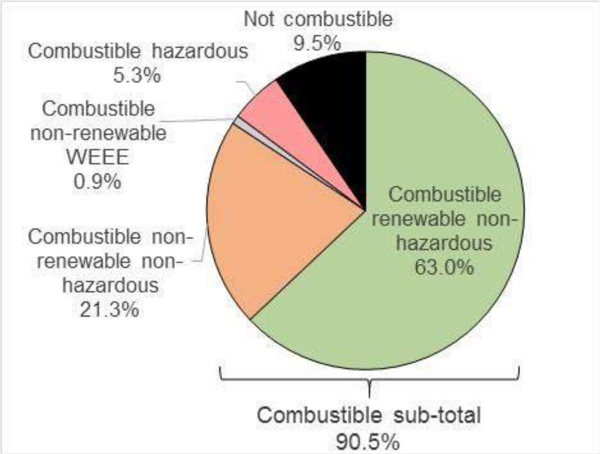
Wednesday average



Thursday average



Friday average



Week average

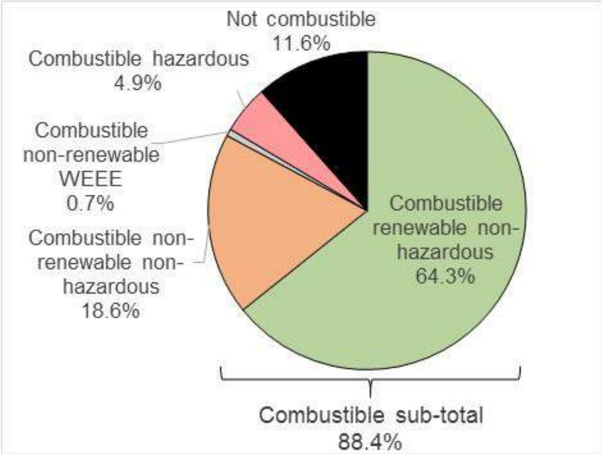


Table 6 - Results – combustible materials – detailed by day (% by weight)

Materials		Mon average	Tue average	Wed average	Thurs average	Fri average	Week average
Combustible renewable non-hazardous (eligible waste fuels)	Paper and cardboard	3.63	3.23	4.61	1.56	5.38	3.71
	LPB *(85% renewable)*	0.00	0.00	0.00	0.01	0.02	0.01
	Nappies *(90% renewable)*	0.01	0.00	0.00	0.00	0.01	0.01
	Wood general	47.90	62.67	55.20	59.02	50.86	54.59
	Wood MDF	3.55	5.29	4.67	4.4	5.45	4.63
	Food and kitchen	0.01	0.00	0.00	0.00	0.01	0.01
	Garden and vegetation	1.72	0.67	1.50	1.13	1.24	1.30
Combustible non-renewable non-hazardous	Other plastic (not polystyrene)	9.04	6.68	7.03	4.33	8.96	7.24
	Polystyrene	0.06	0.11	0.02	0.04	0.18	0.08
	Textiles	11.50	4.43	11.15	8.67	11.65	9.84
	Rubber	0.39	1.44	0.19	0.26	0.26	0.44
	Leather	0.00	0.35	0.16	0.09	0.00	0.10
	WEEE	0.81	0.74	0.49	0.72	0.89	0.73
	Insulation	0.28	0.00	0.00	0.00	0.00	0.06
	Carpet/underlay	0.00	0.00	0.00	3.48	0.24	0.80
Combustible hazardous	Wood treated ^	4.59	6.89	4.05	3.95	5.30	4.82
	Other hazardous <	0.01	0.00	0.00	0.34	0.01	0.07
Not combustible	Metal	1.89	2.16	1.30	1.54	2.56	1.87
	Glass	0.06	0.21	0.11	0.08	0.10	0.10
	Asbestos	0.00	0.00	0.00	0.00	0.00	0.00
	Asphalt	0.00	1.69	0.00	3.59	0.89	1.20
	Other compounds *	2.73	0.31	0.00	0.00	1.50	0.95
	Inert incl. non-hazardous building waste	11.82	3.13	9.52	6.79	4.49	7.44
Total		**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

^ Treated wood is not classified as renewable in this study. It is classified as combustible. The treatments used are non-renewable, although the wood component is renewable.

< The category of “Other hazardous” in combustible waste includes the detailed audit categories of Medical, Chemicals, Paint, Batteries car, Batteries other and Other hazardous. Asbestos was included in not combustible waste. While the category includes these materials, no car batteries were in the samples audited, as shown in Table 4. The MRF removes car batteries within the process before the CRW is generated. There was also no medical waste and no batteries other, as shown in Table 4.

* Other compounds exclude composite plastic, composite metal and e-waste.

Figure 3 - Results – combustible materials – detailed by week (% by weight)

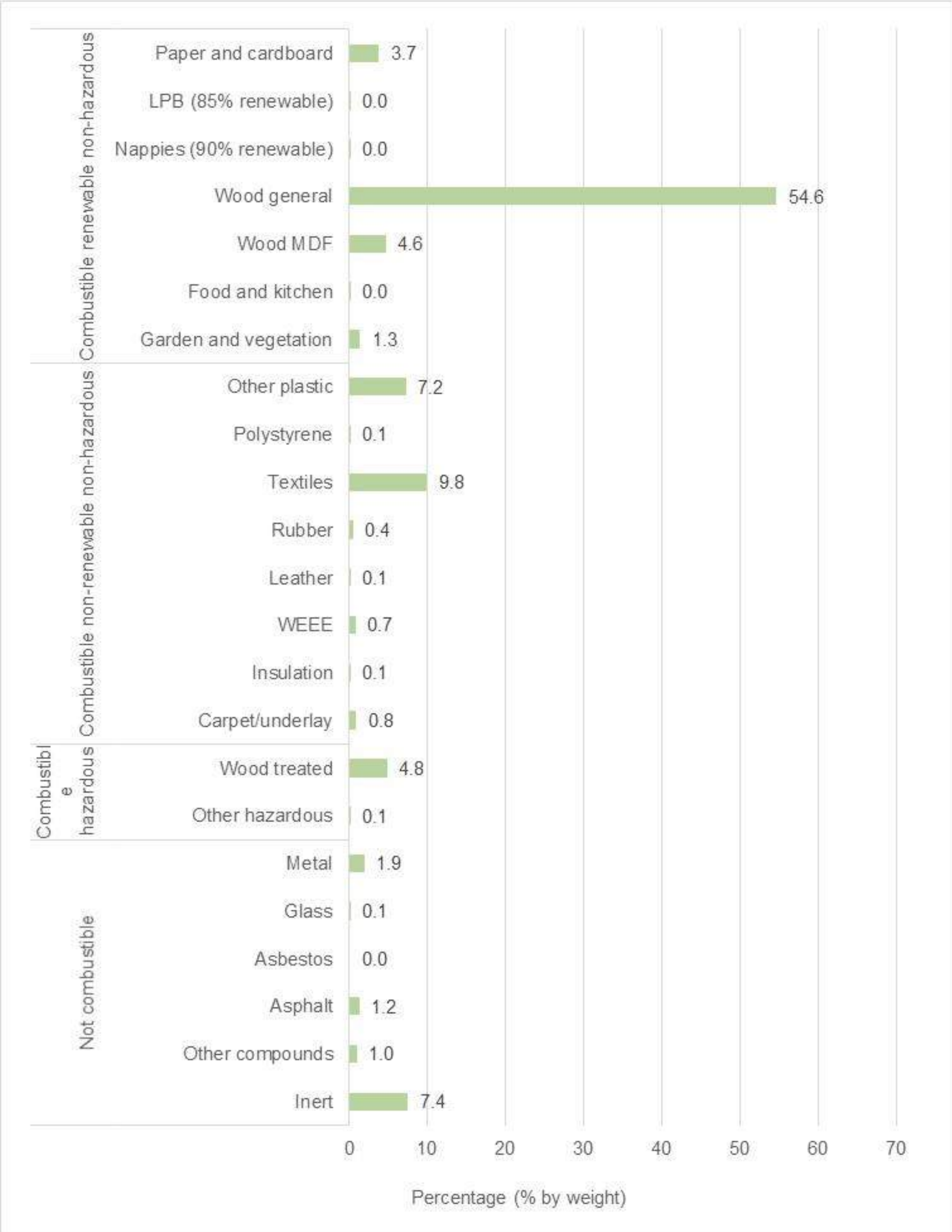
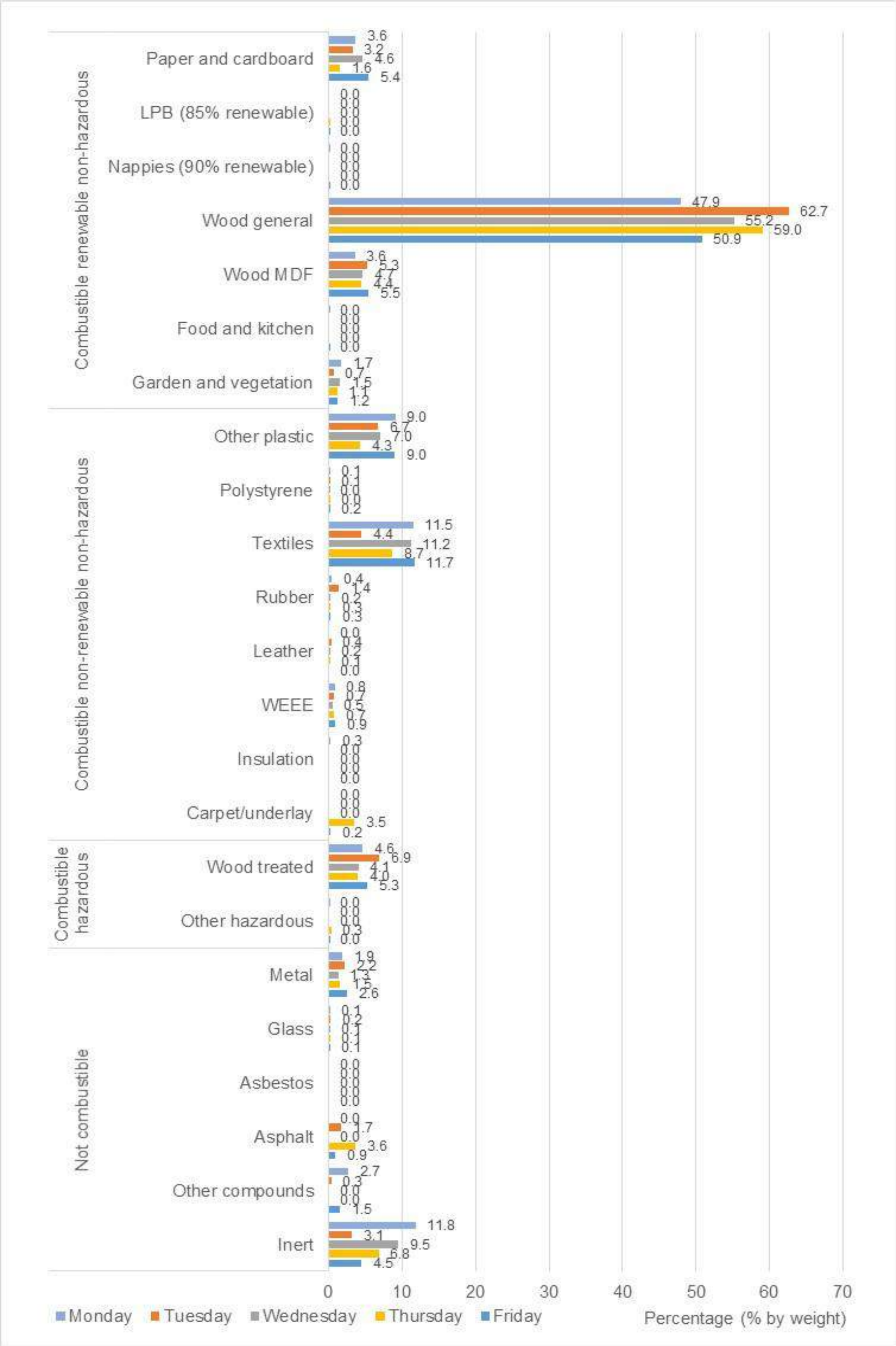


Figure 4 - Results – combustible materials – detailed by day (% by weight)



3.3 Recyclable materials

This section provides the amount and composition of recyclable materials in CRW, based on fully commingled materials like paper, cardboard and containers. Table 7 provides the data.

The data shows that there was a low level of these recyclable materials in the CRW. The CRW was 3.24% recyclables, which was mainly recyclable paper and cardboard at 3.09% of the CRW. Most of this paper and cardboard was soiled to some extent and generally not suited a MRF recovery process by the time it was audited.

The energy from waste policy preferences higher order recycling over combustion. Based on the audit week, there is a not a substantial opportunity for further recovery of recyclables from the CRW.

The CRW is mainly timber which presents in a form that is not reusable, probably not avoidable and not economically viable to further separate which is why it is currently being landfilled.

Table 7 - Results – recyclable materials (% by weight)

Materials	Mon average	Tue average	Wed average	Thurs average	Fri average	Week average
Recyclable paper and cardboard	2.88	2.95	3.87	1.35	4.37	3.09
Recyclable plastic containers	0.11	0.10	0.10	0.05	0.14	0.10
Recyclable metal containers	0.01	0.02	0.06	0.02	0.05	0.04
Recyclable glass containers	0.00	0.00	0.00	0.00	0.00	0.00
Recyclable liquid paperboard	0.00	0.00	0.00	0.01	0.02	0.01
Sub-total recyclables	***3.00***	***3.07***	***4.03***	***1.43***	***4.58***	***3.24***
Not recyclables	97.00	96.93	95.97	98.57	95.42	96.76
Total	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

3.4 Confidence intervals

Table 8 provides the confidence intervals at a 90% confidence level for the main target materials. The audit involved sorting approximately 4.5 tonnes of CRW material across 5 days of generation in 42 samples.

The hazardous category, which is of main concern to NSW EPA has the lowest confidence interval of 5.5%, with a maximum of 10.4% hazardous material at the upper confidence interval value at 90% certainty. The mean value is 4.9%.

The renewable combustible materials (eligible waste fuels) have a larger confidence interval of up to 12.2%, but even at the lower confidence interval value at 90% certainty is still over half (52.1%) of the material is combustible, renewable, non-hazardous material. The mean value is 64.3%. Therefore, the waste stream was highly eligible based on the material composition audited.

Combustible materials in total were at least 80.3% of the material at the lower confidence interval value at 90% certainty. The mean value is 88.4%. Therefore, the waste was highly combustible based on the material composition audited.

Table 8 - Results – confidence intervals

Materials	Confidence interval	Mean percentage	Lower value	Upper value
Combustible materials				
Renewable non-hazardous (eligible waste fuels)	+/- 12.2%	64.3	52.1	76.5
Non-renewable non-hazardous	+/- 9.9%	18.6	8.7	28.5
Non-renewable WEEE	+/-2.2%	0.7	0.0	2.9
Hazardous	+/- 5.5%	4.9	0.0	10.4
Combustible sub-total	***+/- 8.1%***	***88.4***	***80.3***	***96.5***
Non-combustible materials				
Not combustible	+/- 8.1%	11.6	3.5	19.7
Recyclable materials – paper, cardboard and containers				
Recyclable materials	+/- 4.5%	3.2	0.0	7.7

4 Comments

The CRW material, the residual of waste delivered as mixed residual waste, is currently being sent to landfill after a substantial post-collection recovery effort in the onsite MRF.

A robust audit sampling regime was implemented covering the CRW generation cycle as the output from the MRF during the MRF operating hours. The audit data represents the audit week.

These audit results show the CRW has:

- A high level of combustible material, potentially suited to an energy from waste facility.
- A high level of combustible material that were eligible waste fuels based on ORER (2001).
- A low level of recyclables that could be processed in higher order recycling initiatives like fully commingled systems.
- A low level of hazardous waste, although there is some limited amount of e-waste and paint. These materials could be managed through onsite removal or through safe combustion in the processing technology option.
- No visually identifiable asbestos in the audit week in the samples audited, which is likely to be partly be due to the asbestos detection gun.
- No visually identifiable lead painted wood waste in the audit week in the samples audited.

The presence of asbestos, lead painted wood and other hazardous compounds should be tested for in a laboratory. The moisture and chemical characteristics of the waste were not measured in this audit.

The CRW is a post-processing material. The waste is highly mixed because it has been stockpiled, loaded into the MRF, picked on a conveyor and transported out of the MRF technology down a chute. This processing assists to make the material more consistent than it would be between the incoming loads. Each incoming load is likely to have more variability than the CRW.

The processing technology should be assessed for its ability to handle the waste composition.

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Appendix 1

This Appendix provides a separate raw data file in Excel.

Appendix 2

This Appendix provides the aggregation of the sorting categories for reporting.

Table 9 - Aggregation of sorting categories for combustibility and recyclability

Summary ^	Sorting category and number		Combustibility	Recyclability
Paper	1	Recyclable paper	Yes	Yes
	2	Disposable contaminated (soft) paper	Yes	No
	3	Cardboard	Yes	Yes
	4	Liquid paperboard	Yes	Yes
	5	Nappies	Yes	No
Wood/timber	6	Untreated wood – MDF board	Yes	No
	7	Untreated wood – All other	Yes	No
	8	Treated wood – CCA treated	Yes	No
	9	Treated wood – lead painted	Yes	No
Plastic	10	Recyclable plastic containers excl. EPS	Yes	No
	11	Other rigid plastics excl. EPS	Yes	Yes
	12	EPS	Yes	No
	13	Soft (films) plastics	Yes	No
	14	Composite plastics	Yes	No
Metal (Ferrous and non-ferrous()	15	Recyclable metal containers	No	Yes
	16	Composite	No	No
	17	Other metals	No	No
Organic (not Wood/ timber)	18	Food/kitchen – vegetable	Yes	No
	19	Food/kitchen – meat	Yes	No
	20	Garden/ vegetation	Yes	No
	21	Textiles/rags	Yes	No
	22	Rubber	Yes	No
	23	Leather	Yes	No
WEEE	24	E-waste	Yes <	No
	25	Mobiles	Yes	No
	26	Toners	Yes	No
Hazardous	27	Medical	Yes	No
	28	Chemicals	Yes	No
	29	Paint	Yes	No
	30	Asbestos	No	No
	31	Batteries car	Yes	No
	32	Batteries other	Yes	No
	33	Other hazardous	Yes	No
Glass	34	Glass containers	No	Yes
	35	Glass other	No	No
Other (including Earth and Building Materials)	36	Insulation	Yes	No
	37	Carpet/underlay	Yes	No
	38	Compounds (excl. composite plastic, composite metal, e-waste)	No	No
	39	Asphalt	No	No
	40	Inert incl. non-hazardous building waste	No	No

< These materials are classified as combustible in ORER (2001). In practice, a fraction of the material may not combust, such as metal and glass components of e-waste.

eC Sustainable

REPORT PRODUCED FOR:
Dial A Dump Industries

MRF Residual Waste:
Composition Audit

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List of abbreviations

AS	Australian Standard
C&I	Commercial and Industrial
EPL	Environmental Protection License
EPS	Expanded Polystyrene
HAC	Hazard Assessment Check
NSW	New South Wales
MRF	Material Recovery Facility
OHSMS	Occupational Health and Safety Management System
LPB	Liquid Paperboard
PE	Polyethylene
PET	Polyethylene Terephthalate
PP	Polypropylene
PPE	Personal Protective Equipment
PS	Polystyrene
PVC	Polyvinyl Chloride
SWMS	Safe Work Method Statement
WEEE	Waste Electronic and Electrical Equipment
WHS	Work Health and Safety

1 Introduction

1.1 Background

The Next Generation NSW (TNG) is proposing to develop an energy from waste generation facility at Genesis Zero, a Dial-a-Dump Industries (DADI) waste facility at Eastern Creek. TNG is seeking planning approval for the facility.

The Genesis Zero site includes a landfill and a Materials Recovery Facility (MRF) and is licensed with Environmental Protection License (EPL) 20121 to receive general solid waste as defined in the Protection of the Environment Operations Act, *NSW*, 1997 (POEO Act).

The facility is considering using MRF Residuals, the materials removed from recycling in a Material Recovery Facility (MRF) process, as part of the input for the energy from waste generation facility. MRF Residuals include contaminated recycling, bagged materials and other materials rejected from the MRF.

The MRF Residuals would be sourced from a third party dry recycling MRF, Visy Recycling (Visy) at Smithfield. Visy accepts residential and commercial dry recycling, such as paper, cardboard and containers. Approximately 400 tonnes of MRF Residuals is available per day at the time that audit was conducted. The MRF Residuals are currently landfilled at the DADI site.

MRF Residuals in this study does not include any by-products of the waste processed through the onsite MRF at DADI.

In order to satisfy the NSW Environment Protection Authority (EPA) energy from waste policy requirements, NSW EPA requires some additional data to assess the application for approval as part of the planning process.

The NSW EPA, and its consultants, have raised a range of concerns. Notably these relate to:

- The quantity of the different constituent streams of waste available to qualify as eligible waste fuels;
- The content of certain elements of the eligible waste fuel streams;
- The procedural measures which will be in place to ensure consistency of that content.

This audit seeks to provide information that will assist in handling and mitigating these concerns.

1.2 NSW energy from waste policy

The NSW Energy from Waste Policy (NSW EPA, 2015) sets out the considerations and criteria that apply to recovering energy from waste in NSW. It ensures this energy recovery:

- Poses minimal risk of harm to human health and the environment.
- Will not undermine higher order waste management options, such as avoidance, re-use or recycling.

Under the policy, 'eligible waste fuels', are low risk materials able to be considered for use as a fuel due to their origin, low levels of contaminants and consistency over time.

1.3 Audit objectives

DADI engaged EC Sustainable to conduct an independent audit of the MRF Residuals. The objectives were to determine the composition of the MRF Residuals over a one week period using a representative sampling regime. The MRF Residuals composition data required include:

- Combustible and eligible waste fuel materials that will provide energy.
- Hazardous materials that may require management to prevent them from entering the energy generation process.
- Recyclable materials that could be otherwise processed as a higher order waste management option.

This report provides the results of the audit.

1.4 Document structure

This report provides:

- Section 2: the methods used to obtain the data
- Section 3: the results of the waste audit.
- Section 4: comments.

2 Project methods

2.1 What is a waste audit?

A waste audit is an examination of a particular waste stream including the waste materials within that stream. It includes using classification methods to determine the physical waste stream composition, measurement of the size of the waste stream and verification of other statistics related to the waste stream for planning and decision-making purposes.

2.2 Guidelines.

The audit followed applicable parts of guidelines, such as from NSW EPA in 2008 and 2010 and Office of Renewable Energy Regulator (2001).

2.3 Sample frame

The audit sample frame was designed to comprehensively cover a full week of MRF Residuals deliveries from Visy at Smithfield. The sampling included selecting two samples per load delivered from Visy each day for one week. However, the first sample, the pilot sample, had only one sample as the bulk density and sample size by volume was evaluated.

Table 1 provides the audit sample frame.

Table 1 - Sample frame

Day	Date	Number of samples	Sample source times
Monday	01/05/2017	6	8:10AM, 8:10AM, 11:00AM, 11:05AM, 13:00PM, 13:00PM
Tuesday	02/05/2017	6	9:00AM, 9:00AM, 12:00PM, 12:00PM, 14:30PM, 14:30PM
Wednesday	26/04/2017	7	6:30AM, 9:10AM, 9:10AM, 12:00PM, 12:00PM, 15:00PM, 15:00PM
Thursday	27/04/2017	8	6:30AM, 6:35AM, 9:00AM, 9:00AM, 12:00PM, 12:00PM, 14:00PM, 14:00PM
Friday	28/04/2017	4	11:45AM, 11:45AM, 14:30PM, 14:30PM
Saturday	29/04/2017	No MRF Residuals was delivered	Facility open, but MRF not running
Sunday	30/04/2017		Facility closed
Total	**-**	**31**	**-**

2.4 Sampling methods

A target sample size of 100kg was used for the audit. This was designed to maximise the number of samples while ensuring each sample was of an adequate size based on the weight of single items in the sample. The single item weights in each sample are low with almost all material less than 2kg and most items less than 1kg. The sample weights did very depending on the bulk density which was affected by the composition of the sample, particularly the amount of glass other which was mainly glass fines.

The collection of approximately 100kg for each sample was conducted by:

- Target load arrived at the site and proceeded to the landfill face.
- Site loader took 4 bucket loads from around one end of the delivered load spaced apart and placed in a pile.
- Site loader to mixed and coned and quartered the pile.
- Site loader delivered 100kg from one quarter to EC Sustainable, sampling approx. 6 inches from the ground to avoid any site soil in the sample.
- Site loader to repeated for the other end of the load for the second sample from that load.

The samples were delivered to EC Sustainable in bulka bags by a forklift. The samples were sorted on the day of sampling.

ORER (2001) discussed visual audits of C&I waste, considering individual incoming loads not an on-going flow of waste after some processing. The MRF Residuals is a post-processing material and not an incoming material and the waste is highly mixed and in small particle sizes. Visual auditing methods would not be appropriate for accurate measurements. Physical weight based auditing provides a higher order method of accurate data collection compared to visual audits.

2.5 Sorting and data collection

2.5.1 Location

A safe undercover sorting site was provided by DADI adjacent to the MRF.

2.5.2 Sorting categories

Table 2 provides the sorting categories used in the audit. These categories are based on applicable components of relevant guidelines such as NSW EPA (2008 and 2010) and ORER (2001).

Table 2 - Sorting categories

Summary ^	Sorting category and number		ORER Guideline (2001) category	
			Name	**Renewable eligible**
Paper	1	Recyclable paper	Newspaper, magazines, mixed paper	Yes
	2	Disposable contaminated (soft) paper	Paper composite	Yes
	3	Cardboard	Cardboard	Yes
	4	Liquid paperboard (LPB)	Liquid paperboard	Yes 85%
	5	Nappies	Disposable nappies	Yes 90%
Wood/timber	6	Untreated wood – MDF board	Wood	Yes
	7	Untreated wood – All other		
	8	Treated wood – CCA treated		Potentially >
	9	Treated wood – lead painted		
Plastic	10	Recyclable plastic containers excl. EPS	Mixed plastics, PET, PE, PVC, PP, PS not EPS	No
	11	Other rigid plastics excl. EPS		
	12	Expanded Polystyrene (EPS)	Polystyrene (PS)	No
	13	Soft (films) plastics	Plastic film	No
	14	Composite plastics	Plastic composite	No
Metal (Ferrous and non-ferrous)	15	Recyclable metal containers	Not required	No
	16	Composite	Not required	No
	17	Other metals	Not required	No
Organic (not Wood/ timber)	18	Food/kitchen – vegetable	Kitchen organics - veg	Yes
	19	Food/kitchen – meat	Kitchen organics - meat	Yes
	20	Garden/ vegetation	Garden organics	Yes
	21	Textiles/rags	Textiles	No *
	22	Rubber	Rubber	No
	23	Leather	Not required	Potentially
WEEE	24	E-waste	Compounds (radios etc)	No
	25	Mobiles	Mobile phones	No
	26	Toners	Toner cartridges	No
Hazardous	27	Medical	Not required – additional potential combustibles, although hazardous	No
	28	Chemicals		
	29	Paint		
	30	Asbestos		
	31	Batteries car (vehicles)		
	32	Batteries other		
	33	Other hazardous		
Glass	34	Glass containers	Not required	No
	35	Glass other	Not required	No
Other (including Earth and Building Materials)	36	Insulation	Not required – additional potential combustibles	No
	37	Carpet/underlay		No
	38	Compounds (excl. composite plastic, composite metal, e-waste)	Compounds (radios etc)	No
	39	Asphalt	Not required	No
	40	Inert incl. non-hazardous building waste	Not required	No

^ Generally based on NSW EPA (2008 and 2010), with more detail on the C&D and wood materials due to the amount of that material in the MRF Residuals and less detail on materials not required in ORER (2001).

> Assumed not eligible in ORER (2001) as a precautionary approach due to the treatments, although all wood is eligible.

* Not from a consistent source of natural fibre based on the audit and therefore not eligible in ORER (2001).

The samples were sorted into two size fractions, with the whole sample sorted. This was for additional information in the raw data. This report analyses the whole sample results. The size fractions were: oversize (>25mm); and fines (<=25mm).

2.5.3 Sorting competency

EC Sustainable is a waste auditing organisation for the NSW EPA through the State Government panel contract for waste auditing services.

A team of trained sorting staff were used to collect and sort the material. All staff had WHS white cards, manual handling training, tetanus vaccinations, and Hepatitis A and B vaccinations. Staff were inducted by DADI at the site.

The audit managers had third party waste audit competency training from a third-party trainer. The waste audit competency training includes WHS awareness relevant to sorting and accurate identification of material types in each category.

2.5.4 Material weighing

The sorted material in each category for each sample was weighed. An accuracy of 10g was used for the weighing. Each weight was verified by a second person for accuracy.

2.5.5 Scale calibration

All scales were calibrated by a senior staff member each day before the commencement of the audit each day. Three weights (200g, 1kg and 5kg) were used. If scales failed to read within 1% of the dedicated weight (for example, a 1kg weight should read between 9.990 and 1.010kg), then the scale was removed and a conforming replacement used.

No scales failed the calibration checks and had been serviced by the supplier before the audit.

2.5.6 Removal of sorted material

The auditors placed the materials into a skip bin provided by DADI following sorting. The skip bin was emptied daily as required by DADI.

2.5.7 Weather conditions

Table 3 provides the weather conditions for the audit period. The weather was generally calm and dry with temperatures from 14 to 24 degrees Celsius. The temperature is higher than the average for late April and early May. However, there is unlikely to be any unusual weather impacts on the audit results with no extreme data.

Table 3 - Weather data

Day	Date	Rainfall (24 hrs)	Temperature		Cloud cover (9am)	Wind (9am)
			9am	Maximum		
Monday	01/05/2017	0mm	15.2 ºC	24.3 ºC	4/8	N, 4km/h
Tuesday	02/05/2017	0mm	17.8 ºC	23.7 ºC	4/8	Calm
Wednesday	26/04/2017	0mm	20.4 ºC	23.8 ºC	0/8	N, 2km/h
Thursday	27/04/2017	0.6mm	14.2 ºC	20.1 ºC	1/8	Calm
Friday	28/04/2017	0mm	14.3 ºC	20.5 ºC	0/8	W, 7km/h

Source: BOM, 2017, Station 67019, Prospect Reservoir.

2.6 Audit verification and monitoring

A dedicated management staff member was assigned the role of monitoring the audit.

This included factors such as:

- Monitoring WHS compliance and facilitating inductions and procedure management.
- Checking the correct sorting of material.
- Observing the correct sorting of materials.
- Witnessing the correct logging of weights.
- Conducting tests on equipment such as scales to ensure accuracy and trucks to ensure safety.
- Verifying correct data entry.

2.7 Work Health and Safety

To meet Work Health and Safety (WHS) obligations, an Occupational Health and Safety Management System (OHSMS) was developed for the audit. This included completing a safe work method statement and hazard assessment check process for both the collection and sorting tasks in the audit. All staff wore PPE as outlined in the Safe Work Method Statement (SWMS).

3 Results

This section provides the compositional results of the audit. The results are provided in this section for each day and a week average for:

- Detailed compositional results based on all categories of waste sorted.
- Combustible materials, based on the ORER Guidelines (ORER, 2001) with some additional data.
- Recyclable materials, based on fully commingled systems for higher order recovery.

The main confidence intervals are also supplied.

The audit involved sorting approximately 3.7 tonnes of MRF Residuals across 5 days of generation, in 31 samples. The sample weights were characterised as shown below with the detailed weights per sample provided in the Appendix 1 raw data file:

- Minimum sample weight: 79.10kg.
- Maximum sample weight: 179.55kg.
- Average sample weight: 119.36kg.

The results for each day were based on the average of the percentage of each sample rather than the weight of each material in each sample. This averaging method has been used to factor every sample equally regardless of its mass. The mass of samples varied naturally based on the volume of the sample with the target being an estimated 100kg. Samples that were larger should not have more impact on the results, because they were larger due to natural variation in the volume selected.

3.1 Detailed compositional results

Table 4 provides the compositional results of samples from each day and an overall audited average based on the detailed sorting categories. The MRF Residuals in the week were mainly:

1. Textiles/rags, 26.05% of the MRF Residuals.
2. Soft (films) plastics, 14.93% of the MRF Residuals.
3. Cardboard, 6.78% of the MRF Residuals.
4. Recyclable paper, 6.56% of the MRF Residuals.
5. Other rigid plastics excl. EPS, 6.31% of the MRF Residuals.
6. Disposable/contaminated (soft) paper, 6.06% of the MRF Residuals.
7. Glass other, 4.1% of the MRF Residuals, which was mainly glass fines.
8. Composite plastics, 4% of the MRF Residuals.

9. E-waste, 3.69% of the MRF Residuals.
10. Inert including non-hazardous building waste, 2.52% of the MRF Residuals.

The remaining material was 19.00% of the MRF Residuals.

In regards to PVC, they was a very low amount. PVC was not separately sorted, but is estimated as follows:

- Recyclable plastic containers are generally only 1% PVC based on audits conducted by EC Sustainable (EC Sustainable 2011). There was only 2.15% recyclable plastic containers in the audit, and therefore, it is estimated that recyclable plastic PVC containers may be 0.22% of the overall MRF Residuals across the audit.
- Other rigid plastics excluding EPS could include PVC piping if it was in the samples, although there was not a high amount of PVC piping in the audit. to be less than 2% of the other rigid plastics excluding EPS category. This would amount to up to 0.12% of the overall MRF Residuals across the audit.

The waste was quite consistent by day. However, the main variations by day were:

1. Glass other on Thursday, 12.91% of the MRF Residuals.
2. Compounds (excluding plastic and metal) on Wednesday, 6.67% of the MRF Residuals which was a boxing bag.
3. Soft (films) plastics on Monday and Wednesday, 19.48% and 11.38% of the MRF Residuals respectively.
4. Textiles/rags on Tuesday and Thursday, 33.12% and 17.73% of the MRF Residuals respectively.
5. Disposable/contaminated (soft) paper on Tuesday and Friday, 9.01% and 2.31% of the MRF Residuals.
6. Composite plastics on Wednesday, 6.57% of the MRF Residuals.

The MRF Residuals is a post-processing material. The waste is highly mixed because it has been stockpiled, loaded into the MRF, picked on a conveyor and transported out of the MRF technology in trucks. It was then tipped, sampled and mixed for audit. This processing assists to make the material more consistent than it would have been in the incoming loads at the MRF.

The main difference in samples appeared to the delivery of glass fines (glass other), which was clumped in some samples. It may be that glass fines are added into loads at the MRF in batches to spread the material weight across loads. It may be feasible and desirable for DADI to request the MRF to deliver loads with no glass fines since glass is not combustible.

Table 4 - Results – all materials – detailed by day (% by weight)

Materials		Mon average	Tue average	Wed average	Thurs average	Fri average	Week average
Paper	Recyclable paper	8.59	5.75	5.20	7.07	6.11	6.56
	Disposable contaminated (soft) paper	5.14	9.01	6.01	6.45	2.31	6.06
	Cardboard	6.78	6.09	7.90	6.61	6.20	6.78
	Liquid paperboard	1.14	0.22	0.12	0.15	0.12	0.35
	Nappies	0.65	2.14	1.65	1.31	1.33	1.42
Wood/ timber	Untreated wood - MDF board	0.66	0.09	0.16	0.93	0.62	0.50
	Untreated wood - All other	1.58	2.12	2.75	2.65	1.50	2.21
	Treated wood - CCA treated	0.34	0.09	0.23	0.40	0.16	0.26
	Treated wood - lead painted	0.00	0.00	0.00	0.00	0.00	0.00
Plastic	Recyclable plastic containers excl. EPS	2.65	2.94	1.10	2.28	1.75	2.15
	Other rigid plastics excl. EPS	4.45	3.57	8.46	7.65	6.73	6.31
	EPS	0.88	0.43	0.34	0.63	0.51	0.56
	Soft (films) plastics	19.48	15.64	11.38	13.15	16.79	14.93
	Composite plastics	1.63	2.86	6.57	4.53	3.73	4.00
Metal (Ferrous and non-ferrous)	Recyclable metal containers	0.71	0.76	0.46	0.61	0.99	0.67
	Composite	0.87	0.85	3.11	0.91	1.27	1.43
	Other metals	2.60	2.13	2.47	2.35	2.19	2.36
Organic (not Wood/ timber)	Food/kitchen – vegetable <	1.22	2.81	1.60	1.90	3.69	2.11
	Food/kitchen – meat <	0.11	0.24	0.14	0.17	0.32	0.18
	Garden/ vegetation	0.76	0.30	0.83	2.13	0.65	1.03
	Textiles/rags	28.78	33.12	23.53	17.73	32.36	26.05
	Rubber	1.45	0.49	1.00	0.93	0.21	0.87
	Leather	0.38	0.79	0.66	1.17	0.61	0.76

< Food/kitchen waste was 2.29% of the MRF Residuals, totalling 84.79kg in the whole audit. This is a low amount. At the MRF this material may have been located within plastic bags with contents and containerised food that was removed as contamination by the MRF. Some of the food was located within sealed containers. Due to this, the split between vegetable and meat/dairy was estimated through a general sub-sort and applied across the dataset.

Table 4 (*cont.*) - Results – All materials – detailed by day (% by weight)

Materials		Mon average	Tue average	Wed average	Thurs average	Fri average	Week average
WEEE	E-waste	4.57	2.13	3.56	3.33	5.63	3.69
	Mobiles	0.00	0.00	0.00	0.00	0.00	0.00
	Toners	0.00	0.00	0.10	0.00	0.06	0.03
Hazardous	Medical	0.03	0.07	0.00	0.04	0.00	0.03
	Chemicals	0.02	0.00	0.04	0.00	0.01	0.01
	Paint	0.00	0.00	0.00	0.00	0.00	0.00
	Asbestos	0.00	0.00	0.00	0.00	0.00	0.00
	Batteries car	0.00	0.00	0.00	0.00	0.00	0.00
	Batteries other	0.00	0.00	0.00	0.00	0.01	0.00
	Other hazardous	0.00	0.00	0.01	0.00	0.00	0.00
Glass	Glass containers	0.08	0.32	0.00	0.00	0.00	0.08
	Glass other	1.19	1.52	0.91	12.91	0.33	4.10
Other (including Earth and Building Materials)	Insulation	0.00	0.00	0.00	0.02	0.00	0.00
	Carpet/underlay	0.00	0.00	0.00	0.00	0.00	0.00
	Compounds (excl. plastic and metal)	0.00	0.24	6.67	0.92	1.55	1.99
	Asphalt	0.00	0.00	0.00	0.00	0.00	0.00
	Inert incl. non-hazardous building waste	3.26	3.28	3.04	1.07	2.26	2.52
Total		**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

3.2 Combustible materials

3.2.1 Summary

Table 5 provides the summary categories for combustible materials including eligible was fuels in ORER (2001). Figure 1 provide the data graphically.

The data shows that 86.9% of the MRF Residuals materials were combustible:

- Combustible renewable, 27.2% of the MRF Residuals, which are eligible waste fuels in ORER (2001).
- Combustible non-renewable non-hazardous, 55.6% of the MRF Residuals, which are not eligible waste fuels in ORER (2001).
- Combustible non-renewable WEEE, 3.7% of the MRF Residuals, which are not eligible waste fuels in ORER (2001).
- Combustible hazardous, 0.3% of the MRF Residuals. Generally, these materials are not discussed in ORER (2001).

3.2.2 Detail

Table 6 provides the results for each sample source and an overall audited average based on the combustibility of the materials. This is based on previous audits conducted by DADI with some additions. Figures 2 and 3 provide the data graphically by week and days.

The combustible materials were mainly:

- Other plastic (not polystyrene), 27.39% of the MRF Residuals.
- Textiles, 26.05% of the MRF Residuals.
- Paper and cardboard, 19.40% of the MRF Residuals.
- WEEE, 3.73% of the MRF Residuals.

Non-combustible materials were mainly metal, glass and inert which included non-hazardous building waste.

Table 5 - Results – combustible materials – summary by day (% by weight)

Materials	Mon average	Tue average	Wed average	Thurs average	Fri average	Week average
Combustible						
Renewable non-hazardous (eligible waste fuels)	26.63	28.77	26.36	29.37	22.85	27.20
Non-renewable non-hazardous <	59.70	59.84	53.04	48.09	62.69	55.63
WEEE	4.57	2.13	3.66	3.33	5.69	3.72
Hazardous ^	0.39	0.16	0.28	0.44	0.17	0.30
Combustible sub-total	***91.29***	***90.90***	***83.34***	***81.23***	***91.40***	***86.85***
Not combustible						
Not combustible	8.71	9.10	16.66	18.77	8.60	13.15
Total	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

^ Treated wood, including CCA treated wood and lead painted wood, is not classified as renewable or eligible in this study. It is classified as combustible. The treatments used are non-renewable, although the wood component is renewable. This is a precautionary approach to avoid overestimating the renewable eligible waste fuels based on the guidelines, even though ORER (2001) treats all wood as renewable eligible.

> Non-renewable non-hazardous includes some materials that are not mentioned in ORER (2001), such as leather, that actually may be renewable. This is a precautionary approach to avoid overestimating the renewable eligible waste fuels based on the guidelines.

Figure 1 - Results – combustible materials – summary by day (% by weight)

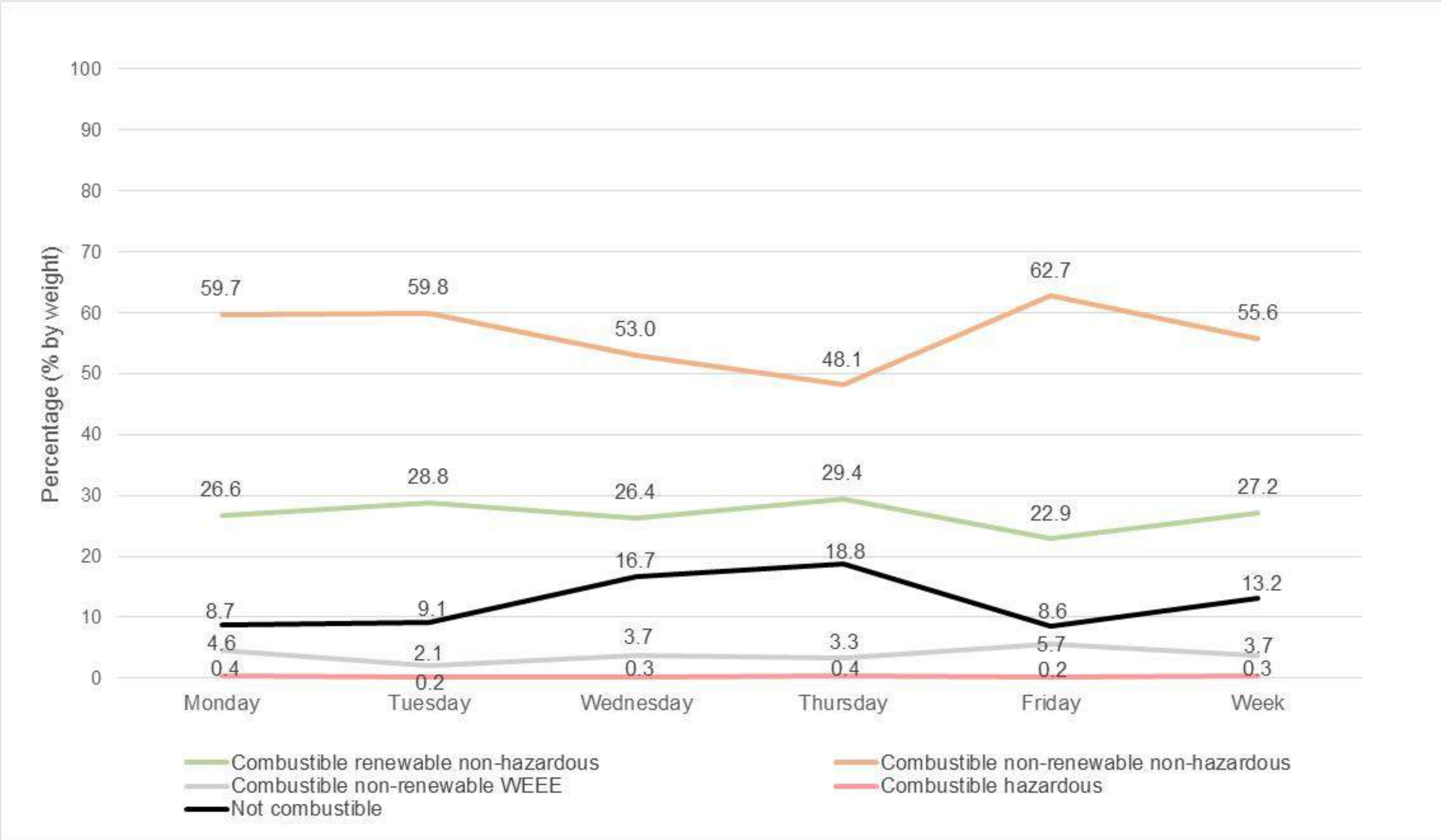


Figure 2 - Results – combustible materials – summary by day (% by weight)

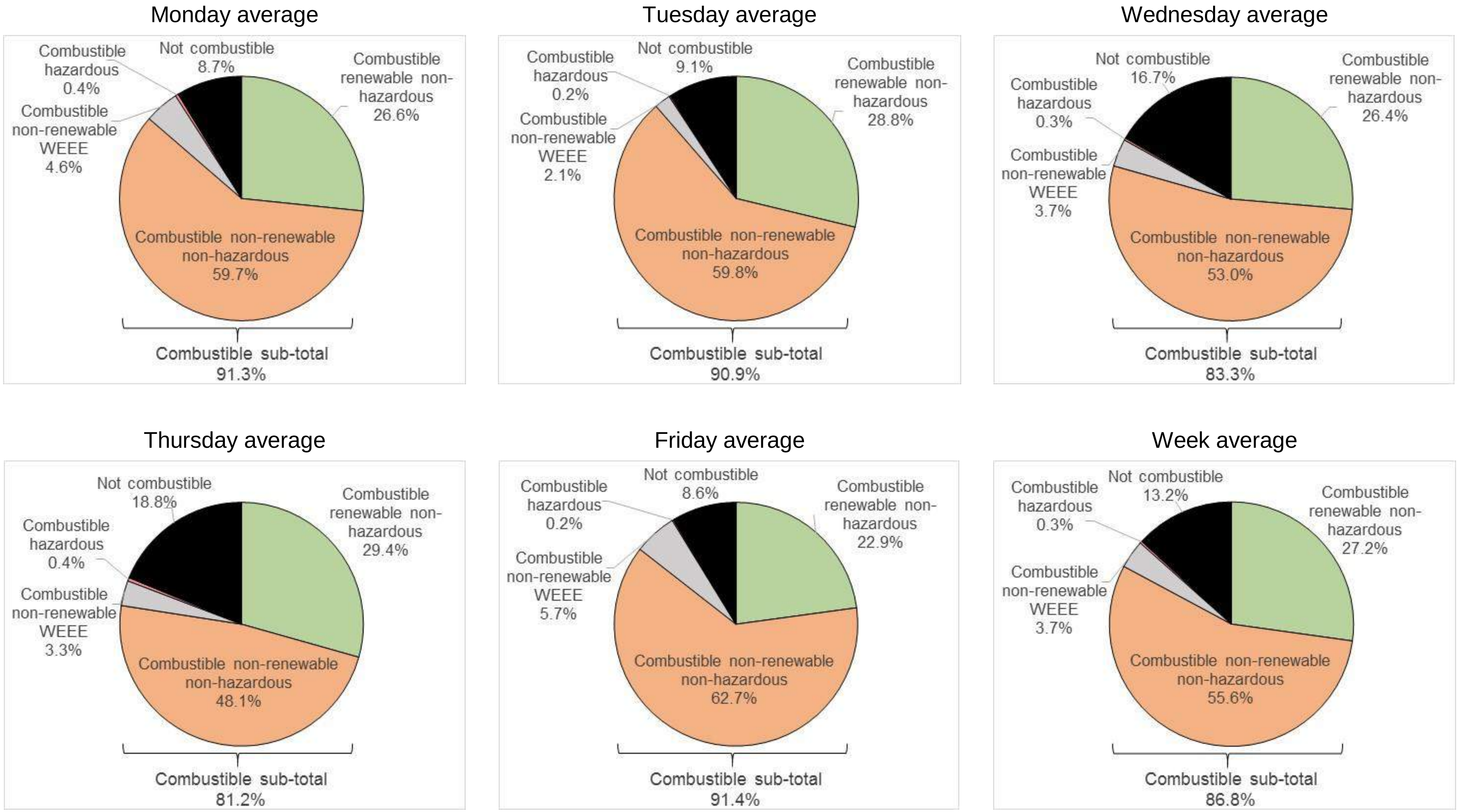


Table 6 - Results – combustible materials – detailed by day (% by weight)

Materials		Mon average	Tue average	Wed average	Thurs average	Fri average	Week average
Combustible renewable non-hazardous (eligible waste fuels)	Paper and cardboard	20.51	20.85	19.11	20.13	14.62	19.40
	LPB *(85% renewable)*	1.14	0.22	0.12	0.15	0.12	0.35
	Nappies *(90% renewable)*	0.65	2.14	1.65	1.31	1.33	1.42
	Wood general	1.58	2.12	2.75	2.65	1.50	2.21
	Wood MDF	0.66	0.09	0.16	0.93	0.62	0.5
	Food and kitchen	1.33	3.05	1.74	2.07	4.01	2.29
	Garden and vegetation	0.76	0.30	0.83	2.13	0.65	1.03
Combustible non-renewable non-hazardous	Other plastic (not polystyrene)	28.21	25.01	27.51	27.61	29.00	27.39
	Polystyrene	0.88	0.43	0.34	0.63	0.51	0.56
	Textiles	28.78	33.12	23.53	17.73	32.36	26.05
	Rubber	1.45	0.49	1.00	0.93	0.21	0.87
	Leather	0.38	0.79	0.66	1.17	0.61	0.76
	WEEE	4.57	2.13	3.66	3.33	5.69	3.72
	Insulation	0.00	0.00	0.00	0.02	0.00	0.00
	Carpet/underlay	0.00	0.00	0.00	0.00	0.00	0.00
Combustible hazardous	Wood treated ^	0.34	0.09	0.23	0.40	0.16	0.26
	Other hazardous <	0.05	0.07	0.05	0.04	0.01	0.04
Not combustible	Metal	4.18	3.74	6.04	3.87	4.45	4.46
	Glass	1.27	1.84	0.91	12.91	0.33	4.18
	Asbestos	0.00	0.00	0.00	0.00	0.01	0.00
	Asphalt	0.00	0.00	0.00	0.00	0.00	0.00
	Other compounds *	0.00	0.24	6.67	0.92	1.55	1.99
	Inert incl. non-hazardous building waste	3.26	3.28	3.04	1.07	2.26	2.52
Total		**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

^ Treated wood is not classified as renewable in this study. It is classified as combustible. The treatments used are non-renewable, although the wood component is renewable.

< The category of "Other hazardous" in combustible waste includes the detailed audit categories of Medical, Chemicals, Paint, Batteries car, Batteries other and Other hazardous. Asbestos was included in not combustible waste. There was no mobiles, paint and no car batteries, as shown in Table 4. There were two cases of potential medical waste, IV lines, although if unused they could be classified as other rigid plastics excluding EPS. However, medical waste was assumed as a precautionary approach and the amount is very low.

* Other compounds exclude composite plastic, composite metal and e-waste.

Figure 3 - Results – combustible materials – detailed by week (% by weight)

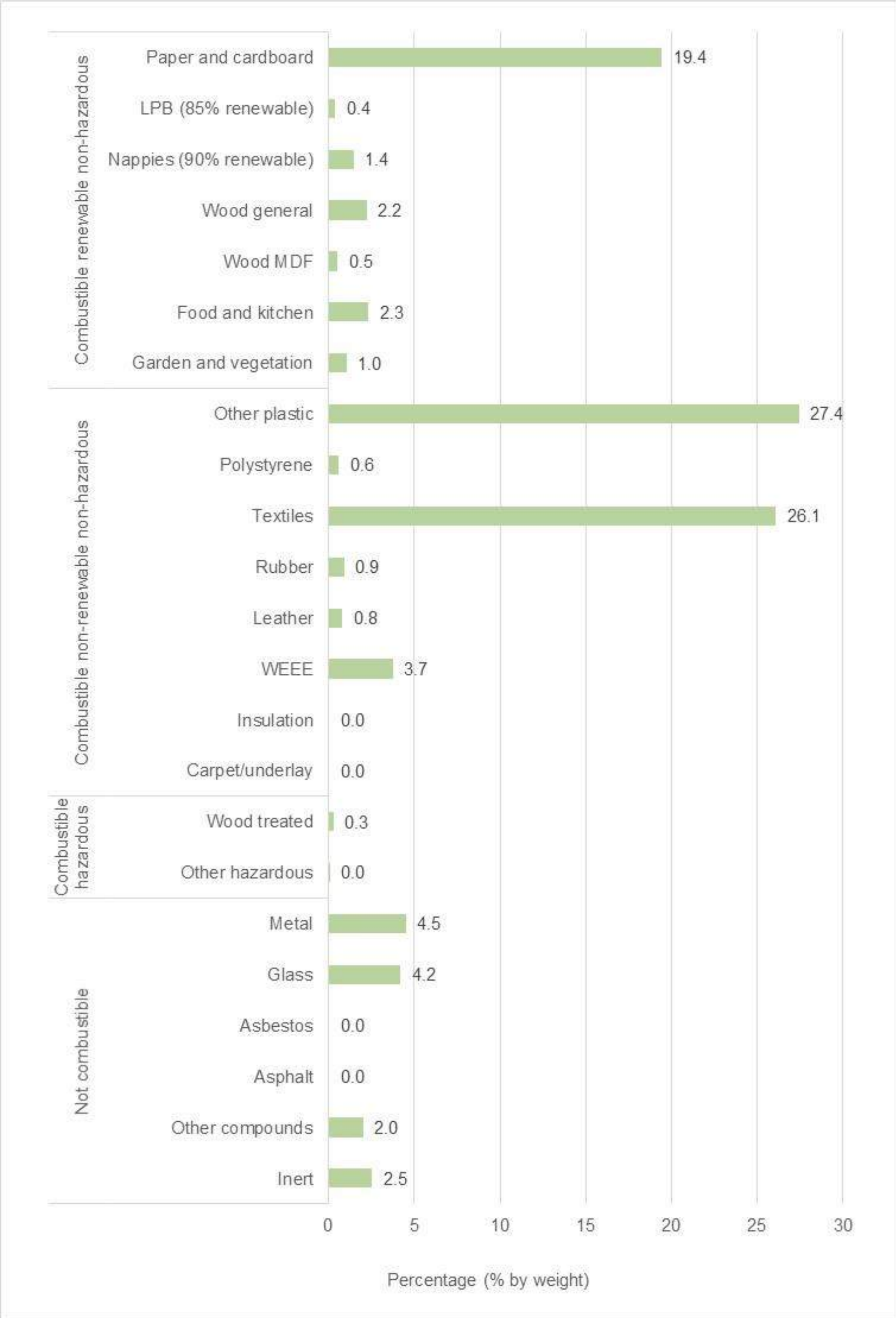
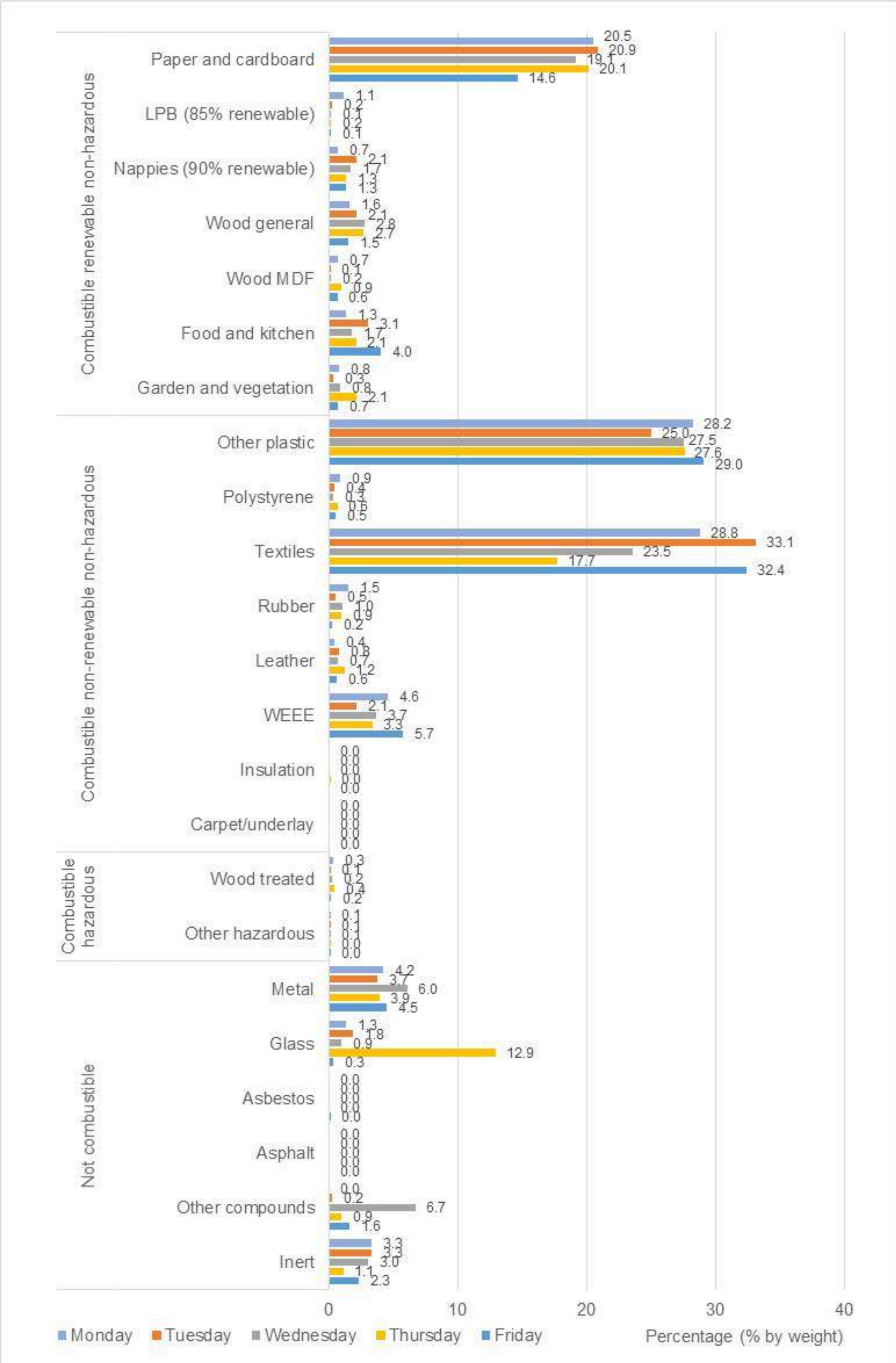


Figure 4 - Results – combustible materials – detailed by day (% by weight)



3.3 Recyclable materials

This section provides the amount and composition of recyclable materials in MRF Residuals, based on fully commingled materials like paper, cardboard and containers. Table 7 provides the data.

The data shows that there was a low level of these recyclable materials in the MRF Residuals. The MRF Residuals was 16.59% recyclables, which was mainly recyclable paper and cardboard at 13.34% of the MRF Residuals. Much of this paper and cardboard was soiled to some extent and generally not suited a MRF recovery process by the time it was audited. However, there was some recoverable paper, but it may have been contained within plastic bags when it was processed at the MRF.

The energy from waste policy preferences higher order recycling over combustion. However, this material has already been processed at a MRF and the market has determined that it is to be sent to landfill.

Table 7 - Results – recyclable materials (% by weight)

Materials	Mon average	Tue average	Wed average	Thurs average	Fri average	Week average
Recyclable paper and cardboard	15.37	11.84	13.10	13.68	12.31	13.34
Recyclable plastic containers	2.65	2.94	1.10	2.28	1.75	2.15
Recyclable metal containers	0.71	0.76	0.46	0.61	0.99	0.67
Recyclable glass containers	0.08	0.32	0.00	0.00	0.00	0.08
Recyclable liquid paperboard	1.14	0.22	0.12	0.15	0.12	0.35
Sub-total recyclables	***19.95***	***16.08***	***14.78***	***16.72***	***15.17***	***16.59***
Not recyclables	80.05	83.92	85.23	83.28	84.83	83.41
Total	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

3.4 Confidence intervals

Table 8 provides the confidence intervals at a 90% confidence level for the main target materials. The audit involved sorting approximately 3.7 tonnes of MRF Residuals material across 5 days of generation in 31 samples.

The hazardous category, which is of main concern to NSW EPA has the lowest confidence interval of 1.6%, with a maximum of 1.9% hazardous material at the upper confidence interval value at 90% certainty. The mean value is 0.3%.

The renewable combustible materials (eligible waste fuels) have a larger confidence interval of up to 13.1%. There is reasonably high percentage of renewable material at the mean and upper confidence values, but not at the lower confidence value. The values range from a lower confidence interval of 14.1% to an upper confidence value or 40.3%. The mean is approximately a quarter of the MRF Residuals.

However, the material very combustible. At the lower confidence value the material is 76.9% combustible and at the upper confidence value is 96.9% combustible. The mean is 86.9%. If glass other (which is mainly glass fines was not placed into the loads then the MRF Residuals audited would have had a mean of 91.6% combustible material.

Table 8 - Results – confidence intervals

Materials	Confidence interval	Mean percentage	Lower value	Upper value
Combustible materials				
Renewable non-hazardous (eligible waste fuels)	+/-13.1%	27.2	14.1	40.3
Non-renewable non-hazardous	+/-14.7%	55.6	40.9	70.3
Non-renewable WEEE	+/-5.6%	3.7	0.0	9.3
Hazardous	+/-1.6%	0.3	0.0	1.9
Combustible sub-total	***+/-10.0%***	***86.9***	***76.9***	***96.9***
Non-combustible materials				
Not combustible	+/-10.0%	13.2	3.2	23.2
Recyclable materials – paper, cardboard and containers				
Recyclable materials	+/-11.0%	16.6	5.6	27.6

4 Comments

The MRF Residuals are currently being sent to landfill after a substantial post-collection recovery effort in the third party MRF. There is the potential to use this material for energy generation. A robust audit sampling regime was implemented covering the MRF Residuals generation cycle as the output from the MRF during the MRF operating hours. The audit data represents the audit week.

These audit results show the MRF Residuals has:

- A very high level of combustible material, potentially suited to an energy from waste facility.
- A high level of combustible material that were eligible waste fuels based on ORER (2001) at the mean and upper confidence level, but not at the lower confidence level.
- A substantial level of recyclables that were not able to be processed in a MRF but that are combustible and are currently being landfilled.
- No visually identifiable lead painted wood waste in the audit week in the samples audited. There was also no visually identifiable chemicals, paint and batteries car.
- A low level of hazardous waste, although there was a very limited amount of medical waste, which may have been unused and potentially classifiable as other rigid plastics excluding EPS, occasional batteries other and one instance of visually identifiable asbestos. These materials could be managed through onsite removal or through safe combustion in the processing technology option if the material was accepted for processing instead of disposal. However, small batteries may be difficult to manage.
- A high amount glass which is not combustible. It may be feasible and desirable for DADI to request the MRF to deliver loads with no glass other (i.e. glass fines). If glass other was not placed into the loads then the MRF Residual audited would have had a mean of 91.6% combustible material.

The presence of asbestos, lead painted wood and other hazardous compounds should be tested in a laboratory. The moisture and chemical characteristics of the waste were not measured in this audit.

The MRF Residuals is a post-processing material. The waste is highly mixed because it has been stockpiled, loaded into the MRF, picked on a conveyor and transported out of the MRF technology in trucks. It was then tipped, sampled and mixed for audit. This processing assists to make the material more consistent than it would have been in the incoming loads at the MRF.

The processing technology should be assessed for its ability to handle the waste composition.

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Appendix 1

This Appendix provides a separate raw data file in Excel.

Appendix 2

This Appendix provides the aggregation of the sorting categories for reporting.

Table 9 - Aggregation of sorting categories for combustibility and recyclability

Summary ^	Sorting category and number		Combustibility	Recyclability
Paper	1	Recyclable paper	Yes	Yes
	2	Disposable contaminated (soft) paper	Yes	No
	3	Cardboard	Yes	Yes
	4	Liquid paperboard	Yes	Yes
	5	Nappies	Yes	No
Wood/timber	6	Untreated wood – MDF board	Yes	No
	7	Untreated wood – All other	Yes	No
	8	Treated wood – CCA treated	Yes	No
	9	Treated wood – lead painted	Yes	No
Plastic	10	Recyclable plastic containers excl. EPS	Yes	No
	11	Other rigid plastics excl. EPS	Yes	Yes
	12	EPS	Yes	No
	13	Soft (films) plastics	Yes	No
	14	Composite plastics	Yes	No
Metal (Ferrous and non-ferrous()	15	Recyclable metal containers	No	Yes
	16	Composite	No	No
	17	Other metals	No	No
Organic (not Wood/ timber)	18	Food/kitchen – vegetable	Yes	No
	19	Food/kitchen – meat	Yes	No
	20	Garden/ vegetation	Yes	No
	21	Textiles/rags	Yes	No
	22	Rubber	Yes	No
	23	Leather	Yes	No
WEEE	24	E-waste	Yes <	No
	25	Mobiles	Yes	No
	26	Toners	Yes	No
Hazardous	27	Medical	Yes	No
	28	Chemicals	Yes	No
	29	Paint	Yes	No
	30	Asbestos	No	No
	31	Batteries car	Yes	No
	32	Batteries other	Yes	No
	33	Other hazardous	Yes	No
Glass	34	Glass containers	No	Yes
	35	Glass other	No	No
Other (including Earth and Building Materials)	36	Insulation	Yes	No
	37	Carpet/underlay	Yes	No
	38	Compounds (excl. composite plastic, composite metal, e-waste)	No	No
	39	Asphalt	No	No
	40	Inert incl. non-hazardous building waste	No	No

< These materials are classified as combustible in ORER (2001). In practice, a fraction of the material may not combust, such as metal and glass components of e-waste.

2016

Report:
Audit of potential feedstock for The Next Generation energy-from-waste facility
for
Dial A Dump Industries

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EXECUTIVE SUMMARY

Composition of shredder floc

- The results summarised in this report arise from 19 samples collected over six days with a total weight of 601.0kg.
- The minimum individual sample weight was 7.8kg and the maximum was 43.2kg.
- After sorting, the entire summed sorted sample weighed 582.0kg. The loss of weight during sorting (19.0kg, 3.2%) was most likely due to evaporation of small quantities of moisture. All analysis presented in this report refers to the post-sorting weights.
- APC sorted the 582.0kg of shredder floc tipped at the Genesis landfill in Eastern Creek over six (6) days in July 2016.
- The majority (58%) of shredder floc is fines. There are also substantial amounts of non-polystyrene plastics (21%) and textiles (11%). These three materials make up 90% of shredder floc.
- The remainder is made up of rubber/leather (5%), wood waste (3%), metal (1%), polystyrene (1%) and paper/cardboard (0.4%).
- When the samples were tested in the laboratory, the metal content of the shredder floc samples ranged from 0.6% to 9.7%, with an average content of 2.9% metals.

Moisture content

- The moisture content of the floc samples, including metals, ranged from 8.8% to 15.6%, with an average moisture content of 12.8%.
- When metals are excluded, the moisture content ranged from 9.8% to 16.1%, with an average of 13.2%.

Ash yield

- The ash yield of the floc samples, including metals, ranged from 41.4% to 74.0%, with an average ash yield of 58.5%.
- When metals are excluded, the ash yield ranged from 40.3% to 70.3%, with an average of 57.0%.

Gross wet calorific value

- The gross wet calorific value of the floc samples, including metals, ranged from 8.7 to 16.7 MJ/kg, with an average of 12.8 MJ/kg.
- When metals are excluded, the range was 8.8 to 17.4 MJ/kg, with an average of 13.2 MJ/kg.

Net wet calorific value

- The net wet calorific value of the floc samples, including metals, ranged from 7.8 to 15.7 MJ/kg, with an average of 11.6 MJ/kg.
- When metals are excluded, the range was 7.8 to 16.3 MJ/kg, with an average of 12.0 MJ/kg.

Introduction

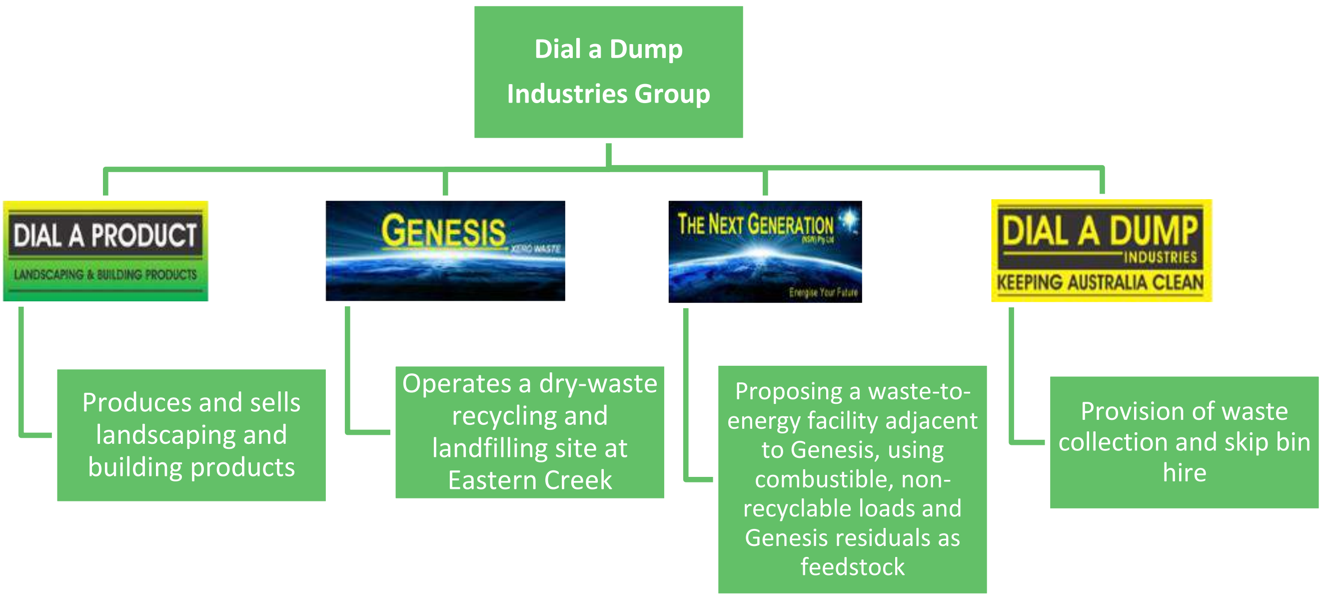
1

1. INTRODUCTION

The Next Generation NSW Pty Ltd (TNG) is proposing to construct and operate an Energy-from-Waste (EFW) electricity generation facility at Honeycomb Drive, Eastern Creek, located within the M7 Business Hub.

The site is south of the M4 Motorway and adjacent to the Genesis Xero Waste recycling and landfill facility. Both Genesis Xero Waste and The Next Generation are part of the Dial a Dump Industries group, as shown in Figure 1 below.

Figure 1 Companies within Dial a Dump Industries

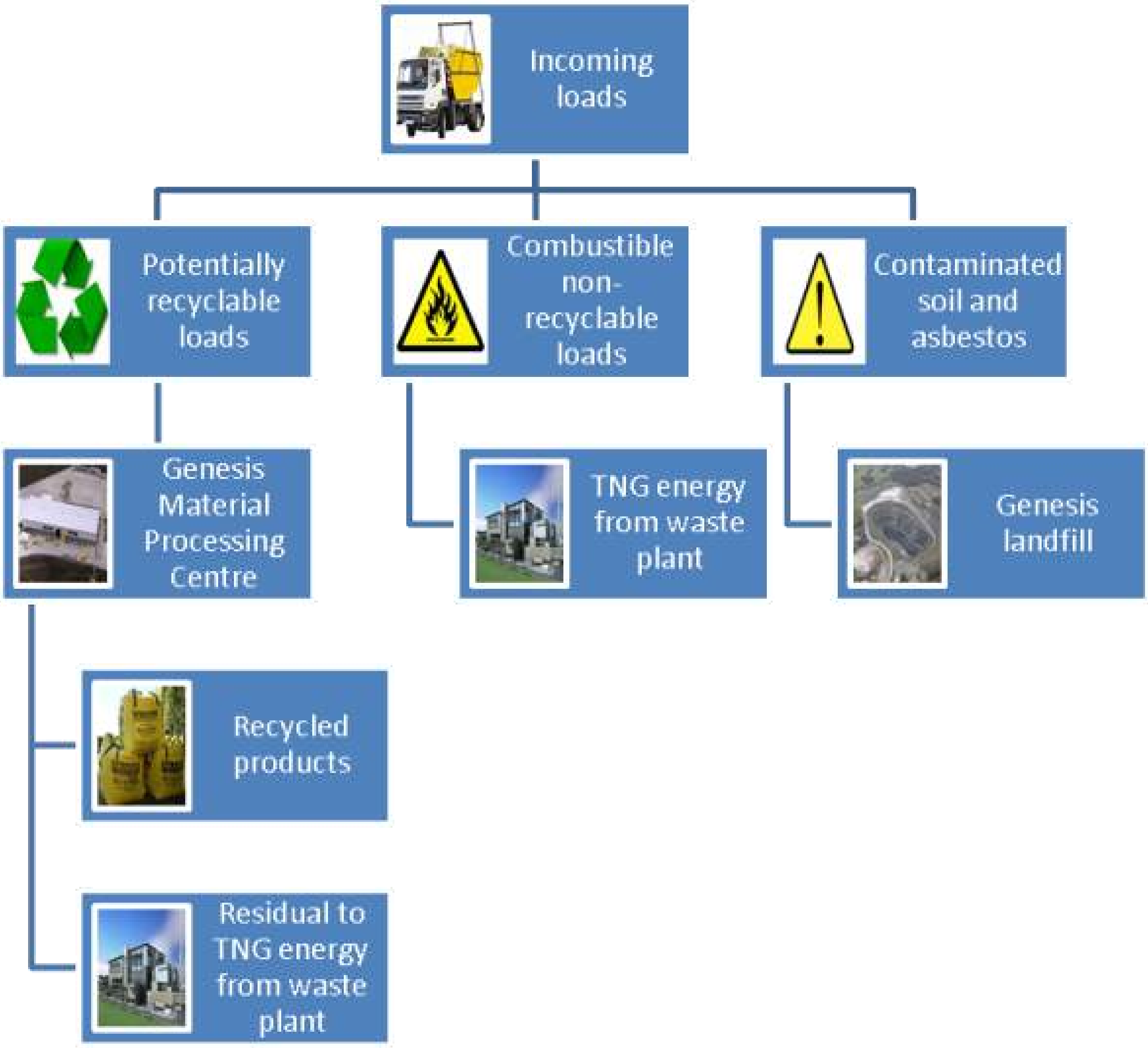


The proposed EFW facility aims to utilise waste that is currently being disposed to the Genesis landfill (either directly or as residual from the Genesis Material Processing Centre) and to use the power and heat generated to provide a level of energy self-sufficiency within the immediate business precinct.

The EFW facility will have the capacity to receive 800,000 to 1,000,000 tonnes per year of waste. It will receive combustible, non-recyclable loads currently destined for the Genesis landfill, as well as residual material conveyed from the Genesis Materials Processing Centre, as shown in Figure 2.

The EFW plant will use thermal conversion to produce electrical power from the feedstock waste.

Figure 2 Proposed treatment of incoming waste loads



1.1 About this audit

In order to move forward with the EFW project and achieve planning approval, the NSW EPA (and its consultants) has raised a range of concerns. Notably, these relate to:

a) the quantity of the different constituent streams of waste available to qualify as eligible waste fuels;
b) the content of certain elements of the eligible waste fuel streams; and
c) the procedural measures which will be in place to ensure consistency.

In order to provide statistically significant data with respect to (a) and (b) above, TNG engaged A.Prince consulting (APC) to undertake a waste audit to establish the quantity and quality of the components of some of the proposed feedstock waste streams.

This audit targeted one of the potential feedstock waste streams: shredder floc. More detail about current amounts and treatment of shredder floc is in Figure 3.

Figure 3 Shredder floc

waste from car and metal shredding → 150–200 tonnes per day → delivered in trucks → average six (6) incoming loads per day → currently disposed directly to Genesis landfill with no prior sorting/ treatment

There are several other potential feedstocks which were not part of this audit.

Image 2 Artists impression of EFW plant

Image 1 Genesis landfill showing chute from Material Processing Facility

A variety of audit methods were used to obtain the required results, using a combination of physical sorting and laboratory testing. Figure 4 shows the methods used and where they are reported.

Figure 4 Audit methods and reporting structure

Physical sorting to determine composition	Lab testing for moisture content and calorific value
• Sample collected by Environ • Physical sorting done by APC at the Genesis site • Results are reported in this report	• Sample collected by Environ • Testing done at HRL laboratory • Results are reported in this report

Image 3 The Genesis Material Processing Centre

Methodology

2

2. METHODOLOGY

2.1 Project inception meeting

Prior to project commencement, a project inception meeting was held with APC, Dial a Dump (DADI) and Environ Consulting Services (ECS) on 4 August 2016. This meeting confirmed project requirements, sampling and sorting logistics, documentation and the project timeline. Attendees were:

Environ
- Pablo Garces

APC
- Anne Prince
- David Hitchcock
- Dr Ian Nivison-Smith

DADI
- Alicia Marix-Evans
- Rodney Johnson

2.2 Staff inductions

APC staff received site-specific safety inductions at the Genesis site. APC provided Safe Work Method Statements for the sorting component of the audit.

2.3 Sample collection

The physical collection of the samples for both the waste audit and the lab analysis was undertaken by a representative of ECS, on the following dates:

Sat 13 Aug → Mon 15 Aug → Tue 16 Aug → Wed 17 Aug → Thu 18 Aug → Fri 19 Aug

The sampling regimes for the samples to be physically sorted and the samples to be sent for laboratory testing are described in Figure 5 below.

The samples were collected at the base of the Genesis landfill. The trucks tipped their loads at the base of the landfill and the sample was taken. An APC staff member accompanied the ECS representative on one trip to the landfill base to observe the sample retrieval process and take images for incorporation into this report.

Figure 5 Sampling regime

Sampling for the physical sorting samples

- Approx. three (3) incoming loads were sampled each day for six (6) days (total 19 loads were sampled)
- Trucks selected at random
- Truck tipped all load on floor of pit
- Each sample was approx. 35kg (x 3 per day to provide total daily sample of approx. 100kg)
- To make up each 35kg sample, 10 small samples were taken from different places in the load
- Each 35kg sample was placed in 200-micron thickness plastic bags
- The bag was labelled with date, sample time as well as the truck rego
- At the end of the day, the weighbridge was asked for the docket in order to get the total size of the sample from which the subsample was taken
- The sample was taken to the APC sorting location

Sampling for the laboratory analysis samples

- Sampling for the laboratory analysis was conducted by Environ Consulting Services in accordance with HRL requirements and as directed by European engineers consulting to the project.
- The lab samples were a subsample of the physical sorting samples – that is, each sample collected included approximately 35kg to be sorted and 6kg to be sent to the lab.
- 17 samples were sent for testing.
- The last sample was not sent to the laboratory due to late arrival of the floc trucks for sample collection.

The initial weighing of 19 samples produced a total weight of 601.0kg, with a minimum individual sample weight of 7.8kg and a maximum of 43.2kg. After sorting, the entire summed sorted sample weighed 582.0kg. The loss of weight during sorting (19.0kg, 3.2%) was most likely due to evaporation of small quantities of moisture. All further analysis refers to the post-sorting weights.

Image 4 A truckload of shredder floc waste enters the landfill base

Image 5 This load was selected for sampling

Image 6 An ECS representative collects samples for the audit

2.4 Waste sorting

Sorting was undertaken by APC staff at the Genesis site at Honeycomb Drive, Eastern Creek, on the 17, 18 and 19 August 2016. Two bunkers at the Genesis facility were dedicated to APC for the sorting phase: one for sorting, and one for storage.

Image 7 The sorting location at the Genesis facility

The waste samples were manually sorted into eight categories as shown in Figure 6. These were selected by ECS, APC and DADI based on the categories in the Office of the Renewable Energy Regulator (ORER) *Guidelines for determining the renewable components in waste for electricity generation*. The categories in the *Guidelines* were modified for this audit based on what components were likely to be present in the feedstock waste streams audited.

Figure 6 Sorting categories

ORER eligible categories	Sorting categories for this audit
• paper/cardboard	• paper/cardboard
• food/kitchen	• textiles
• garden/vegetation	• wood waste
• wood/timber	• rubber/leather
• textiles/rags	• polystyrene
• rubber	• other plastic
• plastic	• metal
• polystyrene	• inert (fines, <10mm)

A 10mm sieve was used to separate materials. Separated materials were placed in appropriate containers, weighed on a set of electronic scales and the weight recorded.

Image 8 Samples are sorted

2.5 Data verification accuracy and quality assurance

A number of techniques and procedures were used to check and verify data. At the data-entry stage, each coded sheet on which sorting data was recorded was checked against the total weight for that sample and any significant differences were investigated. Data was analysed by APC's statistician using Excel.

Results – shredder floc composition

3

3. RESULTS – SHREDDER FLOC COMPOSITION

3.1 Composition of shredder floc

The majority (58%) of shredder floc is fines. There are also substantial amounts of non-polystyrene plastics (21%) and textiles (11%). These three materials make up 90% of shredder floc.

The remainder is made up of rubber/leather (5%), wood waste (3%), metal (1%), polystyrene (1%) and paper/cardboard (0.4%). The detailed composition by sample, as well as the corresponding laboratory results, is presented in Appendix A.

Figure 7 Composition of shredder floc

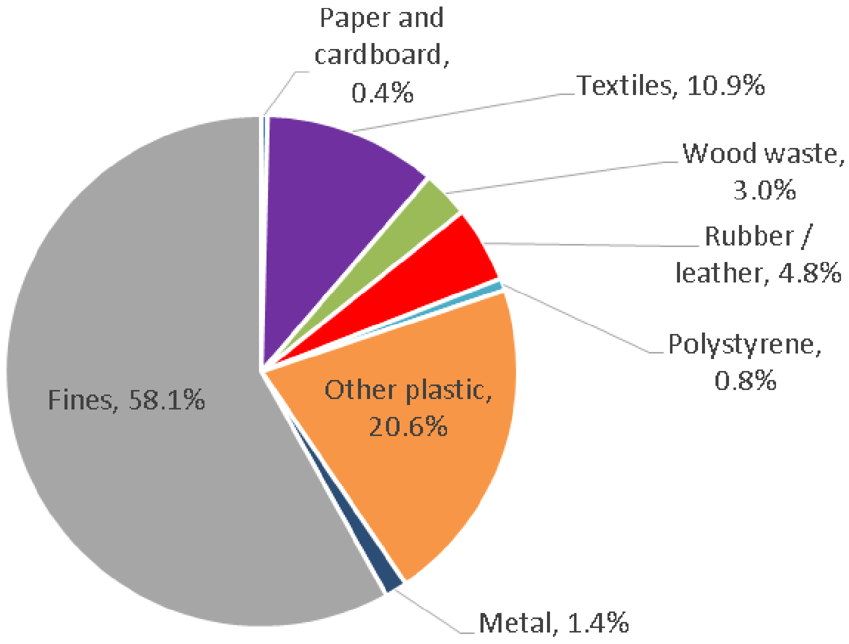


Image 9 58% of floc is fines

Image 10 Plastics sorted from the floc

Image 11 Rubber sorted from the floc

Image 12 Polystyrene sorted from the floc

Image 13 Timber sorted from the floc

Image 14 Paper and cardboard

Image 15 A floc sample

The following table shows the weight, percentage and minimum and maximum proportions of materials found in the 19 samples.

Table 1 Shredder floc composition including range

Material	Weight audited (kg)	Per cent	Range
Fines	338.1	58.1%	35.7%–82.5%
Other plastic	120.1	20.6%	11.7%–32.1%
Textiles	63.6	10.9%	1.0%–23.9%
Rubber/leather	28.0	4.8%	1.5%–14.0%
Wood waste	17.4	3.0%	0.6%–4.8%
Metal	8.2	1.4%	0.5%–2.8%
Polystyrene	4.4	0.8%	0.3%–6.4%
Paper and cardboard	2.2	0.4%	0.0%–0.6%
Total	**582.0**	**100.0%**	

3.2 Confidence intervals

A more statistically accurate way of portraying variability between samples is to calculate confidence intervals. Upper and lower 95% confidence intervals show the region within which we would expect the true value of an estimate to lie in 95% of cases. Table 2 shows the percentages of each material with lower and upper 95% confidence intervals.

Table 2 Confidence intervals

Material	Average	95% CI	Lower limit	Upper limit
Fines	58.1%	6.9%	51.2%	65.0%
Other plastic	20.6%	3.1%	17.6%	23.7%
Textiles	10.9%	3.2%	7.7%	14.1%
Rubber/leather	4.8%	1.3%	3.6%	6.1%
Wood waste	3.0%	0.5%	2.5%	3.5%
Metal	1.4%	0.3%	1.1%	1.7%
Polystyrene	0.8%	0.6%	0.1%	1.4%
Paper and cardboard	0.4%	0.1%	0.3%	0.5%

The following charts show the percentage composition and confidence intervals for each material. The materials are shown on two separate charts to maintain scale: materials that were present in small amounts and materials that were present in large amounts.

Figure 8 Average percentage by weight of materials, with lower and upper 95% confidence limits – materials present in large amounts

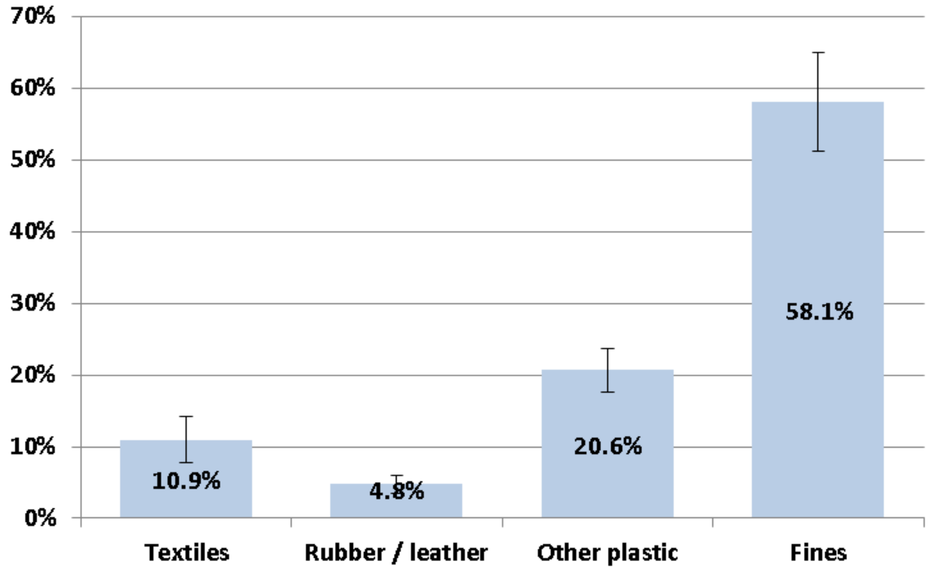
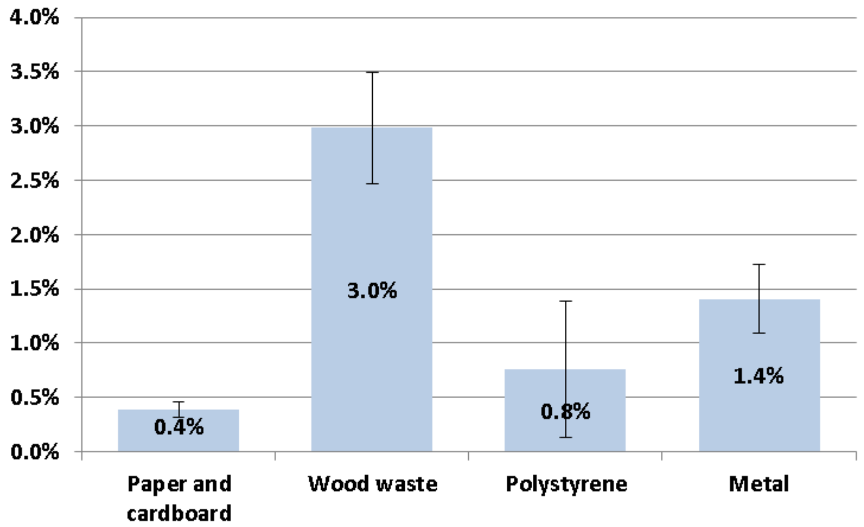


Figure 9 Average percentage by weight of materials, with lower and upper 95% confidence limits – materials that were present in small amounts



This audit was carried out by skilled staff under strictly controlled conditions with a relatively small number of sorting categories. The sample number (n=19) can be judged as quite sufficient for this kind of data collection. The comparatively narrow confidence intervals indicate that the accuracy of these results is very acceptable. The only component with a wide confidence interval was polystyrene that indicates a small percentage of material that is not very evenly distributed within the samples collected.

Results – metals, moisture content, ash yield and calorific value

4

4. RESULTS – METALS, MOISTURE, ASH AND CALORIFIC VALUE

4.1 Laboratory analysis

Of the 19 samples collected for physical sorting, 17 sub-samples of those samples were sent for laboratory analysis to HRL Laboratories. The results reported in this report are:

- % metal
- total moisture
- ash yield
- calorific value

The laboratory testing results for metal content, moisture content, ash yield and calorific value are contained in Appendix A.

4.2 Percentage metals

The 17 samples tested had a metals content of between 0.6% and 9.7%, with an average of 2.9% and a median of 1.8%. This is higher than the metals result from the physical sorting (1% metals), as the physical sort only looked for obvious metal parts, whereas the lab testing was able to detect much smaller metal fragments.

4.3 Net wet calorific value

Including metals, the average net wet calorific value is 11.6 MJ/kg. Excluding metals, the average net wet calorific value is 12 MJ/kg.

Table 3 Net wet calorific value

Net wet CV	Range	Average	Median
With metals	7.8 to 15.7 MJ/kg	11.6	10.8
Without metals	7.8 to 16.3 MJ/kg	12.0	11.0

4.4 Total moisture

Including metals, the average moisture content is 12.8%. Excluding metals, the average moisture content is 13.2%.

Table 4 Moisture content

Total moisture	Range	Average	Median
With metals	8.8% to 15.6%	12.8%	12.7%
Without metals	9.8% to 16.1%	13.2%	12.9%

4.5 Ash yield

Including metals, the average ash yield is 58.5%. Excluding metals, the average ash yield is 57.0%.

Table 5 Ash yield

Ash yield	Range	Average	Median
With metals	41.4% to 74.0%	58.5%	60.8%
Without metals	40.3% to 73.0%	57.0%	57.9%

4.6 Gross wet calorific value

Including metals, the average gross wet calorific value is 12.8 MJ/kg. Excluding metals, the average gross wet calorific value is 13.2 MJ/kg.

Table 6 Gross wet calorific value

Gross wet CV	Range	Average	Median
With metals	8.7 to 16.7 MJ/kg	12.8 MJ/kg	11.8 MJ/kg
Without metals	8.8 to 17.4 MJ/kg	13.2 MJ/kg	12.1 MJ/kg

Appendices

5

APPENDIX A DETAILED DATA – SHREDDER FLOC COMPOSITION

Sample record number	1		2		3		4		5		6		7		8		9	
Sorting date	19/08/2016		19/08/2016		19/08/2016		18/08/2016		18/08/2016		18/08/2016		18/08/2016		18/08/2016		18/08/2016	
Sampling date	15/08/2016 @ 9.55		15/08/2016 @3.37pm		15/08/2016 @ 7.40 am		16/8/2016 @7.28		16/8/16 @6.40		16/8/16 @10.12		16/08/2016		17/08/2016		17/08/2016	
Truck registration	PFF026		PFF 026		PFF026		PFF026		PFF029		PFF026		PFF026		PFF026		Arrived same time as others	
	kg	%	kg	%	kg	%	kg	%	kg	%	kg	%	kg	%	kg	%	kg	%
Paper and cardboard	0.132	0.41%	0.116	0.57%	0.088	0.23%	0.13	0.50%	0.052	0.43%	0.048	0.13%	0	0.00%	0.06	0.23%	0.134	0.50%
Textiles	4.88	15.11%	1.274	6.25%	5.728	14.86%	0.9	3.46%	0.124	1.03%	0.53	1.40%	0.578	7.41%	0.61	2.30%	3.408	12.80%
Wood waste	0.982	3.04%	0.65	3.19%	1.326	3.44%	0.638	2.45%	0.072	0.60%	0.48	1.26%	0.242	3.10%	0.33	1.24%	0.816	3.07%
Rubber/leather	1.112	3.44%	0.916	4.49%	1.266	3.28%	0.38	1.46%	0.256	2.12%	0.968	2.55%	0.132	1.69%	1.32	4.98%	3.72	13.97%
Plastic	7.56	23.41%	4.654	22.84%	8.812	22.86%	3.452	13.28%	1.42	11.79%	4.444	11.71%	0.5	6.41%	3.862	14.57%	7.816	29.36%
Polystyrene	0.172	0.53%	0.08	0.39%	0.184	0.48%	0.228	0.88%	0.058	0.48%	0.106	0.28%	2.502	32.09%	0.156	0.59%	0.074	0.28%
Metal	0.488	1.51%	0.344	1.69%	0.214	0.56%	0.538	2.07%	0.122	1.01%	0.27	0.71%	0.08	1.03%	0.176	0.66%	0.734	2.76%
Inert	16.964	52.54%	12.346	60.58%	20.924	54.29%	19.726	75.89%	9.944	82.54%	31.116	81.97%	3.764	48.27%	20	75.43%	9.92	37.26%
Total weight	32.29	100.00%	20.38	100.00%	38.542	100.00%	25.992	100.00%	12.048	100.00%	37.962	100.00%	7.798	100.00%	26.514	100.00%	26.622	100.00%
HRL lab sample number	5		6		4		8		7		9		N/A		10		11	
Metal %	3.6		1.1		1.7		1.8		4		1.6		Small make-up sample taken to ensure a total sample greater than 600kg.		2.8		9.7	
Moisture without metal%	11.9		13.4		13.9		12		12.6		12.9				12.2		9.8	
Moisture with metal%	11.5		13.3		13.7		11.8		12.1		12.7				11.9		8.8	
Ash yield without metal%	55.9		67.9		48.6		50.1		52.3		59.9				40.3		43.7	
Ash yield with metal%	57.9		68.6		49.4		51		54.4		60.9				41.4		47.9	
Gross dry calorific without metal MJ/kg	18.01		17.56		16.26		16.16		19.96		15.53				18.08		18.04	
Gross dry calorific with metal MJ/kg	17.36		17.37		15.99		15.87		19.17		15.28				17.58		16.29	
Gross wet calorific without metal MJ/kg	15.9		15.2		14		14.2		17.4		13.5				15.9		16.3	
Gross wet calorific with metal MJ/kg	15.3		15		13.8		13.9		16.7		13.3				15.5		14.7	
Net wet calorific without metal MJ/kg	14.8		14.3		12.9		12.9		16.3		12.3				14.5		15.1	
Net wet calorific with metal MJ/kg	14.3		14.1		12.7		12.7		15.7		12.1				14.1		13.6	

Sample record number	10		11		12		13		14		15		16		17		18		19		TOTAL	
Sorting date	18/08/2016		19/08/2016		19/08/2016		19/08/2016		19/08/2016		19/08/2016		19/08/2016		17/08/2016		17/08/2016		17/08/2016			
Sampling date	17/08/2016		18/08/2016 @ 9.05		18/08/2016 @7.17		18/08/2016 @ 9.15 am		19/08/2016 @ 7.14		19/08/2016 @10.23		19/08/2016 @ 9.15		13/08/2016		13/08/2016		13/08/2016			
Truck registration	PFF026		PFF027		PFF026		CC56QR		PFF026		PFF026		PFF027		PFF076		PFF027		PFF026			
	kg	%	kg	%	kg	%	kg	%	kg	%	kg	%	kg	%	kg	%	kg	%	kg	%	kg	%
Paper and cardboard	0.076	0.30%	0.184	0.59%	0.118	0.3%	0.19	0.55%	0.184	0.45%	0.192	0.44%	0.16	0.46%	0.134	0.39%	0.13	0.37%	0.116	0.34%	2.32	0.39%
Textiles	5.958	23.9%	5.182	16.62%	7.386	18.7%	6.33	18%	6.604	16.00%	5.556	12.77%	5.35	15.13%	0.944	2.76%	1.08	3.16%	1.134	3.29%	65.48	10.91%
Wood waste	0.328	1.32%	1.504	4.82%	1.54	3.9%	1.66	4.72%	1.692	4.10%	1.25	2.87%	1.04	2.94%	0.874	2.56%	0.94	2.74%	0.988	2.87%	17.87	2.98%
Rubber/leather	2.106	8.45%	1.814	5.82%	1.866	4.73%	1.71	4.87%	2.076	5.03%	1.524	3.50%	1.32	3.73%	1.498	4.38%	1.94	5.66%	2.056	5.97%	28.82	4.80%
Plastic	7.134	28.6%	8.082	25.93%	7.892	20%	7.9	22.48%	9.784	23.7%	10.71	24.61%	10.35	29.23%	4.048	11.8%	4.61	13.41%	5.112	14.84%	121.69	20.28%
Polystyrene	0.136	0.55%	0.696	2.23%	0.308	0.78%	0.51	1.45%	0.276	0.67%	0.23	0.53%	0.194	0.55%	0.114	0.33%	0.2	0.58%	0.2	0.58%	6.861	1.14%
Metal	0.296	1.19%	0.39	1.26%	0.72	1.83%	0.29	0.84%	1.036	2.51%	0.29	0.66%	0.19	0.53%	0.618	1.81%	0.57	1.65%	0.832	2.42%	8.44	1.41%
Inert	8.892	35.7%	13.32	42.72%	19.62	49.7%	16.54	47.1%	19.63	47.55%	23.77	54.62%	16.78	47.42%	25.936	75.9%	24.87	72.44%	24.004	69.69%	348.49	58.09%
Total weight	24.93	100%	31.17	100%	39.45	100%	35.14	100%	41.28	100%	43.52	100%	35.39	100%	34.166	100%	34.34	100%	34.442	100%	599.97	100%
HRL lab sample number	**12**		**14**		**13**		**15**		**16**		**Not sent**		**17**		**1**		**2**		**3**		**3**	
Metal %	5		3.1		1.3		2.5		6				1.8		0.6		1.1		1.4			
Moisture without metal	14.2		16.1		14.9		13.4		15.9				11.4		12.8		12.8		13.4			
Moisture with metal	13.5		15.6		14.7		13.1		14.9				11.2		12.7		12.7		13.2			
Ash yield without metal	57.9		53.6		62.1		63.3		60.1				44.2		69.1		66.2		73			
Ash yield with metal	60.8		55.2		62.9		64.9		63.7				45		69.5		66.9		74			
Gross dry calorific without metal	12.69		14.01		12.38		13.93		14.33				13.59		10.12		13.29		13.83			
Gross dry calorific with metal	12.06		13.58		12.22		13.58		13.47				13.34		10.06		13.14		13.63			
Gross wet calorific without metal	10.9		11.8		10.5		12.1		12				12		8.8		11.6		12			
Gross wet calorific with metal	10.4		11.4		10.4		11.8		11.3				11.8		8.7		11.5		11.8			
Net wet calorific without metal	9.7		10.4		9.3		10.6		11				10.8		7.8		10.4		11			
Net wet calorific with metal	9.2		10.1		9.2		10.3		10.3				10.6		7.8		10.3		10.8			

APPENDIX B LABORATORY RESULTS

(See attached)

APPENDIX 2
TNG WASTE FUEL QUALITY ASSURANCE PROCEDURES

THE NEXT GENERATION (NSW) Pty Ltd

Residual Waste Fuel Quality Assurance Procedures

Bronte Walker

Genesis Recycling Facility
Honeycomb Drive Eastern Creek

Issue Date: 1 July 2017

TNG Residual Waste Fuel Quality Assurance

This guideline is for the use of Managers and Employees of the Genesis Waste Recycling and Resource Recovery Facility located at Eastern Creek.

The aim of this guideline is to adapt relevant aspects of the current operational guidelines which operate in respect of quality control for recovered timber and wood-waste products at Genesis.

The purpose of this guideline is to ensure that the residual waste stream which is currently landfilled is subjected to appropriate measures to ensure that in order for it to be used as a fuel the residual waste stream only contains appropriate and approved materials and those standards must be achieved on a consistent and continuous basis.

This guideline is designed for the Genesis Construction and Demolition waste materials processing facility operating as at the date of this publication.

Separate and specific guidelines will be published in respect of:

(a) Commercial and Industrial waste [packaging] when that waste stream becomes operational; and

(b) Third party bona fide resource recovery facilities pre-processed waste streams subjected to Genesis QA procedures.

1. Types of Waste to Expect

Genesis Recycling and Landfill Facilities are licensed to accept General Solid Waste [non putrescible]. This type of waste is defined in the Protection of the Environment Operations Act.

The waste predominantly consists of dry mixed waste from building developments, demolition sites or infrastructure works.

This waste usually contains

1 Timber, garden-waste, green-waste tree loppings and wood-waste.
2 Plastics PVC pipes, polystyrene and packaging.
3 Brick, concrete, tiles, sand, soil, gyprock, compressed fibre cement sheeting.
4 Plumbing, pipes and electrical cables, fixtures and fittings.
5 Gas cylinders, fire extinguishers, colorbond sheets, engine parts, empty paint cans, aluminium, steel copper.
6 Paper, cardboard.

The waste may contain very small amounts of

1 Residue food wastes, wrappers and containers, nappies, sharps, plastic bottles and glass.

Hazardous waste

1 The main hazardous waste which can be found in mixed loads of building and demolition waste is asbestos sheeting also known as "fibro".

This is known as Special Waste. It presents a hazard and a deadly health risk and must NOT under any circumstances be crushed.

It must NOT be permitted into any product output stream and must by law be landfilled.

It can often be difficult to distinguish between compressed fibre cement and the more dangerous asbestos. For this reason both are to be excluded from the processing streams.

2. Graduated Response

Mixed waste comprising many different materials delivered to Genesis arrives in a multitude of different sizes and no single method is perfect at separating these.

That is why we use the **size and general type** of different materials to carry out the first stage sort.

Materials identified as being mostly wood, or mostly metal or mostly brick can either be directed to specific areas within the site designated for those particular materials or the contents of bins can be tipped on the floor within the MPC in order to fully view the contents.

This process is known as the pre-sort extraction.

3. Pre-sort Extraction

Pre-sort extraction of recyclables takes place prior to the waste being fed into the plant.

This is where the larger items of steel, timber, concrete, plastic, cardboard etc. are separated and extracted prior to the waste being loaded into the plant.

Figure 1: Material drop off

Figure 2: Pre-sort extraction in the MPC

Figure 3: Bulldozer completing pre-sort extraction

It is during this pre-sort extraction process that the physically larger items from the following categories can more easily be separated using the "grabs".

1. Timber, garden-waste, green-waste, tree loppings and wood-waste.
2. Plastics, polystyrene and packaging.
3. Brick, concrete, ceramics, tiles, sand, soil, gyprock, compressed fibre cement sheeting.
4. Plumbing, pipes and electrical cables, fixtures and fittings.
5. Gas cylinders, fire extinguishers, colorbond sheets, engine parts, empty paint cans, aluminium, steel copper PVC pipes car batteries.
6. Paper, cardboard.

Concrete	Greater than 500mm in size is to be delivered to the segregated Materials area [SMA]
Clean Paper & **Cardboard**	To be set aside for bailing and removal.
Polystyrene	To be set aside for bailing and removal.
Gyprock Sheet	To be set aside for removal.
Metal Objects	Gas cylinders Fire extinguishers Colorbond sheets Engine parts Aluminium, steel copper electrical/ plumbing accessories Car batteries Electrical components

METALS

The metal objects listed are valuable resources to be removed from site for reprocessing by others.

These objects inflict unnecessary wear and damage on the Plant. It is therefore the highest priority to remove these objects at the earliest stage possible.

4. Asbestos & Fibre Cement Sheeting

It is during this phase that special vigilance is required for the presence of asbestos.

Asbestos is not permitted to be received within the recycling facility and will normally be viewed or declared at the weighbridge. It is at that point where the waste classification is given and the vehicle is directed to the landfill. This applies both to bonded asbestos sheeting and to asbestos or fibre based insulation.

Sometimes small quantities of bonded asbestos may be contained or concealed within a mixed load or may be confused by its appearance with compressed fibre cement sheeting. The presence of this material may only be discovered when the load has been tipped onto the floor for inspection.

In such a case the MPC Manager will determine from the circumstances and by using the electronic scanner whether the load is in fact contaminated, or may be easily and safely remediated.

FIBRE SHEETING
As a general rule, any material within the MPC which may be thought could possibly be asbestos is to be removed for landfilling at the earliest stage possible.

5. PVC Materials

PVC pipes and plumbing fittings are common components of building and demolition waste streams.

In NSW these are not considered hazardous wastes and are usually landfilled.

PVC
PVC pipes and fittings are not a desirable component of the residue waste fuel stream and are excluded at the earliest stage possible.

6. Waste Loaded into the Shredder

After pre-sorting of the material, the residual waste is then loaded into the shredder for resizing before it passes through the plant.

The plant separates the waste materials into commodities such as:

- Timber
- Soil
- Rubble
- Aggregates
- Steel
- Non-ferrous materials.

From the shredder the combined waste stream goes up the conveyor to the "Long Object Separator", here as it name states, the material is separated into larger and smaller objects.

Figure 4: Shredder

Figure 5: Long object separator

7. Waste passes through Electro Magnet and Waste Screen

All the material coming off the Long Object Separator passes under an Electro Magnet, which extracts the small steel fragments which had escaped the pre-sort process and drops the steel items onto another sorting line.

After passing under the Electro Magnet, the material then passes over a waste screen which separates the fractions by size into over 65mm and under 65mm.

Figure 6: Electro Magnet

Figure 7: Waste screen which separates material into over 65cm and under 65cm

8. Waste goes onto Flip Flop Screen

After the Waste Screen the 60mm minus material goes onto a Flip Flop Screen which drops out the fines and also separates the remaining material into fraction sizes of 5mm, 10mm, 25mm and 30mm to 60mm+.

From here the materials pass through a series of blowers to remove any light waste [cardboard, paper, plastic] and then pass through an Eddie-Current to remove the non-ferrous metals.

The material is then stockpiled outside.

The 60mm – 450mm material then passes through the Air Separation unit which sorts out the heavy material from the light material. Heavy material is made up of primarily brick, concrete, asphalt etc. which returns to the Quality Control Station (QC2) for final inspection before going into storage outside.

Figure 8: Flip flop screen

Figure 9: Blowers used to remove any light waste

9. Aggregates and Hardfill Materials

Sorting and separation by weight and by size is a particularly efficient aspect of the Genesis Plant .

It is still necessary to ensure that heavier timber pieces are not cross contaminated with hardfill materials which may be sent for crushing.

At QC 2 pickers inspect the waste flow and ensure that hardfill materials separated from the mixed incoming waste are able to be deposited outside of the western wall of the MPC for where they will be integrated with larger quantities of source separated materials of the same kind.

Figure 10: QC 2 Pickers sorting out the heavy material, made up of primarily brick, concrete and asphalt

10. Ballistic Screen

The Ballistic screen also sorts out the 3 dimensional products such as timber, which then goes through Quality Control Station (QC3).

Figure 11: Ballistic Screen

Figure 12: Pickers at the Quality Picking Station

11. QUALITY CONTROL – Timber and Wood-waste

QC3 picking line is a 6 person picking station, 3 people on each side of the conveyor belt.

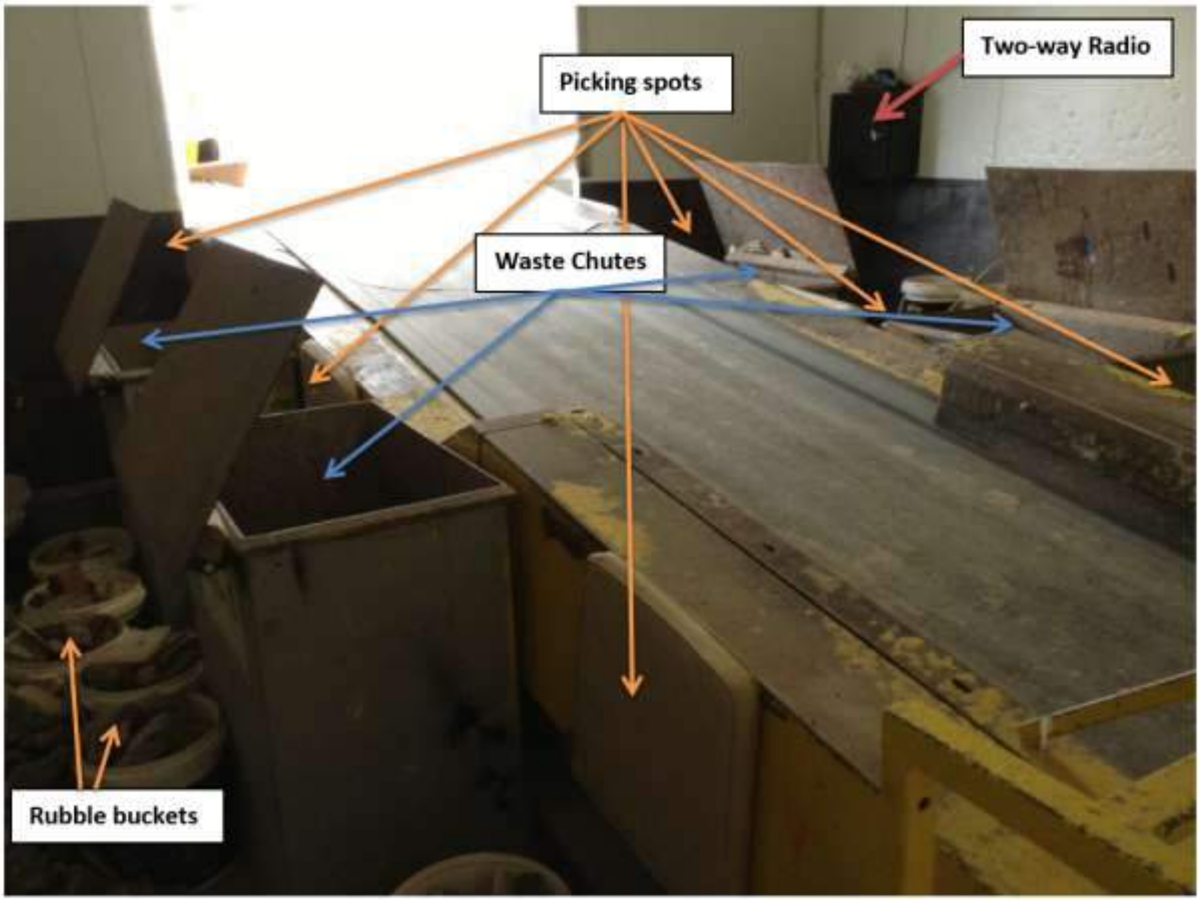


Figure 14: Overview of QC3 picking line

In the Timber Room there are currently FOUR waste chutes and ONE metal chute.

At QC3 the predominantly wood waste which has been separated by the plant from the mixed and shredded waste is then handpicked, separating out and excluding from the flow any material which is not wood.

Items typically removed at QC 3 include:

Plastics

Rubble (brick, tiles, rocks)

Fibreboard

CCA treated timber, painted timber, MDF, formwork fragments are also removed from the recovered wood-waste production line.

Figure 15: The above materials are extracted from the timber line as the material passes through the Quality Picking Stations and placed on the landfill line.

All of the contaminants removed at Quality Control stations by pickers are dropped via the individually designated chutes thereby ensuring that only eligible materials form part of the residue waste fuel stream and materials which are not eligible to be used as fuel are landfilled.

12. After QC3 Timber and Wood-waste Materials pass via Conveyor outside of the Building to QC5

At QC 5 further inspection and picking takes place to ensure integrity of product.

Figure 16: Conveyor from MPC (QC3) to QC5

Figure 17: Conveyor from QC5 to Timber Yard

Acceptable timber is left on the belt. This includes hardwood and pine timber.

Figure 18 Pine timber

13. Timber Processing, Chipping and Shredding

This process takes place outside in the designated area and from where the product is tested, certified, sold and transported.

Figure 19: Shredding material

Figure 20: Finished material

Figure 21: Finished material

TNG Fuel

Materials of concern to the public on the basis of a potential toxicity to the TNG fuel waste stream are already removed from the incoming Genesis mixed waste stream, by the processes described in this manual.

This is carried out at an early stage because

(a) It is convenient and cost effective to do so, and
(b) Because it is financially rewarding to the recycler to remove and sell the materials which have a commercial value, and
(c) Because materials which are submitted to the shredding and separation processes of the Genesis require pre-sorting in order to ensure optimum outcomes.

Pre-sort removal [in particular] of metal objects, car batteries, engine parts, fire extinguishers, gas cylinders, containers, etc. prior to the initial shredding avoids or minimises unnecessary wear and tear on the plant and produces the optimum separation process.

Materials which are identified and removed by hand as contaminants from the recovered resource streams at QC2, QC3 and QC5 are currently then transported to landfill via the downhill conveyor and chute.

These residue fractions comprise the same materials as identified in section 1 but in sizes which are too small to recover and re-use commercially or which are too mixed and soiled that they cannot [using current technology] be recycled.

The same methodology described earlier in this manual to exclude unacceptable materials from recovered wood-waste products also allows Genesis to exclude certain of those same materials from the TNG Fuel stream.

Simple re-designation of excluded material chutes as shown in the following figure means that treated timber, PVC, fibro board and non-combustible fractions can be safely and easily removed from the TNG fuel waste stream. These are then sent to landfill and the balance forms the TNG Fuel waste stream.

The installation of an additional dedicated Quality Control position [as QC6] will provide an additional level of confidence that fuel feedstocks will meet the required standards by minimising or excluding CCA treated or lead painted timbers, asbestos, and PVC.

Artist's Impression TNG Plant

Appendix J

Sensitivity Assessment

Weighted Average Air Quality Data

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

	Sensitive Receptor	ID	X	Y	Annual GLCs																									
														Metal									Heavy Metal							
					PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
					mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
	In-stack Concentration (mg/Nm³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
Sensitive receivers	James Erskine Primary School	R1	296748	6257187	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.5E-05	2.5E-04	4.7E-05	4.1E-06	8.2E-09	1.8E-08	2.0E-09	1.4E-11	7.0E-10	7.6E-08	6.8E-09	4.5E-11	4.3E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.3E-08	1.1E-08	1.2E-07
	Eskrine Park High School	R2	296709	6256992	1.9E-06	1.9E-06	1.7E-05	9.6E-07	1.9E-06	5.2E-05	2.3E-04	4.4E-05	3.8E-06	7.7E-09	1.7E-08	1.9E-09	1.3E-11	6.5E-10	7.1E-08	6.4E-09	4.2E-11	4.1E-09	4.8E-08	2.8E-08	1.8E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.1E-07
	Clairgate Public School	R3	296299	6258187	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.7E-05	2.5E-04	4.8E-05	4.2E-06	8.4E-09	1.9E-08	2.1E-09	1.5E-11	7.1E-10	7.7E-08	7.0E-09	4.6E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.3E-07
	Minchinbury Public School	R4	299287	6259084	4.2E-06	4.2E-06	3.8E-05	2.1E-06	4.2E-06	1.1E-04	5.0E-04	9.7E-05	8.4E-06	1.7E-08	3.8E-08	4.2E-09	2.9E-11	1.4E-09	1.6E-07	1.4E-08	9.2E-11	8.9E-09	1.0E-07	6.2E-08	3.9E-07	7.2E-07	9.2E-07	6.8E-08	2.4E-08	2.5E-07
	Pinegrove Memorial Park Lawn Cemetery	R5	300567	6258692	2.2E-06	2.2E-06	1.9E-05	1.1E-06	2.2E-06	5.8E-05	2.6E-04	5.0E-05	4.3E-06	8.6E-09	1.9E-08	2.2E-09	1.5E-11	7.3E-10	8.0E-08	7.2E-09	4.8E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.8E-07	3.5E-08	1.2E-08	1.3E-07
	Sunny Patch Preparation School & Long Day Care Centre	R6	297153	6258266	3.4E-06	3.4E-06	3.0E-05	1.7E-06	3.4E-06	9.1E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.4E-09	2.4E-11	1.1E-09	1.2E-07	1.1E-08	7.4E-11	7.1E-09	8.4E-08	5.0E-08	3.1E-07	5.8E-07	7.4E-07	5.5E-08	1.9E-08	2.0E-07
	Eastern Creek Public School	R7	301201	6259319	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.6E-09	1.2E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.2E-09	9.9E-08
	St Agnes Catholic High School	R8	300761	6259894	1.9E-06	1.9E-06	1.7E-05	9.6E-07	1.9E-06	5.2E-05	2.3E-04	4.4E-05	3.8E-06	7.7E-09	1.7E-08	1.9E-09	1.3E-11	6.5E-10	7.1E-08	6.4E-09	4.2E-11	4.1E-09	4.8E-08	2.8E-08	1.8E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.2E-07
	All Areas Family Day Care Pty	R9	299581	6258986	3.6E-06	3.6E-06	3.3E-05	1.8E-06	3.6E-06	9.9E-05	4.4E-04	8.4E-05	7.3E-06	1.5E-08	3.3E-08	3.6E-09	2.6E-11	1.2E-09	1.4E-07	1.2E-08	8.0E-11	7.7E-09	9.1E-08	5.4E-08	3.4E-07	6.3E-07	8.0E-07	5.9E-08	2.0E-08	2.2E-07
	Maria Hawey Child Care Centre	R10	299370	6259272	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.5E-04	8.7E-05	7.6E-06	1.5E-08	3.4E-08	3.8E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.3E-11	8.0E-09	9.5E-08	5.6E-08	3.5E-07	6.5E-07	8.3E-07	6.2E-08	2.1E-08	2.3E-07
	Jiminey Cricket Long Day Care	R11	298562	6259310	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.5E-04	8.6E-05	7.5E-06	1.5E-08	3.4E-08	3.8E-09	2.6E-11	1.3E-09	1.4E-07	1.3E-08	8.3E-11	8.0E-09	9.4E-08	5.6E-08	3.5E-07	6.5E-07	8.3E-07	6.1E-08	2.1E-08	2.3E-07
	White Bunny Child Care Centre	R12	299792	6259530	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.2E-05	3.6E-04	7.0E-05	6.0E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.6E-11	6.4E-09	7.6E-08	4.5E-08	2.8E-07	5.2E-07	6.6E-07	4.9E-08	1.7E-08	1.8E-07
	LITTLES MARTIES	R13	296419	6258212	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.4E-06	8.9E-09	2.0E-08	2.2E-09	1.6E-11	7.5E-10	8.2E-08	7.4E-09	4.9E-11	4.7E-09	5.5E-08	3.3E-08	2.0E-07	3.8E-07	4.9E-07	3.6E-08	1.2E-08	1.3E-07
	Kidz Fun Factory	R14	298128	6259445	3.1E-06	3.1E-06	2.8E-05	1.5E-06	3.1E-06	8.3E-05	3.7E-04	7.1E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.1E-07	1.0E-08	6.8E-11	6.5E-09	7.7E-08	4.6E-08	2.8E-07	5.3E-07	6.8E-07	5.0E-08	1.7E-08	1.9E-07
Residential Receivers		R15	296500	6256754	1.7E-06	1.7E-06	1.5E-05	8.4E-07	1.7E-06	4.5E-05	2.0E-04	3.9E-05	3.4E-06	6.7E-09	1.5E-08	1.7E-09	1.2E-11	5.7E-10	6.2E-08	5.6E-09	3.7E-11	3.6E-09	4.2E-08	2.5E-08	1.5E-07	2.9E-07	3.7E-07	2.7E-08	9.4E-09	1.0E-07
		R16	296550	6256754	1.7E-06	1.7E-06	1.5E-05	8.6E-07	1.7E-06	4.6E-05	2.1E-04	3.9E-05	3.4E-06	6.9E-09	1.5E-08	1.7E-09	1.2E-11	5.8E-10	6.3E-08	5.7E-09	3.8E-11	3.6E-09	4.3E-08	2.5E-08	1.6E-07	2.9E-07	3.8E-07	2.8E-08	9.6E-09	1.0E-07
		R17	296600	6256754	1.7E-06	1.7E-06	1.6E-05	8.7E-07	1.7E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	7.0E-09	1.6E-08	1.7E-09	1.2E-11	5.9E-10	6.4E-08	5.8E-09	3.8E-11	3.7E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.8E-07	2.8E-08	9.8E-09	1.0E-07
		R18	296650	6256754	1.8E-06	1.8E-06	1.6E-05	8.9E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.5E-06	7.1E-09	1.6E-08	1.8E-09	1.2E-11	6.0E-10	6.6E-08	5.9E-09	3.9E-11	3.8E-09	4.4E-08	2.6E-08	1.6E-07	3.1E-07	3.9E-07	2.9E-08	9.9E-09	1.1E-07
		R19	296700	6256754	1.8E-06	1.8E-06	1.6E-05	9.0E-07	1.8E-06	4.9E-05	2.2E-04	4.2E-05	3.6E-06	7.2E-09	1.6E-08	1.8E-09	1.3E-11	6.1E-10	6.7E-08	6.0E-09	4.0E-11	3.8E-09	4.5E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	2.9E-08	1.0E-08	1.1E-07
		R20	296750	6256754	1.8E-06	1.8E-06	1.7E-05	9.2E-07	1.8E-06	5.0E-05	2.2E-04	4.2E-05	3.7E-06	7.3E-09	1.7E-08	1.8E-09	1.3E-11	6.2E-10	6.8E-08	6.1E-09	4.0E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.2E-07	4.0E-07	3.0E-08	1.0E-08	1.1E-07
		R21	296800	6256754	1.9E-06	1.9E-06	1.7E-05	9.3E-07	1.9E-06	5.0E-05	2.2E-04	4.3E-05	3.7E-06	7.5E-09	1.7E-08	1.9E-09	1.3E-11	6.3E-10	6.9E-08	6.2E-09	4.1E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.2E-07	4.1E-07	3.0E-08	1.0E-08	1.1E-07
		R22	296850	6256754	1.9E-06	1.9E-06	1.7E-05	9.5E-07	1.9E-06	5.1E-05	2.3E-04	4.4E-05	3.8E-06	7.6E-09	1.7E-08	1.9E-09	1.3E-11	6.5E-10	7.0E-08	6.3E-09	4.2E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.1E-07
		R23	296900	6256754	1.9E-06	1.9E-06	1.7E-05	9.7E-07	1.9E-06	5.2E-05	2.3E-04	4.5E-05	3.9E-06	7.7E-09	1.7E-08	1.9E-09	1.4E-11	6.6E-10	7.2E-08	6.4E-09	4.3E-11	4.1E-09	4.8E-08	2.9E-08	1.8E-07	3.3E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
		R24	296950	6256754	2.0E-06	2.0E-06	1.8E-05	9.8E-07	2.0E-06	5.3E-05	2.4E-04	4.5E-05	3.9E-06	7.9E-09	1.8E-08	2.0E-09	1.4E-11	6.7E-10	7.3E-08	6.6E-09	4.3E-11	4.2E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
		R25	297000	6256754	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	8.0E-09	1.8E-08	2.0E-09	1.4E-11	6.8E-10	7.4E-08	6.7E-09	4.4E-11	4.3E-09	5.0E-08	3.0E-08	1.8E-07	3.4E-07	4.4E-07	3.3E-08	1.1E-08	1.2E-07
		R26	297050	6256754	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.5E-05	2.4E-04	4.7E-05	4.1E-06	8.2E-09	1.8E-08	2.0E-09	1.4E-11	6.9E-10	7.6E-08	6.8E-09	4.5E-11	4.3E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.3E-08	1.1E-08	1.2E-07
		R27	297100	6256754	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.8E-05	4.1E-06	8.3E-09	1.9E-08	2.1E-09	1.5E-11	7.0E-10	7.7E-08	6.9E-09	4.6E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.2E-07
		R28	297150	6256754	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.5E-04	4.9E-05	4.2E-06	8.4E-09	1.9E-08	2.1E-09	1.5E-11	7.2E-10	7.8E-08	7.0E-09	4.6E-11	4.5E-09	5.3E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.3E-07
		R29	297200	6256754	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.8E-05	2.6E-04	4.9E-05	4.3E-06	8.6E-09	1.9E-08	2.1E-09	1.5E-11	7.3E-10	7.9E-08	7.1E-09	4.7E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
		R30	297250	6256754	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	5.9E-05	2.6E-04	5.0E-05	4.4E-06	8.8E-09	2.0E-08	2.2E-09	1.5E-11	7.4E-10	8.1E-08	7.3E-09	4.8E-11	4.6E-09	5.5E-08	3.2E-08	2.0E-07	3.8E-07	4.8E-07	3.6E-08	1.2E-08	1.3E-07
		R31	297300	6256754	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.5E-06	8.9E-09	2.0E-08	2.2E-09	1.6E-11	7.6E-10	8.3E-08	7.4E-09	4.9E-11	4.7E-09	5.6E-08	3.3E-08	2.1E-07	3.8E-07	4.9E-07	3.6E-08	1.3E-08	1.3E-07
		R32	297350	6256754	2.3E-06	2.3E-06	2.0E-05	1.1E-06	2.3E-06	6.1E-05	2.7E-04	5.2E-05	4.6E-06	9.1E-09	2.0E-08	2.3E-09	1.6E-11	7.7E-10	8.4E-08	7.6E-09	5.0E-11	4.8E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
		R33	297400	6256754	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.3E-05	4.6E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.7E-09	5.1E-11	4.9E-09	5.8E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
		R34	297450	6256754	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.8E-04	5.4E-05	4.7E-06	9.4E-09	2.1E-08	2.4E-09	1.7E-11	8.0E-10	8.7E-08	7.9E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.8E-08	1.3E-08	1.4E-07
		R35	297500	6256754	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.5E-05	4.8E-06	9.6E-09	2.2E-08	2.4E-09	1.7E-11	8.2E-10	8.9E-08	8.0E-09	5.3E-11	5.1E-09	6.0E-08	3.6E-08	2.2E-07	4.1E-07	5.3E-07	3.9E-08	1.4E-08	1.4E-07
		R36	296500	6256804	1.7E-06	1.7E-06	1.5E-05	8.5E-07	1.7E-06	4.6E-05	2.0E-04	3.9E-05	3.4E-06	6.8E-09	1.5E-08	1.7E-09	1.2E-11	5.8E-10	6.3E-08	5.7E-09	3.7E-11	3.6E-09	4.2E-08	2.5E-08	1.6E-07	2.9E-07	3.7E-07	2.8E-08	9.5E-09	1.0E-07
		R37	296550	6256804	1.7E-06	1.7E-06	1.6E-05	8.7E-07	1.7E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	6.9E-09	1.6E-08	1.7E-09	1.2E-11	5.9E-10	6.4E-08	5.8E-09	3.8E-11	3.7E-09	4.3E-08	2.6E-08	1.6E-07	3.0E-07	3.8E-07	2.8E-08	9.7E-09	1.0E-07
		R38	296600	6256804	1.8E-06	1.8E-06	1.6E-05	8.8E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.5E-06	7.1E-09	1.6E-08	1.8E-09	1.2E-11	6.0E-10	6.5E-08	5.9E-09	3.9E-11	3.7E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.9E-07	2.9E-08	9.9E-09	1.1E-07
		R39	296650	6256804	1.8E-06	1.8E-06	1.6E-05	9.0E-07	1.8E-06	4.8E-05	2.2E-04	4.1E-05	3.6E-06	7.2E-09	1.6E-08	1.8E-09	1.3E-11	6.1E-10	6.6E-08	6.0E-09	3.9E-11	3.8E-09	4.5E-08	2.7E-08	1.6E-07	3.1E-07	3.9E-07	2.9E-08	1.0E-08	1.1E-07
		R40	296700	6256804	1.8E-06	1.8E-06	1.6E-05	9.1E-07	1.8E-06	4.9E-05	2.2E-04	4.2E-05	3.6E-06	7.3E-09	1.6E-08	1.8E-09	1.3E-11	6.2E-10	6.7E-08	6.1E-09	4.0E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	3.0E-08	1.0E-08	1.1E-07
		R41	296750	6256804	1.9E-06	1.9E-06	1.7E-05	9.3E-07	1.9E-06	5.0E-05	2.2E-04	4.3E-05	3.7E-06	7.4E-09	1.7E-08	1.9E-09	1.3E-11	6.3E-10	6.9E-08	6.2E-09	4.1E-11	3.9E-09	4.7E-08	2.8E-08	1.7E-07	3.2E-07	4.1E-07	3.0E-08	1.0E-08	1.1E-07
		R42	296800	6256804	1.9E-06	1.9E-06	1.7E-05	9.5E-07	1.9E-06	5.1E-05	2.3E-04	4.3E-05	3.8E-06	7.6E-09	1.7E-08	1.9E-09	1.3E-11	6.4E-10	7.0E-08	6.3E-09	4.2E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.1E-07
		R43	296850	6256804	1.9E-06	1.9E-06	1.7E-05	9.6E-07	1.9E-06	5.2E-05	2.3E-04	4.4E-05	3.9E-06	7.7E-09	1.7E-08	1.9E-09	1.3E-11	6.6E-10	7.1E-08	6.4E-09	4.2E-11	4.1E-09	4.8E-08	2.9E-08	1.8E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.2E-07
		R44	296900	6256804	2.0E-06	2.0E-06	1.8E-05	9.8E-07	2.0E-06	5.3E-05	2.4E-04	4.5E-05	3.9E-06	7.8E-09	1.8E-08	2.0E-09	1.4E-11	6.7E-10	7.3E-08	6.5E-09	4.3E-11	4.2E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
		R45	296950	6256804	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	8.0E-09	1.8E-08	2.0E-09	1.4E-11	6.8E-10	7.4E-08	6.7E-09	4.4E-11	4.2E-09	5.0E-08	3.0E-08	1.8E-07	3.4E-07	4.4E-07	3.3E-08	1.1E-08	1.2E-07
		R46	297000	6256804	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.5E-05	2.4E-04	4.7E-05	4.1E-06	8.1E-09	1.8E-08	2.0E-09	1.4E-11	6.9E-10	7.5E-08	6.8E-09	4.5E-11	4.3E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.3E-08	1.1E-08	1.2E-07
		R47	297050	6256804	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.7E-05	4.1E-06	8.3E-09	1.9E-08	2.1E-09	1.4E-11	7.0E-10	7.6E-08	6.9E-09	4.5E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.6E-07	4.5E-07	3.4E-08	1.2E-08	1.2E-07
		R48	297100	6256804	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.5E-04	4.8E-05	4.2E-06	8.4E-09	1.9E-08	2.1E-09	1.5E-11	7.1E-10	7.8E-08	7.0E-09	4.6E-11	4.5E-09	5.3E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.3E-07
		R49	297150	6256804	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.8E-05	2.6E-04	4.9E-05	4.3E-06	8.6E-09	1.9E-08	2.1E-09	1.5E-11	7.3E-10	7.9E-08	7.1E-09	4.7E-11	4.5E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
		R50	297200	6256804	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	5.9E-05	2.6E-04	5.0E-05	4.4E-06	8.7E-09	2.0E-08	2.2E-09	1.5E-11	7.4E-10	8.1E-08	7.3E-09	4.8E-11	4.6E-09	5.5E-08	3.2E-08	2.0E-07	3.8E-07	4.8E-07	3.6E-08	1.2E-08	1.3E-07
		R51	297250	6256804	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.5E-06	8.9E-09	2.0E-08	2.2E-09	1.6E-11	7.6E-10	8.2E-08	7.4E-09	4.9E-11	4.7E-09	5.6E-08	3.3E-08	2.0E-07	3.8E-07	4.9E-07	3.6E-08	1.2E-08	1.3E-07
		R52	297300	6256804	2.3E-06	2.3E-06	2.0E-05	1.1E-06	2.3E-06	6.1E-05	2.7E-04	5.2E-05	4.5E-06	9.1E-09	2.0E-08	2.3E-09	1.6E-11	7.7E-10	8.4E-08	7.6E-09	5.0E-11	4.8E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
		R53	297350	6256804	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.2E-05	2.8E-04	5.3E-05	4.6E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.7E-09	5.1E-11	4.9E-09	5.8E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
		R54	297400	6256804	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.8E-04	5.4E-05	4.7E-06	9.4E-09	2.1E-08	2.4E-09	1.7E-11	8.0E-10	8.7E-08	7.9E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.8E-08	1.3E-08	1.4E-07
		R55	297450	6256804	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.5E-05	4.8E-06	9.6E-09	2.2E-08	2.4E-09	1.7E-11	8.2E-10	8.9E-08	8.0E-09	5.3E-11	5.1E-09	6.0E-08	3.6E-08	2.2E-07	4.1E-07	5.3E-07	3.9E-08	1.3E-08	1.4E-07
		R56	297500	6256804	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.8E-09	2.2E-08	2.5E-09	1.7E-11	8.4E-10	9.1E-08	8.2E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.3E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
		R57	296500	6256854	1.7E-06	1.7E-06	1.5E-05	8.5E-07	1.7E-06	4.6E-05	2.0E-04	3.9E-05	3.4E-06	6.8E-09	1.5E-08	1.7E-09	1.2E-11	5.8E-10	6.3E-08	5.7E-09	3.8E-11	3.6E-09	4.3E-08	2.5E-08	1.6E-07	2.9E-07	3.8E-07	2.8E-08	9.6E-09	1.0E-07
		R58	296550	6256854	1.7E-06	1.7E-06	1.6E-05	8.7E-07	1.7E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	7.0E-09	1.6E-08	1.7E-09	1.2E-11	5.9E-10	6.5E-08	5.8E-09	3.8E-11	3.7E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.8E-07	2.8E-08	9.8E-09	1.0E-07
		R59	296600	6256854	1.8E-06	1.8E-06	1.6E-05	8.9E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.5E-06	7.1E-09	1.6E-08	1.8E-09	1.2E-11	6.0E-10	6.6E-08	5.9E-09	3.9E-11	3.8E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.9E-07	2.9E-08	9.9E-09	1.1E-07
		R60	296650	6256854	1.8E-06	1.8E-06	1.6E-05	9.0E-07	1.8E-06	4.9E-05	2.2E-04	4.2E-05	3.6E-06	7.2E-09	1.6E-08	1.8E-09	1.3E-11	6.1E-10	6.7E-08	6.0E-09	4.0E-11	3.8E-09	4.5E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	2.9E-08	1.0E-08	1.1E-07
		R61	296700	6256854	1.8E-06	1.8E-06	1.7E-05	9.2E-07	1.8E-06	5.0E-05	2.2E-04	4.2E-05	3.7E-06	7.4E-09	1.7E-08	1.8E-09	1.3E-11	6.3E-10	6.8E-08	6.1E-09	4.1E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.2E-07	4.1E-07	3.0E-08	1.0E-08	1.1E-07

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																									
													Metal									Heavy Metal							
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R62	296750	6256854	1.9E-06	1.9E-06	1.7E-05	9.4E-07	1.9E-06	5.1E-05	2.3E-04	4.3E-05	3.8E-06	7.5E-09	1.7E-08	1.9E-09	1.3E-11	6.4E-10	7.0E-08	6.3E-09	4.1E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.2E-07	4.1E-07	3.1E-08	1.1E-08	1.1E-07
	R63	296800	6256854	1.9E-06	1.9E-06	1.7E-05	9.6E-07	1.9E-06	5.2E-05	2.3E-04	4.4E-05	3.8E-06	7.7E-09	1.7E-08	1.9E-09	1.3E-11	6.5E-10	7.1E-08	6.4E-09	4.2E-11	4.1E-09	4.8E-08	2.8E-08	1.8E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.1E-07
	R64	296850	6256854	2.0E-06	2.0E-06	1.8E-05	9.8E-07	2.0E-06	5.3E-05	2.3E-04	4.5E-05	3.9E-06	7.8E-09	1.8E-08	2.0E-09	1.4E-11	6.6E-10	7.2E-08	6.5E-09	4.3E-11	4.1E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R65	296900	6256854	2.0E-06	2.0E-06	1.8E-05	9.9E-07	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	7.9E-09	1.8E-08	2.0E-09	1.4E-11	6.8E-10	7.3E-08	6.6E-09	4.4E-11	4.2E-09	5.0E-08	2.9E-08	1.8E-07	3.4E-07	4.4E-07	3.2E-08	1.1E-08	1.2E-07
	R66	296950	6256854	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.5E-05	2.4E-04	4.7E-05	4.0E-06	8.1E-09	1.8E-08	2.0E-09	1.4E-11	6.9E-10	7.5E-08	6.7E-09	4.5E-11	4.3E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.3E-08	1.1E-08	1.2E-07
	R67	297000	6256854	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.7E-05	4.1E-06	8.2E-09	1.9E-08	2.1E-09	1.4E-11	7.0E-10	7.6E-08	6.9E-09	4.5E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.5E-07	4.5E-07	3.4E-08	1.2E-08	1.2E-07
	R68	297050	6256854	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.7E-05	2.5E-04	4.8E-05	4.2E-06	8.4E-09	1.9E-08	2.1E-09	1.5E-11	7.1E-10	7.8E-08	7.0E-09	4.6E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.3E-07
	R69	297100	6256854	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.8E-05	2.6E-04	4.9E-05	4.3E-06	8.5E-09	1.9E-08	2.1E-09	1.5E-11	7.3E-10	7.9E-08	7.1E-09	4.7E-11	4.5E-09	5.3E-08	3.2E-08	2.0E-07	3.7E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
	R70	297150	6256854	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	5.9E-05	2.6E-04	5.0E-05	4.3E-06	8.7E-09	2.0E-08	2.2E-09	1.5E-11	7.4E-10	8.0E-08	7.2E-09	4.8E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.8E-07	3.5E-08	1.2E-08	1.3E-07
	R71	297200	6256854	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.4E-06	8.9E-09	2.0E-08	2.2E-09	1.6E-11	7.5E-10	8.2E-08	7.4E-09	4.9E-11	4.7E-09	5.5E-08	3.3E-08	2.0E-07	3.8E-07	4.9E-07	3.6E-08	1.2E-08	1.3E-07
	R72	297250	6256854	2.3E-06	2.3E-06	2.0E-05	1.1E-06	2.3E-06	6.1E-05	2.7E-04	5.2E-05	4.5E-06	9.0E-09	2.0E-08	2.3E-09	1.6E-11	7.7E-10	8.4E-08	7.5E-09	5.0E-11	4.8E-09	5.7E-08	3.3E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R73	297300	6256854	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.2E-05	2.8E-04	5.3E-05	4.6E-06	9.2E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.5E-08	7.7E-09	5.1E-11	4.9E-09	5.8E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R74	297350	6256854	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.8E-04	5.4E-05	4.7E-06	9.4E-09	2.1E-08	2.4E-09	1.6E-11	8.0E-10	8.7E-08	7.8E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.0E-07	5.2E-07	3.8E-08	1.3E-08	1.4E-07
	R75	297400	6256854	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.5E-05	4.8E-06	9.6E-09	2.2E-08	2.4E-09	1.7E-11	8.2E-10	8.9E-08	8.0E-09	5.3E-11	5.1E-09	6.0E-08	3.6E-08	2.2E-07	4.1E-07	5.3E-07	3.9E-08	1.3E-08	1.4E-07
	R76	297450	6256854	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.8E-09	2.2E-08	2.5E-09	1.7E-11	8.3E-10	9.1E-08	8.2E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.3E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R77	297500	6256854	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.0E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.5E-10	9.3E-08	8.3E-09	5.5E-11	5.3E-09	6.3E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R78	296500	6256904	1.7E-06	1.7E-06	1.6E-05	8.6E-07	1.7E-06	4.7E-05	2.1E-04	4.0E-05	3.4E-06	6.9E-09	1.6E-08	1.7E-09	1.2E-11	5.9E-10	6.4E-08	5.7E-09	3.8E-11	3.7E-09	4.3E-08	2.6E-08	1.6E-07	3.0E-07	3.8E-07	2.8E-08	9.7E-09	1.0E-07
	R79	296550	6256904	1.8E-06	1.8E-06	1.6E-05	8.8E-07	1.8E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	7.0E-09	1.6E-08	1.8E-09	1.2E-11	6.0E-10	6.5E-08	5.8E-09	3.9E-11	3.7E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.9E-07	2.9E-08	9.8E-09	1.1E-07
	R80	296600	6256904	1.8E-06	1.8E-06	1.6E-05	8.9E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.6E-06	7.2E-09	1.6E-08	1.8E-09	1.3E-11	6.1E-10	6.6E-08	6.0E-09	3.9E-11	3.8E-09	4.5E-08	2.6E-08	1.6E-07	3.1E-07	3.9E-07	2.9E-08	1.0E-08	1.1E-07
	R81	296650	6256904	1.8E-06	1.8E-06	1.6E-05	9.1E-07	1.8E-06	4.9E-05	2.2E-04	4.2E-05	3.7E-06	7.3E-09	1.6E-08	1.8E-09	1.3E-11	6.2E-10	6.8E-08	6.1E-09	4.0E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	3.0E-08	1.0E-08	1.1E-07
	R82	296700	6256904	1.9E-06	1.9E-06	1.7E-05	9.3E-07	1.9E-06	5.0E-05	2.2E-04	4.3E-05	3.7E-06	7.5E-09	1.7E-08	1.9E-09	1.3E-11	6.4E-10	6.9E-08	6.2E-09	4.1E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.2E-07	4.1E-07	3.0E-08	1.0E-08	1.1E-07
	R83	296750	6256904	1.9E-06	1.9E-06	1.7E-05	9.5E-07	1.9E-06	5.2E-05	2.3E-04	4.4E-05	3.8E-06	7.6E-09	1.7E-08	1.9E-09	1.3E-11	6.5E-10	7.1E-08	6.4E-09	4.2E-11	4.0E-09	4.8E-08	2.8E-08	1.8E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.1E-07
	R84	296800	6256904	1.9E-06	1.9E-06	1.7E-05	9.7E-07	1.9E-06	5.2E-05	2.3E-04	4.5E-05	3.9E-06	7.8E-09	1.7E-08	1.9E-09	1.4E-11	6.6E-10	7.2E-08	6.5E-09	4.3E-11	4.1E-09	4.9E-08	2.9E-08	1.8E-07	3.3E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R85	296850	6256904	2.0E-06	2.0E-06	1.8E-05	9.9E-07	2.0E-06	5.3E-05	2.4E-04	4.5E-05	4.0E-06	7.9E-09	1.8E-08	2.0E-09	1.4E-11	6.7E-10	7.3E-08	6.6E-09	4.4E-11	4.2E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.4E-07	3.2E-08	1.1E-08	1.2E-07
	R86	296900	6256904	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	8.1E-09	1.8E-08	2.0E-09	1.4E-11	6.8E-10	7.4E-08	6.7E-09	4.4E-11	4.3E-09	5.0E-08	3.0E-08	1.9E-07	3.5E-07	4.4E-07	3.3E-08	1.1E-08	1.2E-07
	R87	296950	6256904	2.1E-06	2.1E-06	1.8E-05	1.0E-06	2.1E-06	5.5E-05	2.5E-04	4.7E-05	4.1E-06	8.2E-09	1.8E-08	2.1E-09	1.4E-11	7.0E-10	7.6E-08	6.8E-09	4.5E-11	4.3E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.3E-08	1.1E-08	1.2E-07
	R88	297000	6256904	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.8E-05	4.2E-06	8.4E-09	1.9E-08	2.1E-09	1.5E-11	7.1E-10	7.7E-08	7.0E-09	4.6E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.3E-07
	R89	297050	6256904	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.8E-05	2.6E-04	4.9E-05	4.3E-06	8.5E-09	1.9E-08	2.1E-09	1.5E-11	7.2E-10	7.9E-08	7.1E-09	4.7E-11	4.5E-09	5.3E-08	3.2E-08	2.0E-07	3.7E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
	R90	297100	6256904	2.2E-06	2.2E-06	1.9E-05	1.1E-06	2.2E-06	5.9E-05	2.6E-04	5.0E-05	4.3E-06	8.7E-09	2.0E-08	2.2E-09	1.5E-11	7.4E-10	8.0E-08	7.2E-09	4.8E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.8E-07	3.5E-08	1.2E-08	1.3E-07
	R91	297150	6256904	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	5.9E-05	2.6E-04	5.1E-05	4.4E-06	8.8E-09	2.0E-08	2.2E-09	1.5E-11	7.5E-10	8.2E-08	7.3E-09	4.8E-11	4.7E-09	5.5E-08	3.3E-08	2.0E-07	3.8E-07	4.8E-07	3.6E-08	1.2E-08	1.3E-07
	R92	297200	6256904	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.1E-05	2.7E-04	5.2E-05	4.5E-06	9.0E-09	2.0E-08	2.2E-09	1.6E-11	7.6E-10	8.3E-08	7.5E-09	4.9E-11	4.8E-09	5.6E-08	3.3E-08	2.1E-07	3.9E-07	4.9E-07	3.7E-08	1.3E-08	1.3E-07
	R93	297250	6256904	2.3E-06	2.3E-06	2.1E-05	1.1E-06	2.3E-06	6.2E-05	2.8E-04	5.3E-05	4.6E-06	9.2E-09	2.1E-08	2.3E-09	1.6E-11	7.8E-10	8.5E-08	7.7E-09	5.1E-11	4.9E-09	5.7E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.7E-08	1.3E-08	1.4E-07
	R94	297300	6256904	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.4E-09	2.1E-08	2.3E-09	1.6E-11	8.0E-10	8.7E-08	7.8E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.0E-07	5.2E-07	3.8E-08	1.3E-08	1.4E-07
	R95	297350	6256904	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.5E-05	4.8E-06	9.6E-09	2.2E-08	2.4E-09	1.7E-11	8.1E-10	8.9E-08	8.0E-09	5.3E-11	5.1E-09	6.0E-08	3.5E-08	2.2E-07	4.1E-07	5.3E-07	3.9E-08	1.3E-08	1.4E-07
	R96	297400	6256904	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.8E-09	2.2E-08	2.4E-09	1.7E-11	8.3E-10	9.0E-08	8.1E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.2E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R97	297450	6256904	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.7E-05	3.0E-04	5.7E-05	5.0E-06	1.0E-08	2.2E-08	2.5E-09	1.7E-11	8.5E-10	9.2E-08	8.3E-09	5.5E-11	5.3E-09	6.2E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R98	297500	6256904	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.7E-10	9.4E-08	8.5E-09	5.6E-11	5.4E-09	6.4E-08	3.8E-08	2.3E-07	4.4E-07	5.6E-07	4.2E-08	1.4E-08	1.5E-07
	R99	296500	6256954	1.7E-06	1.7E-06	1.6E-05	8.7E-07	1.7E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	7.0E-09	1.6E-08	1.7E-09	1.2E-11	5.9E-10	6.5E-08	5.8E-09	3.8E-11	3.7E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.8E-07	2.8E-08	9.8E-09	1.0E-07
	R100	296550	6256954	1.8E-06	1.8E-06	1.6E-05	8.9E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.6E-06	7.1E-09	1.6E-08	1.8E-09	1.2E-11	6.0E-10	6.6E-08	5.9E-09	3.9E-11	3.8E-09	4.4E-08	2.6E-08	1.6E-07	3.1E-07	3.9E-07	2.9E-08	9.9E-09	1.1E-07
	R101	296600	6256954	1.8E-06	1.8E-06	1.6E-05	9.1E-07	1.8E-06	4.9E-05	2.2E-04	4.2E-05	3.6E-06	7.2E-09	1.6E-08	1.8E-09	1.3E-11	6.2E-10	6.7E-08	6.0E-09	4.0E-11	3.8E-09	4.5E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	3.0E-08	1.0E-08	1.1E-07
	R102	296650	6256954	1.8E-06	1.8E-06	1.7E-05	9.2E-07	1.8E-06	5.0E-05	2.2E-04	4.3E-05	3.7E-06	7.4E-09	1.7E-08	1.8E-09	1.3E-11	6.3E-10	6.8E-08	6.2E-09	4.1E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.2E-07	4.1E-07	3.0E-08	1.0E-08	1.1E-07
	R103	296700	6256954	1.9E-06	1.9E-06	1.7E-05	9.4E-07	1.9E-06	5.1E-05	2.3E-04	4.3E-05	3.8E-06	7.6E-09	1.7E-08	1.9E-09	1.3E-11	6.4E-10	7.0E-08	6.3E-09	4.2E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.2E-07	4.2E-07	3.1E-08	1.1E-08	1.1E-07
	R104	296750	6256954	1.9E-06	1.9E-06	1.7E-05	9.7E-07	1.9E-06	5.2E-05	2.3E-04	4.4E-05	3.9E-06	7.7E-09	1.7E-08	1.9E-09	1.4E-11	6.6E-10	7.2E-08	6.4E-09	4.3E-11	4.1E-09	4.8E-08	2.9E-08	1.8E-07	3.3E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R105	296800	6256954	2.0E-06	2.0E-06	1.8E-05	9.8E-07	2.0E-06	5.3E-05	2.4E-04	4.5E-05	3.9E-06	7.9E-09	1.8E-08	2.0E-09	1.4E-11	6.7E-10	7.3E-08	6.6E-09	4.3E-11	4.2E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R106	296850	6256954	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	8.0E-09	1.8E-08	2.0E-09	1.4E-11	6.8E-10	7.4E-08	6.7E-09	4.4E-11	4.2E-09	5.0E-08	3.0E-08	1.8E-07	3.4E-07	4.4E-07	3.3E-08	1.1E-08	1.2E-07
	R107	296900	6256954	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.5E-05	2.4E-04	4.7E-05	4.1E-06	8.2E-09	1.8E-08	2.0E-09	1.4E-11	6.9E-10	7.5E-08	6.8E-09	4.5E-11	4.3E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.3E-08	1.1E-08	1.2E-07
	R108	296950	6256954	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.8E-05	4.2E-06	8.3E-09	1.9E-08	2.1E-09	1.5E-11	7.1E-10	7.7E-08	6.9E-09	4.6E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.2E-07
	R109	297000	6256954	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.5E-04	4.9E-05	4.2E-06	8.5E-09	1.9E-08	2.1E-09	1.5E-11	7.2E-10	7.8E-08	7.0E-09	4.7E-11	4.5E-09	5.3E-08	3.1E-08	1.9E-07	3.6E-07	4.7E-07	3.4E-08	1.2E-08	1.3E-07
	R110	297050	6256954	2.2E-06	2.2E-06	1.9E-05	1.1E-06	2.2E-06	5.8E-05	2.6E-04	5.0E-05	4.3E-06	8.6E-09	1.9E-08	2.2E-09	1.5E-11	7.3E-10	8.0E-08	7.2E-09	4.8E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.8E-07	3.5E-08	1.2E-08	1.3E-07
	R111	297100	6256954	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	5.9E-05	2.6E-04	5.1E-05	4.4E-06	8.8E-09	2.0E-08	2.2E-09	1.5E-11	7.5E-10	8.1E-08	7.3E-09	4.8E-11	4.7E-09	5.5E-08	3.3E-08	2.0E-07	3.8E-07	4.8E-07	3.6E-08	1.2E-08	1.3E-07
	R112	297150	6256954	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.5E-06	9.0E-09	2.0E-08	2.2E-09	1.6E-11	7.6E-10	8.3E-08	7.5E-09	4.9E-11	4.7E-09	5.6E-08	3.3E-08	2.1E-07	3.9E-07	4.9E-07	3.6E-08	1.3E-08	1.3E-07
	R113	297200	6256954	2.3E-06	2.3E-06	2.1E-05	1.1E-06	2.3E-06	6.2E-05	2.7E-04	5.2E-05	4.6E-06	9.1E-09	2.1E-08	2.3E-09	1.6E-11	7.8E-10	8.4E-08	7.6E-09	5.0E-11	4.8E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R114	297250	6256954	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.8E-09	5.1E-11	4.9E-09	5.8E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R115	297300	6256954	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.9E-04	5.5E-05	4.8E-06	9.5E-09	2.1E-08	2.4E-09	1.7E-11	8.1E-10	8.8E-08	7.9E-09	5.2E-11	5.1E-09	6.0E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.9E-08	1.3E-08	1.4E-07
	R116	297350	6256954	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.7E-09	2.2E-08	2.4E-09	1.7E-11	8.3E-10	9.0E-08	8.1E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.2E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R117	297400	6256954	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.7E-05	3.0E-04	5.7E-05	5.0E-06	1.0E-08	2.2E-08	2.5E-09	1.7E-11	8.5E-10	9.2E-08	8.3E-09	5.5E-11	5.3E-09	6.2E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R118	297450	6256954	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.9E-05	3.0E-04	5.8E-05	5.1E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.6E-10	9.4E-08	8.5E-09	5.6E-11	5.4E-09	6.3E-08	3.8E-08	2.3E-07	4.4E-07	5.6E-07	4.1E-08	1.4E-08	1.5E-07
	R119	297500	6256954	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	7.0E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.8E-10	9.6E-08	8.7E-09	5.7E-11	5.5E-09	6.5E-08	3.8E-08	2.4E-07	4.5E-07	5.7E-07	4.2E-08	1.5E-08	1.6E-07
	R120	296500	6257004	1.8E-06	1.8E-06	1.6E-05	8.8E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.5E-06	7.1E-09	1.6E-08	1.8E-09	1.2E-11	6.0E-10	6.5E-08	5.9E-09	3.9E-11	3.7E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.9E-07	2.9E-08	9.9E-09	1.1E-07
	R121	296550	6257004	1.8E-06	1.8E-06	1.6E-05	9.0E-07	1.8E-06	4.9E-05	2.2E-04	4.1E-05	3.6E-06	7.2E-09	1.6E-08	1.8E-09	1.3E-11	6.1E-10	6.7E-08	6.0E-09	4.0E-11	3.8E-09	4.5E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	2.9E-08	1.0E-08	1.1E-07
	R122	296600	6257004	1.8E-06	1.8E-06	1.7E-05	9.2E-07	1.8E-06	5.0E-05	2.2E-04	4.2E-05	3.7E-06	7.4E-09	1.7E-08	1.8E-09	1.3E-11	6.3E-10	6.8E-08	6.1E-09	4.0E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.2E-07	4.0E-07	3.0E-08	1.0E-08	1.1E-07

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																									
													Metal									Heavy Metal							
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R123	296650	6257004	1.9E-06	1.9E-06	1.7E-05	9.4E-07	1.9E-06	5.1E-05	2.3E-04	4.3E-05	3.8E-06	7.5E-09	1.7E-08	1.9E-09	1.3E-11	6.4E-10	6.9E-08	6.2E-09	4.1E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.2E-07	4.1E-07	3.1E-08	1.1E-08	1.1E-07
	R124	296700	6257004	1.9E-06	1.9E-06	1.7E-05	9.6E-07	1.9E-06	5.2E-05	2.3E-04	4.4E-05	3.8E-06	7.7E-09	1.7E-08	1.9E-09	1.3E-11	6.5E-10	7.1E-08	6.4E-09	4.2E-11	4.1E-09	4.8E-08	2.8E-08	1.8E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.1E-07
	R125	296750	6257004	2.0E-06	2.0E-06	1.8E-05	9.8E-07	2.0E-06	5.3E-05	2.3E-04	4.5E-05	3.9E-06	7.8E-09	1.8E-08	2.0E-09	1.4E-11	6.7E-10	7.2E-08	6.5E-09	4.3E-11	4.1E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R126	296800	6257004	2.0E-06	2.0E-06	1.8E-05	9.9E-07	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	8.0E-09	1.8E-08	2.0E-09	1.4E-11	6.8E-10	7.4E-08	6.6E-09	4.4E-11	4.2E-09	5.0E-08	2.9E-08	1.8E-07	3.4E-07	4.4E-07	3.2E-08	1.1E-08	1.2E-07
	R127	296850	6257004	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.5E-05	2.4E-04	4.7E-05	4.0E-06	8.1E-09	1.8E-08	2.0E-09	1.4E-11	6.9E-10	7.5E-08	6.7E-09	4.5E-11	4.3E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.3E-08	1.1E-08	1.2E-07
	R128	296900	6257004	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.7E-05	4.1E-06	8.2E-09	1.9E-08	2.1E-09	1.4E-11	7.0E-10	7.6E-08	6.9E-09	4.5E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.5E-07	4.5E-07	3.4E-08	1.2E-08	1.2E-07
	R129	296950	6257004	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.5E-04	4.8E-05	4.2E-06	8.4E-09	1.9E-08	2.1E-09	1.5E-11	7.2E-10	7.8E-08	7.0E-09	4.6E-11	4.5E-09	5.3E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.3E-07
	R130	297000	6257004	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.8E-05	2.6E-04	4.9E-05	4.3E-06	8.6E-09	1.9E-08	2.1E-09	1.5E-11	7.3E-10	7.9E-08	7.1E-09	4.7E-11	4.5E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
	R131	297050	6257004	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	5.9E-05	2.6E-04	5.0E-05	4.4E-06	8.8E-09	2.0E-08	2.2E-09	1.5E-11	7.5E-10	8.1E-08	7.3E-09	4.8E-11	4.6E-09	5.5E-08	3.2E-08	2.0E-07	3.8E-07	4.8E-07	3.6E-08	1.2E-08	1.3E-07
	R132	297100	6257004	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.5E-06	8.9E-09	2.0E-08	2.2E-09	1.6E-11	7.6E-10	8.3E-08	7.4E-09	4.9E-11	4.7E-09	5.6E-08	3.3E-08	2.1E-07	3.8E-07	4.9E-07	3.6E-08	1.2E-08	1.3E-07
	R133	297150	6257004	2.3E-06	2.3E-06	2.0E-05	1.1E-06	2.3E-06	6.1E-05	2.7E-04	5.2E-05	4.5E-06	9.1E-09	2.0E-08	2.3E-09	1.6E-11	7.7E-10	8.4E-08	7.6E-09	5.0E-11	4.8E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R134	297200	6257004	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.3E-05	4.6E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.7E-09	5.1E-11	4.9E-09	5.8E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R135	297250	6257004	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.8E-04	5.4E-05	4.7E-06	9.5E-09	2.1E-08	2.4E-09	1.7E-11	8.1E-10	8.8E-08	7.9E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.9E-08	1.3E-08	1.4E-07
	R136	297300	6257004	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.6E-05	4.8E-06	9.7E-09	2.2E-08	2.4E-09	1.7E-11	8.2E-10	9.0E-08	8.1E-09	5.3E-11	5.1E-09	6.1E-08	3.6E-08	2.2E-07	4.2E-07	5.3E-07	3.9E-08	1.4E-08	1.5E-07
	R137	297350	6257004	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.7E-05	3.0E-04	5.7E-05	5.0E-06	9.9E-09	2.2E-08	2.5E-09	1.7E-11	8.4E-10	9.2E-08	8.2E-09	5.4E-11	5.3E-09	6.2E-08	3.7E-08	2.3E-07	4.3E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R138	297400	6257004	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.1E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.6E-10	9.4E-08	8.4E-09	5.6E-11	5.4E-09	6.3E-08	3.7E-08	2.3E-07	4.4E-07	5.6E-07	4.1E-08	1.4E-08	1.5E-07
	R139	297450	6257004	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	7.0E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.8E-10	9.6E-08	8.6E-09	5.7E-11	5.5E-09	6.5E-08	3.8E-08	2.4E-07	4.5E-07	5.7E-07	4.2E-08	1.4E-08	1.6E-07
	R140	297500	6257004	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.2E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.0E-10	9.8E-08	8.8E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.6E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R141	296500	6257054	1.8E-06	1.8E-06	1.6E-05	8.9E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.6E-06	7.1E-09	1.6E-08	1.8E-09	1.2E-11	6.1E-10	6.6E-08	5.9E-09	3.9E-11	3.8E-09	4.5E-08	2.6E-08	1.6E-07	3.1E-07	3.9E-07	2.9E-08	1.0E-08	1.1E-07
	R142	296550	6257054	1.8E-06	1.8E-06	1.6E-05	9.2E-07	1.8E-06	4.9E-05	2.2E-04	4.2E-05	3.7E-06	7.3E-09	1.6E-08	1.8E-09	1.3E-11	6.2E-10	6.8E-08	6.1E-09	4.0E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	3.0E-08	1.0E-08	1.1E-07
	R143	296600	6257054	1.9E-06	1.9E-06	1.7E-05	9.3E-07	1.9E-06	5.0E-05	2.2E-04	4.3E-05	3.7E-06	7.5E-09	1.7E-08	1.9E-09	1.3E-11	6.3E-10	6.9E-08	6.2E-09	4.1E-11	3.9E-09	4.7E-08	2.8E-08	1.7E-07	3.2E-07	4.1E-07	3.0E-08	1.0E-08	1.1E-07
	R144	296650	6257054	1.9E-06	1.9E-06	1.7E-05	9.5E-07	1.9E-06	5.1E-05	2.3E-04	4.4E-05	3.8E-06	7.6E-09	1.7E-08	1.9E-09	1.3E-11	6.5E-10	7.0E-08	6.3E-09	4.2E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.1E-07
	R145	296700	6257054	1.9E-06	1.9E-06	1.7E-05	9.7E-07	1.9E-06	5.2E-05	2.3E-04	4.5E-05	3.9E-06	7.8E-09	1.7E-08	1.9E-09	1.4E-11	6.6E-10	7.2E-08	6.5E-09	4.3E-11	4.1E-09	4.9E-08	2.9E-08	1.8E-07	3.3E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R146	296750	6257054	2.0E-06	2.0E-06	1.8E-05	9.9E-07	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	7.9E-09	1.8E-08	2.0E-09	1.4E-11	6.7E-10	7.3E-08	6.6E-09	4.4E-11	4.2E-09	5.0E-08	2.9E-08	1.8E-07	3.4E-07	4.4E-07	3.2E-08	1.1E-08	1.2E-07
	R147	296800	6257054	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	8.1E-09	1.8E-08	2.0E-09	1.4E-11	6.9E-10	7.5E-08	6.7E-09	4.4E-11	4.3E-09	5.0E-08	3.0E-08	1.9E-07	3.5E-07	4.4E-07	3.3E-08	1.1E-08	1.2E-07
	R148	296850	6257054	2.1E-06	2.1E-06	1.8E-05	1.0E-06	2.1E-06	5.5E-05	2.5E-04	4.7E-05	4.1E-06	8.2E-09	1.8E-08	2.1E-09	1.4E-11	7.0E-10	7.6E-08	6.8E-09	4.5E-11	4.4E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.3E-08	1.2E-08	1.2E-07
	R149	296900	6257054	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.7E-05	2.5E-04	4.8E-05	4.2E-06	8.4E-09	1.9E-08	2.1E-09	1.5E-11	7.1E-10	7.7E-08	7.0E-09	4.6E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.3E-07
	R150	296950	6257054	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.8E-05	2.6E-04	4.9E-05	4.3E-06	8.5E-09	1.9E-08	2.1E-09	1.5E-11	7.2E-10	7.9E-08	7.1E-09	4.7E-11	4.5E-09	5.3E-08	3.2E-08	2.0E-07	3.7E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
	R151	297000	6257054	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	5.9E-05	2.6E-04	5.0E-05	4.3E-06	8.7E-09	2.0E-08	2.2E-09	1.5E-11	7.4E-10	8.0E-08	7.2E-09	4.8E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.8E-07	3.5E-08	1.2E-08	1.3E-07
	R152	297050	6257054	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.4E-06	8.9E-09	2.0E-08	2.2E-09	1.6E-11	7.5E-10	8.2E-08	7.4E-09	4.9E-11	4.7E-09	5.5E-08	3.3E-08	2.0E-07	3.8E-07	4.9E-07	3.6E-08	1.2E-08	1.3E-07
	R153	297100	6257054	2.3E-06	2.3E-06	2.0E-05	1.1E-06	2.3E-06	6.1E-05	2.7E-04	5.2E-05	4.5E-06	9.1E-09	2.0E-08	2.3E-09	1.6E-11	7.7E-10	8.4E-08	7.5E-09	5.0E-11	4.8E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R154	297150	6257054	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.2E-05	2.8E-04	5.3E-05	4.6E-06	9.2E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.7E-09	5.1E-11	4.9E-09	5.8E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R155	297200	6257054	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.8E-04	5.4E-05	4.7E-06	9.4E-09	2.1E-08	2.4E-09	1.7E-11	8.0E-10	8.7E-08	7.9E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.8E-08	1.3E-08	1.4E-07
	R156	297250	6257054	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.5E-05	4.8E-06	9.6E-09	2.2E-08	2.4E-09	1.7E-11	8.2E-10	8.9E-08	8.0E-09	5.3E-11	5.1E-09	6.0E-08	3.6E-08	2.2E-07	4.1E-07	5.3E-07	3.9E-08	1.3E-08	1.4E-07
	R157	297300	6257054	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.7E-05	3.0E-04	5.7E-05	4.9E-06	9.9E-09	2.2E-08	2.5E-09	1.7E-11	8.4E-10	9.1E-08	8.2E-09	5.4E-11	5.2E-09	6.2E-08	3.6E-08	2.3E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R158	297350	6257054	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.0E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.5E-10	9.3E-08	8.4E-09	5.5E-11	5.3E-09	6.3E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R159	297400	6257054	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.7E-10	9.5E-08	8.6E-09	5.7E-11	5.4E-09	6.4E-08	3.8E-08	2.4E-07	4.4E-07	5.7E-07	4.2E-08	1.4E-08	1.5E-07
	R160	297450	6257054	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.6E-09	1.8E-11	9.0E-10	9.8E-08	8.8E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.5E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R161	297500	6257054	2.7E-06	2.7E-06	2.4E-05	1.4E-06	2.7E-06	7.3E-05	3.3E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.2E-10	1.0E-07	9.0E-09	6.0E-11	5.8E-09	6.8E-08	4.0E-08	2.5E-07	4.7E-07	6.0E-07	4.4E-08	1.5E-08	1.6E-07
	R162	296500	6257104	1.8E-06	1.8E-06	1.6E-05	9.0E-07	1.8E-06	4.9E-05	2.2E-04	4.2E-05	3.6E-06	7.2E-09	1.6E-08	1.8E-09	1.3E-11	6.2E-10	6.7E-08	6.0E-09	4.0E-11	3.8E-09	4.5E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	2.9E-08	1.0E-08	1.1E-07
	R163	296550	6257104	1.9E-06	1.9E-06	1.7E-05	9.3E-07	1.9E-06	5.0E-05	2.2E-04	4.3E-05	3.7E-06	7.4E-09	1.7E-08	1.9E-09	1.3E-11	6.3E-10	6.9E-08	6.2E-09	4.1E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.2E-07	4.1E-07	3.0E-08	1.0E-08	1.1E-07
	R164	296600	6257104	1.9E-06	1.9E-06	1.7E-05	9.5E-07	1.9E-06	5.1E-05	2.3E-04	4.3E-05	3.8E-06	7.6E-09	1.7E-08	1.9E-09	1.3E-11	6.4E-10	7.0E-08	6.3E-09	4.2E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.1E-07
	R165	296650	6257104	1.9E-06	1.9E-06	1.7E-05	9.6E-07	1.9E-06	5.2E-05	2.3E-04	4.4E-05	3.9E-06	7.7E-09	1.7E-08	1.9E-09	1.3E-11	6.5E-10	7.1E-08	6.4E-09	4.2E-11	4.1E-09	4.8E-08	2.8E-08	1.8E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.2E-07
	R166	296700	6257104	2.0E-06	2.0E-06	1.8E-05	9.8E-07	2.0E-06	5.3E-05	2.4E-04	4.5E-05	3.9E-06	7.9E-09	1.8E-08	2.0E-09	1.4E-11	6.7E-10	7.3E-08	6.6E-09	4.3E-11	4.2E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R167	296750	6257104	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	8.0E-09	1.8E-08	2.0E-09	1.4E-11	6.8E-10	7.4E-08	6.7E-09	4.4E-11	4.2E-09	5.0E-08	3.0E-08	1.8E-07	3.4E-07	4.4E-07	3.3E-08	1.1E-08	1.2E-07
	R168	296800	6257104	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.5E-05	2.5E-04	4.7E-05	4.1E-06	8.2E-09	1.8E-08	2.0E-09	1.4E-11	7.0E-10	7.6E-08	6.8E-09	4.5E-11	4.3E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.3E-08	1.1E-08	1.2E-07
	R169	296850	6257104	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.8E-05	4.2E-06	8.3E-09	1.9E-08	2.1E-09	1.5E-11	7.1E-10	7.7E-08	6.9E-09	4.6E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.3E-07
	R170	296900	6257104	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.5E-04	4.9E-05	4.2E-06	8.5E-09	1.9E-08	2.1E-09	1.5E-11	7.2E-10	7.9E-08	7.1E-09	4.7E-11	4.5E-09	5.3E-08	3.1E-08	2.0E-07	3.7E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
	R171	296950	6257104	2.2E-06	2.2E-06	1.9E-05	1.1E-06	2.2E-06	5.8E-05	2.6E-04	5.0E-05	4.3E-06	8.7E-09	1.9E-08	2.2E-09	1.5E-11	7.4E-10	8.0E-08	7.2E-09	4.8E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.8E-07	3.5E-08	1.2E-08	1.3E-07
	R172	297000	6257104	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.4E-06	8.8E-09	2.0E-08	2.2E-09	1.5E-11	7.5E-10	8.2E-08	7.4E-09	4.9E-11	4.7E-09	5.5E-08	3.3E-08	2.0E-07	3.8E-07	4.9E-07	3.6E-08	1.2E-08	1.3E-07
	R173	297050	6257104	2.3E-06	2.3E-06	2.0E-05	1.1E-06	2.3E-06	6.1E-05	2.7E-04	5.2E-05	4.5E-06	9.0E-09	2.0E-08	2.3E-09	1.6E-11	7.7E-10	8.3E-08	7.5E-09	5.0E-11	4.8E-09	5.6E-08	3.3E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R174	297100	6257104	2.3E-06	2.3E-06	2.1E-05	1.1E-06	2.3E-06	6.2E-05	2.8E-04	5.3E-05	4.6E-06	9.2E-09	2.1E-08	2.3E-09	1.6E-11	7.8E-10	8.5E-08	7.7E-09	5.1E-11	4.9E-09	5.7E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.7E-08	1.3E-08	1.4E-07
	R175	297150	6257104	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.4E-09	2.1E-08	2.4E-09	1.6E-11	8.0E-10	8.7E-08	7.8E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.0E-07	5.2E-07	3.8E-08	1.3E-08	1.4E-07
	R176	297200	6257104	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.5E-05	4.8E-06	9.6E-09	2.2E-08	2.4E-09	1.7E-11	8.2E-10	8.9E-08	8.0E-09	5.3E-11	5.1E-09	6.0E-08	3.6E-08	2.2E-07	4.1E-07	5.3E-07	3.9E-08	1.3E-08	1.4E-07
	R177	297250	6257104	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.8E-09	2.2E-08	2.5E-09	1.7E-11	8.3E-10	9.1E-08	8.2E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.3E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R178	297300	6257104	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.0E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.5E-10	9.3E-08	8.4E-09	5.5E-11	5.3E-09	6.3E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R179	297350	6257104	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.7E-10	9.5E-08	8.5E-09	5.6E-11	5.4E-09	6.4E-08	3.8E-08	2.4E-07	4.4E-07	5.6E-07	4.2E-08	1.4E-08	1.5E-07
	R180	297400	6257104	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.4E-08	2.6E-09	1.8E-11	8.9E-10	9.7E-08	8.7E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.5E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R181	297450	6257104	2.7E-06	2.7E-06	2.4E-05	1.4E-06	2.7E-06	7.3E-05	3.2E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.2E-10	1.0E-07	9.0E-09	6.0E-11	5.7E-09	6.8E-08	4.0E-08	2.5E-07	4.7E-07	6.0E-07	4.4E-08	1.5E-08	1.6E-07
	R182	296500	6257154	1.8E-06	1.8E-06	1.6E-05	9.2E-07	1.8E-06	4.9E-05	2.2E-04	4.2E-05	3.7E-06	7.3E-09	1.6E-08	1.8E-09	1.3E-11	6.2E-10	6.8E-08	6.1E-09	4.0E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	3.0E-08	1.0E-08	1.1E-07
	R183	296550	6257154	1.9E-06	1.9E-06	1.7E-05	9.4E-07	1.9E-06	5.1E-05	2.3E-04	4.3E-05	3.8E-06	7.5E-09	1.7E-08	1.9E-09	1.3E-11	6.4E-10	7.0E-08	6.3E-09	4.1E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.2E-07	4.1E-07	3.1E-08	1.1E-08	1.1E-07

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																									
													Metal										Heavy Metal							
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm ³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R184	296600	6257154	1.9E-06	1.9E-06	1.7E-05	9.6E-07	1.9E-06	5.2E-05	2.3E-04	4.4E-05	3.8E-06	7.6E-09	1.7E-08	1.9E-09	1.3E-11	6.5E-10	7.1E-08	6.4E-09	4.2E-11	4.1E-09	4.8E-08	2.8E-08	1.8E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.1E-07
	R185	296650	6257154	1.9E-06	1.9E-06	1.8E-05	9.7E-07	1.9E-06	5.3E-05	2.3E-04	4.5E-05	3.9E-06	7.8E-09	1.8E-08	1.9E-09	1.4E-11	6.6E-10	7.2E-08	6.5E-09	4.3E-11	4.1E-09	4.9E-08	2.9E-08	1.8E-07	3.3E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R186	296700	6257154	2.0E-06	2.0E-06	1.8E-05	9.9E-07	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	8.0E-09	1.8E-08	2.0E-09	1.4E-11	6.8E-10	7.4E-08	6.6E-09	4.4E-11	4.2E-09	5.0E-08	2.9E-08	1.8E-07	3.4E-07	4.4E-07	3.2E-08	1.1E-08	1.2E-07
	R187	296750	6257154	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.5E-05	2.4E-04	4.7E-05	4.1E-06	8.1E-09	1.8E-08	2.0E-09	1.4E-11	6.9E-10	7.5E-08	6.7E-09	4.5E-11	4.3E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.3E-08	1.1E-08	1.2E-07
	R188	296800	6257154	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.8E-05	4.2E-06	8.3E-09	1.9E-08	2.1E-09	1.5E-11	7.1E-10	7.7E-08	6.9E-09	4.6E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.2E-07
	R189	296850	6257154	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.5E-04	4.9E-05	4.2E-06	8.5E-09	1.9E-08	2.1E-09	1.5E-11	7.2E-10	7.8E-08	7.0E-09	4.6E-11	4.5E-09	5.3E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.3E-07
	R190	296900	6257154	2.2E-06	2.2E-06	1.9E-05	1.1E-06	2.2E-06	5.8E-05	2.6E-04	5.0E-05	4.3E-06	8.6E-09	1.9E-08	2.2E-09	1.5E-11	7.3E-10	8.0E-08	7.2E-09	4.7E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
	R191	296950	6257154	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	5.9E-05	2.6E-04	5.1E-05	4.4E-06	8.8E-09	2.0E-08	2.2E-09	1.5E-11	7.5E-10	8.1E-08	7.3E-09	4.8E-11	4.7E-09	5.5E-08	3.3E-08	2.0E-07	3.8E-07	4.8E-07	3.6E-08	1.2E-08	1.3E-07
	R192	297000	6257154	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.1E-05	2.7E-04	5.2E-05	4.5E-06	9.0E-09	2.0E-08	2.2E-09	1.6E-11	7.6E-10	8.3E-08	7.5E-09	4.9E-11	4.8E-09	5.6E-08	3.3E-08	2.1E-07	3.9E-07	4.9E-07	3.7E-08	1.3E-08	1.3E-07
	R193	297050	6257154	2.3E-06	2.3E-06	2.1E-05	1.1E-06	2.3E-06	6.2E-05	2.7E-04	5.3E-05	4.6E-06	9.2E-09	2.1E-08	2.3E-09	1.6E-11	7.8E-10	8.5E-08	7.6E-09	5.0E-11	4.9E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R194	297100	6257154	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.4E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.7E-08	7.8E-09	5.1E-11	5.0E-09	5.8E-08	3.5E-08	2.2E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R195	297150	6257154	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.9E-04	5.5E-05	4.8E-06	9.6E-09	2.1E-08	2.4E-09	1.7E-11	8.1E-10	8.8E-08	8.0E-09	5.3E-11	5.1E-09	6.0E-08	3.5E-08	2.2E-07	4.1E-07	5.3E-07	3.9E-08	1.3E-08	1.4E-07
	R196	297200	6257154	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.8E-09	2.2E-08	2.4E-09	1.7E-11	8.3E-10	9.0E-08	8.1E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.2E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R197	297250	6257154	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.0E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.5E-10	9.3E-08	8.3E-09	5.5E-11	5.3E-09	6.3E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R198	297300	6257154	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.7E-10	9.5E-08	8.5E-09	5.6E-11	5.4E-09	6.4E-08	3.8E-08	2.4E-07	4.4E-07	5.6E-07	4.2E-08	1.4E-08	1.5E-07
	R199	297350	6257154	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.4E-08	2.6E-09	1.8E-11	8.9E-10	9.7E-08	8.7E-09	5.8E-11	5.5E-09	6.5E-08	3.9E-08	2.4E-07	4.5E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R200	297400	6257154	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.2E-05	3.2E-04	6.2E-05	5.3E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.1E-10	9.9E-08	8.9E-09	5.9E-11	5.7E-09	6.7E-08	4.0E-08	2.5E-07	4.6E-07	5.9E-07	4.4E-08	1.5E-08	1.6E-07
	R201	297450	6257154	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.4E-05	3.3E-04	6.3E-05	5.5E-06	1.1E-08	2.5E-08	2.8E-09	1.9E-11	9.4E-10	1.0E-07	9.2E-09	6.1E-11	5.8E-09	6.9E-08	4.1E-08	2.5E-07	4.7E-07	6.1E-07	4.5E-08	1.5E-08	1.7E-07
	R202	296500	6257204	1.9E-06	1.9E-06	1.7E-05	9.3E-07	1.9E-06	5.0E-05	2.2E-04	4.3E-05	3.7E-06	7.4E-09	1.7E-08	1.9E-09	1.3E-11	6.3E-10	6.9E-08	6.2E-09	4.1E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.2E-07	4.1E-07	3.0E-08	1.0E-08	1.1E-07
	R203	296550	6257204	1.9E-06	1.9E-06	1.7E-05	9.5E-07	1.9E-06	5.1E-05	2.3E-04	4.4E-05	3.8E-06	7.6E-09	1.7E-08	1.9E-09	1.3E-11	6.5E-10	7.0E-08	6.3E-09	4.2E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.1E-07
	R204	296600	6257204	1.9E-06	1.9E-06	1.7E-05	9.7E-07	1.9E-06	5.2E-05	2.3E-04	4.4E-05	3.9E-06	7.7E-09	1.7E-08	1.9E-09	1.4E-11	6.6E-10	7.2E-08	6.4E-09	4.3E-11	4.1E-09	4.8E-08	2.9E-08	1.8E-07	3.3E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R205	296650	6257204	2.0E-06	2.0E-06	1.8E-05	9.8E-07	2.0E-06	5.3E-05	2.4E-04	4.5E-05	3.9E-06	7.9E-09	1.8E-08	2.0E-09	1.4E-11	6.7E-10	7.3E-08	6.6E-09	4.3E-11	4.2E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R206	296700	6257204	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	8.1E-09	1.8E-08	2.0E-09	1.4E-11	6.9E-10	7.5E-08	6.7E-09	4.4E-11	4.3E-09	5.0E-08	3.0E-08	1.9E-07	3.5E-07	4.4E-07	3.3E-08	1.1E-08	1.2E-07
	R207	296750	6257204	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.7E-05	4.1E-06	8.2E-09	1.9E-08	2.1E-09	1.4E-11	7.0E-10	7.6E-08	6.9E-09	4.5E-11	4.4E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.4E-08	1.2E-08	1.2E-07
	R208	296800	6257204	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.5E-04	4.8E-05	4.2E-06	8.4E-09	1.9E-08	2.1E-09	1.5E-11	7.2E-10	7.8E-08	7.0E-09	4.6E-11	4.5E-09	5.3E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.3E-07
	R209	296850	6257204	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.8E-05	2.6E-04	4.9E-05	4.3E-06	8.6E-09	1.9E-08	2.1E-09	1.5E-11	7.3E-10	7.9E-08	7.1E-09	4.7E-11	4.5E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
	R210	296900	6257204	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	5.9E-05	2.6E-04	5.0E-05	4.4E-06	8.8E-09	2.0E-08	2.2E-09	1.5E-11	7.5E-10	8.1E-08	7.3E-09	4.8E-11	4.6E-09	5.5E-08	3.2E-08	2.0E-07	3.8E-07	4.8E-07	3.6E-08	1.2E-08	1.3E-07
	R211	296950	6257204	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.5E-06	8.9E-09	2.0E-08	2.2E-09	1.6E-11	7.6E-10	8.3E-08	7.4E-09	4.9E-11	4.7E-09	5.6E-08	3.3E-08	2.1E-07	3.8E-07	4.9E-07	3.6E-08	1.3E-08	1.3E-07
	R212	297000	6257204	2.3E-06	2.3E-06	2.1E-05	1.1E-06	2.3E-06	6.2E-05	2.7E-04	5.2E-05	4.6E-06	9.1E-09	2.1E-08	2.3E-09	1.6E-11	7.8E-10	8.4E-08	7.6E-09	5.0E-11	4.8E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R213	297050	6257204	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.8E-09	5.1E-11	4.9E-09	5.8E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R214	297100	6257204	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.9E-04	5.5E-05	4.8E-06	9.5E-09	2.1E-08	2.4E-09	1.7E-11	8.1E-10	8.8E-08	7.9E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.9E-08	1.3E-08	1.4E-07
	R215	297150	6257204	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.7E-09	2.2E-08	2.4E-09	1.7E-11	8.3E-10	9.0E-08	8.1E-09	5.3E-11	5.2E-09	6.1E-08	3.6E-08	2.2E-07	4.2E-07	5.3E-07	4.0E-08	1.4E-08	1.5E-07
	R216	297200	6257204	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.7E-05	3.0E-04	5.7E-05	5.0E-06	1.0E-08	2.2E-08	2.5E-09	1.7E-11	8.5E-10	9.2E-08	8.3E-09	5.5E-11	5.3E-09	6.2E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R217	297250	6257204	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.7E-10	9.4E-08	8.5E-09	5.6E-11	5.4E-09	6.4E-08	3.8E-08	2.3E-07	4.4E-07	5.6E-07	4.1E-08	1.4E-08	1.5E-07
	R218	297300	6257204	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	7.0E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.9E-10	9.6E-08	8.7E-09	5.7E-11	5.5E-09	6.5E-08	3.9E-08	2.4E-07	4.5E-07	5.7E-07	4.2E-08	1.5E-08	1.6E-07
	R219	297350	6257204	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.2E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.1E-10	9.9E-08	8.9E-09	5.9E-11	5.6E-09	6.7E-08	3.9E-08	2.5E-07	4.6E-07	5.9E-07	4.3E-08	1.5E-08	1.6E-07
	R220	297400	6257204	2.7E-06	2.7E-06	2.5E-05	1.4E-06	2.7E-06	7.4E-05	3.3E-04	6.3E-05	5.4E-06	1.1E-08	2.5E-08	2.7E-09	1.9E-11	9.3E-10	1.0E-07	9.1E-09	6.0E-11	5.8E-09	6.8E-08	4.0E-08	2.5E-07	4.7E-07	6.0E-07	4.4E-08	1.5E-08	1.6E-07
	R221	297450	6257204	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.6E-05	3.4E-04	6.4E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.5E-10	1.0E-07	9.3E-09	6.2E-11	5.9E-09	7.0E-08	4.1E-08	2.6E-07	4.8E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R222	296500	6257254	1.9E-06	1.9E-06	1.7E-05	9.4E-07	1.9E-06	5.1E-05	2.3E-04	4.3E-05	3.8E-06	7.5E-09	1.7E-08	1.9E-09	1.3E-11	6.4E-10	7.0E-08	6.3E-09	4.1E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.2E-07	4.1E-07	3.1E-08	1.1E-08	1.1E-07
	R223	296550	6257254	1.9E-06	1.9E-06	1.7E-05	9.6E-07	1.9E-06	5.2E-05	2.3E-04	4.4E-05	3.8E-06	7.7E-09	1.7E-08	1.9E-09	1.3E-11	6.5E-10	7.1E-08	6.4E-09	4.2E-11	4.1E-09	4.8E-08	2.8E-08	1.8E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.2E-07
	R224	296600	6257254	2.0E-06	2.0E-06	1.8E-05	9.8E-07	2.0E-06	5.3E-05	2.4E-04	4.5E-05	3.9E-06	7.8E-09	1.8E-08	2.0E-09	1.4E-11	6.7E-10	7.3E-08	6.5E-09	4.3E-11	4.2E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R225	296650	6257254	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	8.0E-09	1.8E-08	2.0E-09	1.4E-11	6.8E-10	7.4E-08	6.7E-09	4.4E-11	4.2E-09	5.0E-08	3.0E-08	1.8E-07	3.4E-07	4.4E-07	3.3E-08	1.1E-08	1.2E-07
	R226	296700	6257254	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.5E-05	2.5E-04	4.7E-05	4.1E-06	8.2E-09	1.8E-08	2.0E-09	1.4E-11	7.0E-10	7.6E-08	6.8E-09	4.5E-11	4.3E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.3E-08	1.1E-08	1.2E-07
	R227	296750	6257254	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.7E-05	2.5E-04	4.8E-05	4.2E-06	8.4E-09	1.9E-08	2.1E-09	1.5E-11	7.1E-10	7.7E-08	7.0E-09	4.6E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.3E-07
	R228	296800	6257254	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.8E-05	2.6E-04	4.9E-05	4.3E-06	8.5E-09	1.9E-08	2.1E-09	1.5E-11	7.3E-10	7.9E-08	7.1E-09	4.7E-11	4.5E-09	5.3E-08	3.2E-08	2.0E-07	3.7E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
	R229	296850	6257254	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	5.9E-05	2.6E-04	5.0E-05	4.4E-06	8.7E-09	2.0E-08	2.2E-09	1.5E-11	7.4E-10	8.1E-08	7.3E-09	4.8E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.8E-07	3.6E-08	1.2E-08	1.3E-07
	R230	296900	6257254	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.5E-06	8.9E-09	2.0E-08	2.2E-09	1.6E-11	7.6E-10	8.2E-08	7.4E-09	4.9E-11	4.7E-09	5.6E-08	3.3E-08	2.0E-07	3.8E-07	4.9E-07	3.6E-08	1.2E-08	1.3E-07
	R231	296950	6257254	2.3E-06	2.3E-06	2.0E-05	1.1E-06	2.3E-06	6.1E-05	2.7E-04	5.2E-05	4.5E-06	9.1E-09	2.0E-08	2.3E-09	1.6E-11	7.7E-10	8.4E-08	7.6E-09	5.0E-11	4.8E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R232	297000	6257254	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.3E-05	4.6E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.7E-09	5.1E-11	4.9E-09	5.8E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R233	297050	6257254	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.8E-04	5.4E-05	4.7E-06	9.5E-09	2.1E-08	2.4E-09	1.7E-11	8.1E-10	8.8E-08	7.9E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.9E-08	1.3E-08	1.4E-07
	R234	297100	6257254	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.6E-05	4.8E-06	9.7E-09	2.2E-08	2.4E-09	1.7E-11	8.2E-10	9.0E-08	8.1E-09	5.3E-11	5.1E-09	6.0E-08	3.6E-08	2.2E-07	4.2E-07	5.3E-07	3.9E-08	1.4E-08	1.5E-07
	R235	297150	6257254	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.7E-05	3.0E-04	5.7E-05	4.9E-06	9.9E-09	2.2E-08	2.5E-09	1.7E-11	8.4E-10	9.1E-08	8.2E-09	5.4E-11	5.2E-09	6.2E-08	3.7E-08	2.3E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R236	297200	6257254	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.0E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.6E-10	9.3E-08	8.4E-09	5.6E-11	5.4E-09	6.3E-08	3.7E-08	2.3E-07	4.3E-07	5.6E-07	4.1E-08	1.4E-08	1.5E-07
	R237	297250	6257254	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	7.0E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.8E-10	9.6E-08	8.6E-09	5.7E-11	5.5E-09	6.5E-08	3.8E-08	2.4E-07	4.5E-07	5.7E-07	4.2E-08	1.5E-08	1.6E-07
	R238	297300	6257254	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.2E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.0E-10	9.8E-08	8.8E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.6E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R239	297350	6257254	2.7E-06	2.7E-06	2.4E-05	1.4E-06	2.7E-06	7.3E-05	3.2E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.2E-10	1.0E-07	9.0E-09	6.0E-11	5.7E-09	6.8E-08	4.0E-08	2.5E-07	4.7E-07	6.0E-07	4.4E-08	1.5E-08	1.6E-07
	R240	297400	6257254	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.5E-05	3.3E-04	6.4E-05	5.5E-06	1.1E-08	2.5E-08	2.8E-09	1.9E-11	9.4E-10	1.0E-07	9.2E-09	6.1E-11	5.9E-09	6.9E-08	4.1E-08	2.6E-07	4.8E-07	6.1E-07	4.5E-08	1.6E-08	1.7E-07
	R241	296500	6257304	1.9E-06	1.9E-06	1.7E-05	9.5E-07	1.9E-06	5.1E-05	2.3E-04	4.4E-05	3.8E-06	7.6E-09	1.7E-08	1.9E-09	1.3E-11	6.5E-10	7.0E-08	6.3E-09	4.2E-11	4.0E-09	4.8E-08	2.8E-08	1.8E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.1E-07
	R242	296550	6257304	2.0E-06	2.0E-06	1.8E-05	9.8E-07	2.0E-06	5.3E-05	2.3E-04	4.5E-05	3.9E-06	7.8E-09	1.8E-08	2.0E-09	1.4E-11	6.6E-10	7.2E-08	6.5E-09	4.3E-11	4.1E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R243	296600	6257304	2.0E-06	2.0E-06	1.8E-05	9.9E-07	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	8.0E-09	1.8E-08	2.0E-09	1.4E-11	6.8E-10	7.4E-08	6.6E-09	4.4E-11	4.2E-09	5.0E-08	2.9E-08	1.8E-07	3.4E-07	4.4E-07	3.2E-08	1.1E-08	1.2E-07
	R244	296650	6257304	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.5E-05	2.4E-04	4.7E-05	4.1E-06	8.1E-09	1.8E-08	2.0E-09	1.4E-11	6.9E-10	7.5E-08	6.8E-09	4.5E-11	4.3E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.3E-08	1.1E-08	1.2E-07

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																									
													Metal										Heavy Metal						
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R245	296700	6257304	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.8E-05	4.1E-06	8.3E-09	1.9E-08	2.1E-09	1.4E-11	7.0E-10	7.7E-08	6.9E-09	4.6E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.2E-07
	R246	296750	6257304	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.5E-04	4.9E-05	4.2E-06	8.5E-09	1.9E-08	2.1E-09	1.5E-11	7.2E-10	7.8E-08	7.1E-09	4.7E-11	4.5E-09	5.3E-08	3.1E-08	1.9E-07	3.6E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
	R247	296800	6257304	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	5.9E-05	2.6E-04	5.0E-05	4.3E-06	8.7E-09	2.0E-08	2.2E-09	1.5E-11	7.4E-10	8.0E-08	7.2E-09	4.8E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.8E-07	3.5E-08	1.2E-08	1.3E-07
	R248	296850	6257304	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.4E-06	8.8E-09	2.0E-08	2.2E-09	1.5E-11	7.5E-10	8.2E-08	7.4E-09	4.9E-11	4.7E-09	5.5E-08	3.3E-08	2.0E-07	3.8E-07	4.9E-07	3.6E-08	1.2E-08	1.3E-07
	R249	296900	6257304	2.3E-06	2.3E-06	2.0E-05	1.1E-06	2.3E-06	6.1E-05	2.7E-04	5.2E-05	4.5E-06	9.0E-09	2.0E-08	2.3E-09	1.6E-11	7.7E-10	8.4E-08	7.5E-09	5.0E-11	4.8E-09	5.7E-08	3.3E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R250	296950	6257304	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.3E-05	4.6E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.7E-09	5.1E-11	4.9E-09	5.8E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R251	297000	6257304	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.8E-04	5.4E-05	4.7E-06	9.4E-09	2.1E-08	2.4E-09	1.7E-11	8.0E-10	8.7E-08	7.9E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.8E-08	1.3E-08	1.4E-07
	R252	297050	6257304	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.5E-05	4.8E-06	9.6E-09	2.2E-08	2.4E-09	1.7E-11	8.2E-10	8.9E-08	8.0E-09	5.3E-11	5.1E-09	6.0E-08	3.6E-08	2.2E-07	4.1E-07	5.3E-07	3.9E-08	1.3E-08	1.4E-07
	R253	297100	6257304	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.8E-09	2.2E-08	2.5E-09	1.7E-11	8.3E-10	9.1E-08	8.2E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.3E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R254	297150	6257304	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.0E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.5E-10	9.3E-08	8.3E-09	5.5E-11	5.3E-09	6.3E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R255	297200	6257304	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.7E-10	9.5E-08	8.6E-09	5.7E-11	5.4E-09	6.4E-08	3.8E-08	2.4E-07	4.4E-07	5.7E-07	4.2E-08	1.4E-08	1.5E-07
	R256	297250	6257304	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.6E-09	1.8E-11	9.0E-10	9.8E-08	8.8E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.5E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R257	297300	6257304	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.3E-05	3.2E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.2E-10	1.0E-07	9.0E-09	5.9E-11	5.7E-09	6.7E-08	4.0E-08	2.5E-07	4.6E-07	5.9E-07	4.4E-08	1.5E-08	1.6E-07
	R258	297350	6257304	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.5E-05	3.3E-04	6.4E-05	5.5E-06	1.1E-08	2.5E-08	2.8E-09	1.9E-11	9.4E-10	1.0E-07	9.2E-09	6.1E-11	5.9E-09	6.9E-08	4.1E-08	2.5E-07	4.7E-07	6.1E-07	4.5E-08	1.5E-08	1.7E-07
	R259	297400	6257304	2.8E-06	2.8E-06	2.6E-05	1.4E-06	2.8E-06	7.7E-05	3.4E-04	6.5E-05	5.7E-06	1.1E-08	2.6E-08	2.8E-09	2.0E-11	9.6E-10	1.0E-07	9.4E-09	6.2E-11	6.0E-09	7.1E-08	4.2E-08	2.6E-07	4.9E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R260	296500	6257354	1.9E-06	1.9E-06	1.7E-05	9.6E-07	1.9E-06	5.2E-05	2.3E-04	4.4E-05	3.9E-06	7.7E-09	1.7E-08	1.9E-09	1.3E-11	6.6E-10	7.1E-08	6.4E-09	4.2E-11	4.1E-09	4.8E-08	2.9E-08	1.8E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.2E-07
	R261	296550	6257354	2.0E-06	2.0E-06	1.8E-05	9.9E-07	2.0E-06	5.3E-05	2.4E-04	4.5E-05	3.9E-06	7.9E-09	1.8E-08	2.0E-09	1.4E-11	6.7E-10	7.3E-08	6.6E-09	4.3E-11	4.2E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R262	296600	6257354	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	8.1E-09	1.8E-08	2.0E-09	1.4E-11	6.9E-10	7.5E-08	6.7E-09	4.4E-11	4.3E-09	5.0E-08	3.0E-08	1.9E-07	3.5E-07	4.4E-07	3.3E-08	1.1E-08	1.2E-07
	R263	296650	6257354	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.7E-05	4.1E-06	8.2E-09	1.9E-08	2.1E-09	1.4E-11	7.0E-10	7.6E-08	6.9E-09	4.5E-11	4.4E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.4E-08	1.2E-08	1.2E-07
	R264	296700	6257354	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.7E-05	2.5E-04	4.8E-05	4.2E-06	8.4E-09	1.9E-08	2.1E-09	1.5E-11	7.1E-10	7.8E-08	7.0E-09	4.6E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.3E-07
	R265	296750	6257354	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.8E-05	2.6E-04	4.9E-05	4.3E-06	8.6E-09	1.9E-08	2.1E-09	1.5E-11	7.3E-10	7.9E-08	7.1E-09	4.7E-11	4.5E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
	R266	296800	6257354	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	5.9E-05	2.6E-04	5.1E-05	4.4E-06	8.8E-09	2.0E-08	2.2E-09	1.5E-11	7.5E-10	8.1E-08	7.3E-09	4.8E-11	4.7E-09	5.5E-08	3.2E-08	2.0E-07	3.8E-07	4.8E-07	3.6E-08	1.2E-08	1.3E-07
	R267	296850	6257354	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.1E-05	2.7E-04	5.2E-05	4.5E-06	9.0E-09	2.0E-08	2.2E-09	1.6E-11	7.6E-10	8.3E-08	7.5E-09	4.9E-11	4.8E-09	5.6E-08	3.3E-08	2.1E-07	3.9E-07	4.9E-07	3.7E-08	1.3E-08	1.3E-07
	R268	296900	6257354	2.3E-06	2.3E-06	2.1E-05	1.1E-06	2.3E-06	6.2E-05	2.8E-04	5.3E-05	4.6E-06	9.2E-09	2.1E-08	2.3E-09	1.6E-11	7.8E-10	8.5E-08	7.6E-09	5.0E-11	4.9E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R269	296950	6257354	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.4E-09	2.1E-08	2.3E-09	1.6E-11	8.0E-10	8.7E-08	7.8E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.0E-07	5.2E-07	3.8E-08	1.3E-08	1.4E-07
	R270	297000	6257354	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.5E-05	4.8E-06	9.6E-09	2.2E-08	2.4E-09	1.7E-11	8.2E-10	8.9E-08	8.0E-09	5.3E-11	5.1E-09	6.0E-08	3.5E-08	2.2E-07	4.1E-07	5.3E-07	3.9E-08	1.3E-08	1.4E-07
	R271	297050	6257354	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.8E-09	2.2E-08	2.4E-09	1.7E-11	8.3E-10	9.1E-08	8.1E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.3E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R272	297100	6257354	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.0E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.5E-10	9.3E-08	8.3E-09	5.5E-11	5.3E-09	6.3E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R273	297150	6257354	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.7E-10	9.5E-08	8.5E-09	5.6E-11	5.4E-09	6.4E-08	3.8E-08	2.4E-07	4.4E-07	5.6E-07	4.2E-08	1.4E-08	1.5E-07
	R274	297200	6257354	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.4E-08	2.6E-09	1.8E-11	8.9E-10	9.7E-08	8.7E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.5E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R275	297250	6257354	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.2E-05	3.2E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.1E-10	9.9E-08	8.9E-09	5.9E-11	5.7E-09	6.7E-08	4.0E-08	2.5E-07	4.6E-07	5.9E-07	4.4E-08	1.5E-08	1.6E-07
	R276	297300	6257354	2.7E-06	2.7E-06	2.5E-05	1.4E-06	2.7E-06	7.4E-05	3.3E-04	6.3E-05	5.5E-06	1.1E-08	2.5E-08	2.7E-09	1.9E-11	9.3E-10	1.0E-07	9.1E-09	6.0E-11	5.8E-09	6.9E-08	4.1E-08	2.5E-07	4.7E-07	6.0E-07	4.5E-08	1.5E-08	1.6E-07
	R277	297350	6257354	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.6E-05	3.4E-04	6.5E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.6E-10	1.0E-07	9.4E-09	6.2E-11	6.0E-09	7.0E-08	4.2E-08	2.6E-07	4.8E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R278	297400	6257354	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.8E-05	3.5E-04	6.7E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.8E-10	1.1E-07	9.6E-09	6.4E-11	6.1E-09	7.2E-08	4.3E-08	2.7E-07	5.0E-07	6.4E-07	4.7E-08	1.6E-08	1.7E-07
	R279	296500	6257404	2.0E-06	2.0E-06	1.8E-05	9.8E-07	2.0E-06	5.3E-05	2.3E-04	4.5E-05	3.9E-06	7.8E-09	1.8E-08	2.0E-09	1.4E-11	6.6E-10	7.2E-08	6.5E-09	4.3E-11	4.1E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R280	296550	6257404	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	8.0E-09	1.8E-08	2.0E-09	1.4E-11	6.8E-10	7.4E-08	6.6E-09	4.4E-11	4.2E-09	5.0E-08	3.0E-08	1.8E-07	3.4E-07	4.4E-07	3.3E-08	1.1E-08	1.2E-07
	R281	296600	6257404	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.5E-05	2.4E-04	4.7E-05	4.1E-06	8.2E-09	1.8E-08	2.0E-09	1.4E-11	6.9E-10	7.5E-08	6.8E-09	4.5E-11	4.3E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.3E-08	1.1E-08	1.2E-07
	R282	296650	6257404	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.8E-05	4.2E-06	8.4E-09	1.9E-08	2.1E-09	1.5E-11	7.1E-10	7.7E-08	7.0E-09	4.6E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.3E-07
	R283	296700	6257404	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.6E-04	4.9E-05	4.3E-06	8.5E-09	1.9E-08	2.1E-09	1.5E-11	7.2E-10	7.9E-08	7.1E-09	4.7E-11	4.5E-09	5.3E-08	3.2E-08	2.0E-07	3.7E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
	R284	296750	6257404	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	5.9E-05	2.6E-04	5.0E-05	4.3E-06	8.7E-09	2.0E-08	2.2E-09	1.5E-11	7.4E-10	8.0E-08	7.2E-09	4.8E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.8E-07	3.5E-08	1.2E-08	1.3E-07
	R285	296800	6257404	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.4E-06	8.9E-09	2.0E-08	2.2E-09	1.6E-11	7.6E-10	8.2E-08	7.4E-09	4.9E-11	4.7E-09	5.6E-08	3.3E-08	2.0E-07	3.8E-07	4.9E-07	3.6E-08	1.2E-08	1.3E-07
	R286	296850	6257404	2.3E-06	2.3E-06	2.0E-05	1.1E-06	2.3E-06	6.1E-05	2.7E-04	5.2E-05	4.5E-06	9.1E-09	2.0E-08	2.3E-09	1.6E-11	7.7E-10	8.4E-08	7.5E-09	5.0E-11	4.8E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R287	296900	6257404	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.3E-05	4.6E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.7E-09	5.1E-11	4.9E-09	5.8E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R288	296950	6257404	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.9E-04	5.5E-05	4.8E-06	9.5E-09	2.1E-08	2.4E-09	1.7E-11	8.1E-10	8.8E-08	7.9E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.9E-08	1.3E-08	1.4E-07
	R289	297000	6257404	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.7E-09	2.2E-08	2.4E-09	1.7E-11	8.3E-10	9.0E-08	8.1E-09	5.3E-11	5.2E-09	6.1E-08	3.6E-08	2.2E-07	4.2E-07	5.3E-07	4.0E-08	1.4E-08	1.5E-07
	R290	297050	6257404	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.7E-05	3.0E-04	5.7E-05	5.0E-06	1.0E-08	2.2E-08	2.5E-09	1.7E-11	8.5E-10	9.2E-08	8.3E-09	5.5E-11	5.3E-09	6.2E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R291	297100	6257404	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.7E-10	9.4E-08	8.5E-09	5.6E-11	5.4E-09	6.4E-08	3.8E-08	2.3E-07	4.4E-07	5.6E-07	4.2E-08	1.4E-08	1.5E-07
	R292	297150	6257404	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	7.0E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.9E-10	9.7E-08	8.7E-09	5.7E-11	5.5E-09	6.5E-08	3.9E-08	2.4E-07	4.5E-07	5.7E-07	4.3E-08	1.5E-08	1.6E-07
	R293	297200	6257404	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.2E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.1E-10	9.9E-08	8.9E-09	5.9E-11	5.7E-09	6.7E-08	4.0E-08	2.5E-07	4.6E-07	5.9E-07	4.4E-08	1.5E-08	1.6E-07
	R294	297250	6257404	2.7E-06	2.7E-06	2.5E-05	1.4E-06	2.7E-06	7.4E-05	3.3E-04	6.3E-05	5.5E-06	1.1E-08	2.5E-08	2.7E-09	1.9E-11	9.3E-10	1.0E-07	9.1E-09	6.0E-11	5.8E-09	6.8E-08	4.0E-08	2.5E-07	4.7E-07	6.0E-07	4.5E-08	1.5E-08	1.6E-07
	R295	297300	6257404	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.6E-05	3.4E-04	6.4E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.5E-10	1.0E-07	9.3E-09	6.2E-11	5.9E-09	7.0E-08	4.2E-08	2.6E-07	4.8E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R296	297350	6257404	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.8E-05	3.5E-04	6.6E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.8E-10	1.1E-07	9.6E-09	6.3E-11	6.1E-09	7.2E-08	4.3E-08	2.6E-07	4.9E-07	6.3E-07	4.7E-08	1.6E-08	1.7E-07
	R297	297400	6257404	2.9E-06	2.9E-06	2.7E-05	1.5E-06	2.9E-06	8.0E-05	3.5E-04	6.8E-05	5.9E-06	1.2E-08	2.7E-08	2.9E-09	2.1E-11	1.0E-09	1.1E-07	9.8E-09	6.5E-11	6.3E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.7E-08	1.8E-07
	R298	296500	6257454	2.0E-06	2.0E-06	1.8E-05	9.9E-07	2.0E-06	5.3E-05	2.4E-04	4.6E-05	4.0E-06	7.9E-09	1.8E-08	2.0E-09	1.4E-11	6.7E-10	7.3E-08	6.6E-09	4.4E-11	4.2E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.4E-07	3.2E-08	1.1E-08	1.2E-07
	R299	296550	6257454	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.5E-05	2.4E-04	4.7E-05	4.1E-06	8.1E-09	1.8E-08	2.0E-09	1.4E-11	6.9E-10	7.5E-08	6.7E-09	4.5E-11	4.3E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.3E-08	1.1E-08	1.2E-07
	R300	296600	6257454	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.8E-05	4.1E-06	8.3E-09	1.9E-08	2.1E-09	1.4E-11	7.0E-10	7.7E-08	6.9E-09	4.6E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.2E-07
	R301	296650	6257454	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.5E-04	4.9E-05	4.2E-06	8.5E-09	1.9E-08	2.1E-09	1.5E-11	7.2E-10	7.8E-08	7.1E-09	4.7E-11	4.5E-09	5.3E-08	3.1E-08	1.9E-07	3.6E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
	R302	296700	6257454	2.2E-06	2.2E-06	1.9E-05	1.1E-06	2.2E-06	5.8E-05	2.6E-04	5.0E-05	4.3E-06	8.6E-09	1.9E-08	2.2E-09	1.5E-11	7.3E-10	8.0E-08	7.2E-09	4.7E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
	R303	296750	6257454	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.4E-06	8.8E-09	2.0E-08	2.2E-09	1.5E-11	7.5E-10	8.2E-08	7.4E-09	4.9E-11	4.7E-09	5.5E-08	3.3E-08	2.0E-07	3.8E-07	4.9E-07	3.6E-08	1.2E-08	1.3E-07
	R304	296800	6257454	2.3E-06	2.3E-06	2.0E-05	1.1E-06	2.3E-06	6.1E-05	2.7E-04	5.2E-05	4.5E-06	9.0E-09	2.0E-08	2.3E-09	1.6E-11	7.7E-10	8.3E-08	7.5E-09	5.0E-11	4.8E-09	5.6E-08	3.3E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R305	296850	6257454	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.2E-05	2.8E-04	5.3E-05	4.6E-06	9.2E-09	2.1E-08	2.3E-09	1.6E-11	7.8E-10	8.5E-08	7.7E-09	5.1E-11	4.9E-09	5.8E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																												
													Metal									Heavy Metal							
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R306	296900	6257454	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.8E-04	5.4E-05	4.7E-06	9.4E-09	2.1E-08	2.4E-09	1.6E-11	8.0E-10	8.7E-08	7.8E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.8E-08	1.3E-08	1.4E-07
	R307	296950	6257454	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.6E-05	4.8E-06	9.7E-09	2.2E-08	2.4E-09	1.7E-11	8.2E-10	8.9E-08	8.0E-09	5.3E-11	5.1E-09	6.0E-08	3.6E-08	2.2E-07	4.2E-07	5.3E-07	3.9E-08	1.4E-08	1.4E-07
	R308	297000	6257454	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.7E-05	3.0E-04	5.7E-05	5.0E-06	9.9E-09	2.2E-08	2.5E-09	1.7E-11	8.4E-10	9.2E-08	8.2E-09	5.4E-11	5.2E-09	6.2E-08	3.7E-08	2.3E-07	4.3E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R309	297050	6257454	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.1E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.6E-10	9.4E-08	8.4E-09	5.6E-11	5.4E-09	6.3E-08	3.7E-08	2.3E-07	4.4E-07	5.6E-07	4.1E-08	1.4E-08	1.5E-07
	R310	297100	6257454	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	7.0E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.8E-10	9.6E-08	8.6E-09	5.7E-11	5.5E-09	6.5E-08	3.8E-08	2.4E-07	4.5E-07	5.7E-07	4.2E-08	1.5E-08	1.6E-07
	R311	297150	6257454	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.2E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.1E-10	9.8E-08	8.9E-09	5.9E-11	5.6E-09	6.7E-08	3.9E-08	2.4E-07	4.6E-07	5.9E-07	4.3E-08	1.5E-08	1.6E-07
	R312	297200	6257454	2.7E-06	2.7E-06	2.5E-05	1.4E-06	2.7E-06	7.4E-05	3.3E-04	6.3E-05	5.5E-06	1.1E-08	2.5E-08	2.7E-09	1.9E-11	9.3E-10	1.0E-07	9.1E-09	6.0E-11	5.8E-09	6.8E-08	4.0E-08	2.5E-07	4.7E-07	6.0E-07	4.4E-08	1.5E-08	1.6E-07
	R313	297250	6257454	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.5E-05	3.4E-04	6.4E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.5E-10	1.0E-07	9.3E-09	6.1E-11	5.9E-09	7.0E-08	4.1E-08	2.6E-07	4.8E-07	6.1E-07	4.6E-08	1.6E-08	1.7E-07
	R314	297300	6257454	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.7E-05	3.4E-04	6.6E-05	5.7E-06	1.1E-08	2.6E-08	2.9E-09	2.0E-11	9.8E-10	1.1E-07	9.5E-09	6.3E-11	6.1E-09	7.2E-08	4.2E-08	2.6E-07	4.9E-07	6.3E-07	4.7E-08	1.6E-08	1.7E-07
	R315	297350	6257454	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.0E-05	3.5E-04	6.8E-05	5.9E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	9.8E-09	6.5E-11	6.3E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.7E-08	1.8E-07
	R316	297400	6257454	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.2E-05	3.6E-04	6.9E-05	6.0E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.6E-11	6.4E-09	7.5E-08	4.5E-08	2.8E-07	5.2E-07	6.6E-07	4.9E-08	1.7E-08	1.8E-07
	R317	296500	6257504	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	8.0E-09	1.8E-08	2.0E-09	1.4E-11	6.8E-10	7.4E-08	6.7E-09	4.4E-11	4.3E-09	5.0E-08	3.0E-08	1.8E-07	3.4E-07	4.4E-07	3.3E-08	1.1E-08	1.2E-07
	R318	296550	6257504	2.1E-06	2.1E-06	1.8E-05	1.0E-06	2.1E-06	5.5E-05	2.5E-04	4.7E-05	4.1E-06	8.2E-09	1.8E-08	2.1E-09	1.4E-11	7.0E-10	7.6E-08	6.8E-09	4.5E-11	4.4E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.3E-08	1.2E-08	1.2E-07
	R319	296600	6257504	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.5E-04	4.8E-05	4.2E-06	8.4E-09	1.9E-08	2.1E-09	1.5E-11	7.1E-10	7.8E-08	7.0E-09	4.6E-11	4.5E-09	5.3E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.3E-07
	R320	296650	6257504	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.8E-05	2.6E-04	4.9E-05	4.3E-06	8.6E-09	1.9E-08	2.1E-09	1.5E-11	7.3E-10	7.9E-08	7.1E-09	4.7E-11	4.5E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
	R321	296700	6257504	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	5.9E-05	2.6E-04	5.0E-05	4.4E-06	8.8E-09	2.0E-08	2.2E-09	1.5E-11	7.5E-10	8.1E-08	7.3E-09	4.8E-11	4.6E-09	5.5E-08	3.2E-08	2.0E-07	3.8E-07	4.8E-07	3.6E-08	1.2E-08	1.3E-07
	R322	296750	6257504	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.1E-05	2.7E-04	5.2E-05	4.5E-06	9.0E-09	2.0E-08	2.2E-09	1.6E-11	7.6E-10	8.3E-08	7.5E-09	4.9E-11	4.8E-09	5.6E-08	3.3E-08	2.1E-07	3.9E-07	4.9E-07	3.7E-08	1.3E-08	1.3E-07
	R323	296800	6257504	2.3E-06	2.3E-06	2.1E-05	1.1E-06	2.3E-06	6.2E-05	2.7E-04	5.3E-05	4.6E-06	9.2E-09	2.1E-08	2.3E-09	1.6E-11	7.8E-10	8.5E-08	7.6E-09	5.0E-11	4.9E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R324	296850	6257504	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.4E-09	2.1E-08	2.3E-09	1.6E-11	8.0E-10	8.7E-08	7.8E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.0E-07	5.2E-07	3.8E-08	1.3E-08	1.4E-07
	R325	296900	6257504	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.5E-05	4.8E-06	9.6E-09	2.2E-08	2.4E-09	1.7E-11	8.2E-10	8.9E-08	8.0E-09	5.3E-11	5.1E-09	6.0E-08	3.5E-08	2.2E-07	4.1E-07	5.3E-07	3.9E-08	1.3E-08	1.4E-07
	R326	296950	6257504	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.8E-09	2.2E-08	2.5E-09	1.7E-11	8.3E-10	9.1E-08	8.2E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.3E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R327	297000	6257504	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.0E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.6E-10	9.3E-08	8.4E-09	5.5E-11	5.3E-09	6.3E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R328	297050	6257504	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	7.0E-05	3.1E-04	5.9E-05	5.2E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.8E-10	9.5E-08	8.6E-09	5.7E-11	5.5E-09	6.4E-08	3.8E-08	2.4E-07	4.4E-07	5.7E-07	4.2E-08	1.4E-08	1.5E-07
	R329	297100	6257504	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.6E-09	1.8E-11	9.0E-10	9.8E-08	8.8E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.5E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R330	297150	6257504	2.7E-06	2.7E-06	2.4E-05	1.4E-06	2.7E-06	7.3E-05	3.2E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.2E-10	1.0E-07	9.0E-09	6.0E-11	5.7E-09	6.8E-08	4.0E-08	2.5E-07	4.7E-07	6.0E-07	4.4E-08	1.5E-08	1.6E-07
	R331	297200	6257504	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.5E-05	3.3E-04	6.4E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	1.9E-11	9.5E-10	1.0E-07	9.3E-09	6.1E-11	5.9E-09	7.0E-08	4.1E-08	2.6E-07	4.8E-07	6.1E-07	4.5E-08	1.6E-08	1.7E-07
	R332	297250	6257504	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.7E-05	3.4E-04	6.6E-05	5.7E-06	1.1E-08	2.6E-08	2.9E-09	2.0E-11	9.7E-10	1.1E-07	9.5E-09	6.3E-11	6.0E-09	7.1E-08	4.2E-08	2.6E-07	4.9E-07	6.3E-07	4.6E-08	1.6E-08	1.7E-07
	R333	297300	6257504	2.9E-06	2.9E-06	2.6E-05	1.5E-06	2.9E-06	7.9E-05	3.5E-04	6.7E-05	5.9E-06	1.2E-08	2.6E-08	2.9E-09	2.1E-11	1.0E-09	1.1E-07	9.8E-09	6.4E-11	6.2E-09	7.3E-08	4.3E-08	2.7E-07	5.0E-07	6.4E-07	4.8E-08	1.6E-08	1.8E-07
	R334	297350	6257504	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.1E-05	3.6E-04	6.9E-05	6.0E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.6E-11	6.4E-09	7.5E-08	4.5E-08	2.8E-07	5.2E-07	6.6E-07	4.9E-08	1.7E-08	1.8E-07
	R335	297400	6257504	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.4E-05	3.7E-04	7.1E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.1E-07	1.0E-08	6.8E-11	6.6E-09	7.8E-08	4.6E-08	2.9E-07	5.3E-07	6.8E-07	5.1E-08	1.7E-08	1.9E-07
	R336	296500	6257554	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.5E-05	2.4E-04	4.7E-05	4.1E-06	8.1E-09	1.8E-08	2.0E-09	1.4E-11	6.9E-10	7.5E-08	6.8E-09	4.5E-11	4.3E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.3E-08	1.1E-08	1.2E-07
	R337	296550	6257554	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.8E-05	4.2E-06	8.3E-09	1.9E-08	2.1E-09	1.5E-11	7.1E-10	7.7E-08	6.9E-09	4.6E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.2E-07
	R338	296600	6257554	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.6E-04	4.9E-05	4.3E-06	8.5E-09	1.9E-08	2.1E-09	1.5E-11	7.2E-10	7.9E-08	7.1E-09	4.7E-11	4.5E-09	5.3E-08	3.2E-08	2.0E-07	3.7E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
	R339	296650	6257554	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	5.9E-05	2.6E-04	5.0E-05	4.3E-06	8.7E-09	2.0E-08	2.2E-09	1.5E-11	7.4E-10	8.0E-08	7.2E-09	4.8E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.8E-07	3.5E-08	1.2E-08	1.3E-07
	R340	296700	6257554	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.5E-06	8.9E-09	2.0E-08	2.2E-09	1.6E-11	7.6E-10	8.2E-08	7.4E-09	4.9E-11	4.7E-09	5.6E-08	3.3E-08	2.0E-07	3.8E-07	4.9E-07	3.6E-08	1.2E-08	1.3E-07
	R341	296750	6257554	2.3E-06	2.3E-06	2.0E-05	1.1E-06	2.3E-06	6.1E-05	2.7E-04	5.2E-05	4.6E-06	9.1E-09	2.0E-08	2.3E-09	1.6E-11	7.7E-10	8.4E-08	7.6E-09	5.0E-11	4.8E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R342	296800	6257554	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.7E-09	5.1E-11	4.9E-09	5.8E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R343	296850	6257554	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.9E-04	5.5E-05	4.8E-06	9.5E-09	2.1E-08	2.4E-09	1.7E-11	8.1E-10	8.8E-08	7.9E-09	5.2E-11	5.1E-09	6.0E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.9E-08	1.3E-08	1.4E-07
	R344	296900	6257554	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.8E-09	2.2E-08	2.4E-09	1.7E-11	8.3E-10	9.0E-08	8.1E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.2E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R345	296950	6257554	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.7E-05	3.0E-04	5.7E-05	5.0E-06	1.0E-08	2.2E-08	2.5E-09	1.7E-11	8.5E-10	9.2E-08	8.3E-09	5.5E-11	5.3E-09	6.2E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R346	297000	6257554	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.7E-10	9.5E-08	8.5E-09	5.6E-11	5.4E-09	6.4E-08	3.8E-08	2.4E-07	4.4E-07	5.6E-07	4.2E-08	1.4E-08	1.5E-07
	R347	297050	6257554	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.4E-08	2.6E-09	1.8E-11	8.9E-10	9.7E-08	8.7E-09	5.8E-11	5.6E-09	6.5E-08	3.9E-08	2.4E-07	4.5E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R348	297100	6257554	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.3E-05	3.2E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.1E-10	1.0E-07	9.0E-09	5.9E-11	5.7E-09	6.7E-08	4.0E-08	2.5E-07	4.6E-07	5.9E-07	4.4E-08	1.5E-08	1.6E-07
	R349	297150	6257554	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.5E-05	3.3E-04	6.4E-05	5.5E-06	1.1E-08	2.5E-08	2.8E-09	1.9E-11	9.4E-10	1.0E-07	9.2E-09	6.1E-11	5.9E-09	6.9E-08	4.1E-08	2.5E-07	4.8E-07	6.1E-07	4.5E-08	1.5E-08	1.7E-07
	R350	297200	6257554	2.8E-06	2.8E-06	2.6E-05	1.4E-06	2.8E-06	7.7E-05	3.4E-04	6.5E-05	5.7E-06	1.1E-08	2.6E-08	2.8E-09	2.0E-11	9.6E-10	1.0E-07	9.4E-09	6.2E-11	6.0E-09	7.1E-08	4.2E-08	2.6E-07	4.9E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R351	297250	6257554	2.9E-06	2.9E-06	2.6E-05	1.5E-06	2.9E-06	7.9E-05	3.5E-04	6.7E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.9E-10	1.1E-07	9.7E-09	6.4E-11	6.2E-09	7.3E-08	4.3E-08	2.7E-07	5.0E-07	6.4E-07	4.8E-08	1.6E-08	1.7E-07
	R352	297300	6257554	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.1E-05	3.6E-04	6.9E-05	6.0E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.6E-11	6.3E-09	7.5E-08	4.4E-08	2.8E-07	5.1E-07	6.6E-07	4.9E-08	1.7E-08	1.8E-07
	R353	297350	6257554	3.1E-06	3.1E-06	2.8E-05	1.5E-06	3.1E-06	8.3E-05	3.7E-04	7.1E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.0E-09	1.1E-07	1.0E-08	6.8E-11	6.5E-09	7.7E-08	4.6E-08	2.8E-07	5.3E-07	6.8E-07	5.0E-08	1.7E-08	1.8E-07
	R354	297400	6257554	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.6E-05	3.8E-04	7.3E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.7E-09	8.0E-08	4.7E-08	2.9E-07	5.5E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R355	296500	6257604	2.1E-06	2.1E-06	1.8E-05	1.0E-06	2.1E-06	5.5E-05	2.5E-04	4.7E-05	4.1E-06	8.2E-09	1.8E-08	2.1E-09	1.4E-11	7.0E-10	7.6E-08	6.8E-09	4.5E-11	4.4E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.3E-08	1.2E-08	1.2E-07
	R356	296550	6257604	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.5E-04	4.8E-05	4.2E-06	8.4E-09	1.9E-08	2.1E-09	1.5E-11	7.2E-10	7.8E-08	7.0E-09	4.6E-11	4.5E-09	5.3E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.3E-07
	R357	296600	6257604	2.2E-06	2.2E-06	1.9E-05	1.1E-06	2.2E-06	5.8E-05	2.6E-04	5.0E-05	4.3E-06	8.6E-09	1.9E-08	2.2E-09	1.5E-11	7.3E-10	8.0E-08	7.2E-09	4.7E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
	R358	296650	6257604	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	5.9E-05	2.6E-04	5.1E-05	4.4E-06	8.8E-09	2.0E-08	2.2E-09	1.5E-11	7.5E-10	8.2E-08	7.3E-09	4.8E-11	4.7E-09	5.5E-08	3.3E-08	2.0E-07	3.8E-07	4.8E-07	3.6E-08	1.2E-08	1.3E-07
	R359	296700	6257604	2.3E-06	2.3E-06	2.0E-05	1.1E-06	2.3E-06	6.1E-05	2.7E-04	5.2E-05	4.5E-06	9.0E-09	2.0E-08	2.3E-09	1.6E-11	7.7E-10	8.3E-08	7.5E-09	5.0E-11	4.8E-09	5.6E-08	3.3E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R360	296750	6257604	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.2E-05	2.8E-04	5.3E-05	4.6E-06	9.2E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.5E-08	7.7E-09	5.1E-11	4.9E-09	5.8E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R361	296800	6257604	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.8E-04	5.4E-05	4.7E-06	9.5E-09	2.1E-08	2.4E-09	1.7E-11	8.0E-10	8.8E-08	7.9E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.9E-08	1.3E-08	1.4E-07
	R362	296850	6257604	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.6E-05	4.8E-06	9.7E-09	2.2E-08	2.4E-09	1.7E-11	8.2E-10	9.0E-08	8.1E-09	5.3E-11	5.1E-09	6.1E-08	3.6E-08	2.2E-07	4.2E-07	5.3E-07	3.9E-08	1.4E-08	1.5E-07
	R363	296900	6257604	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.7E-05	3.0E-04	5.7E-05	5.0E-06	9.9E-09	2.2E-08	2.5E-09	1.7E-11	8.4E-10	9.2E-08	8.3E-09	5.5E-11	5.3E-09	6.2E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.0E-08	1.4E-08	1.5E-07
	R364	296950	6257604	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.6E-10	9.4E-08	8.5E-09	5.6E-11	5.4E-09	6.4E-08	3.8E-08	2.3E-07	4.4E-07	5.6E-07	4.1E-08	1.4E-08	1.5E-07
	R365	297000	6257604	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	7.0E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.9E-10	9.6E-08	8.7E-09	5.7E-11	5.5E-09	6.5E-08	3.9E-08	2.4E-07	4.5E-07	5.7E-07	4.2E-08	1.5E-08	1.6E-07
	R366	297050	6257604	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.2E-05	3.2E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.1E-10	9.9E-08	8.9E-09	5.9E-11	5.7E-09	6.7E-08	4.0E-08	2.5E-07	4.6E-07	5.9E-07	4.4E-08	1.5E-08	1.6E-07

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs									Metal										Heavy Metal							
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R367	297100	6257604	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.4E-05	3.3E-04	6.3E-05	5.5E-06	1.1E-08	2.5E-08	2.8E-09	1.9E-11	9.4E-10	1.0E-07	9.2E-09	6.1E-11	5.8E-09	6.9E-08	4.1E-08	2.5E-07	4.7E-07	6.1E-07	4.5E-08	1.5E-08	1.7E-07
	R368	297150	6257604	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.6E-05	3.4E-04	6.5E-05	5.7E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.6E-10	1.0E-07	9.4E-09	6.2E-11	6.0E-09	7.1E-08	4.2E-08	2.6E-07	4.9E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R369	297200	6257604	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.8E-05	3.5E-04	6.7E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.9E-10	1.1E-07	9.7E-09	6.4E-11	6.1E-09	7.2E-08	4.3E-08	2.7E-07	5.0E-07	6.4E-07	4.7E-08	1.6E-08	1.7E-07
	R370	297250	6257604	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.0E-05	3.6E-04	6.8E-05	5.9E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	9.9E-09	6.5E-11	6.3E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.7E-08	1.8E-07
	R371	297300	6257604	3.1E-06	3.1E-06	2.7E-05	1.5E-06	3.1E-06	8.2E-05	3.7E-04	7.0E-05	6.1E-06	1.2E-08	2.7E-08	3.1E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.5E-09	7.6E-08	4.5E-08	2.8E-07	5.3E-07	6.7E-07	5.0E-08	1.7E-08	1.8E-07
	R372	297350	6257604	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.5E-05	3.8E-04	7.2E-05	6.3E-06	1.3E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.2E-07	1.0E-08	6.9E-11	6.7E-09	7.9E-08	4.7E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.8E-08	1.9E-07
	R373	296500	6257654	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.8E-05	4.2E-06	8.3E-09	1.9E-08	2.1E-09	1.5E-11	7.1E-10	7.7E-08	6.9E-09	4.6E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.2E-07
	R374	296550	6257654	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.8E-05	2.6E-04	4.9E-05	4.3E-06	8.5E-09	1.9E-08	2.1E-09	1.5E-11	7.3E-10	7.9E-08	7.1E-09	4.7E-11	4.5E-09	5.3E-08	3.2E-08	2.0E-07	3.7E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
	R375	296600	6257654	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	5.9E-05	2.6E-04	5.0E-05	4.4E-06	8.7E-09	2.0E-08	2.2E-09	1.5E-11	7.4E-10	8.1E-08	7.3E-09	4.8E-11	4.6E-09	5.5E-08	3.2E-08	2.0E-07	3.8E-07	4.8E-07	3.6E-08	1.2E-08	1.3E-07
	R376	296650	6257654	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.5E-06	8.9E-09	2.0E-08	2.2E-09	1.6E-11	7.6E-10	8.3E-08	7.4E-09	4.9E-11	4.7E-09	5.6E-08	3.3E-08	2.1E-07	3.8E-07	4.9E-07	3.6E-08	1.3E-08	1.3E-07
	R377	296700	6257654	2.3E-06	2.3E-06	2.1E-05	1.1E-06	2.3E-06	6.2E-05	2.7E-04	5.3E-05	4.6E-06	9.1E-09	2.1E-08	2.3E-09	1.6E-11	7.8E-10	8.5E-08	7.6E-09	5.0E-11	4.8E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R378	296750	6257654	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.4E-09	2.1E-08	2.3E-09	1.6E-11	8.0E-10	8.7E-08	7.8E-09	5.1E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R379	296800	6257654	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.5E-05	4.8E-06	9.6E-09	2.2E-08	2.4E-09	1.7E-11	8.2E-10	8.9E-08	8.0E-09	5.3E-11	5.1E-09	6.0E-08	3.6E-08	2.2E-07	4.1E-07	5.3E-07	3.9E-08	1.3E-08	1.4E-07
	R380	296850	6257654	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.6E-05	3.0E-04	5.7E-05	4.9E-06	9.8E-09	2.2E-08	2.5E-09	1.7E-11	8.4E-10	9.1E-08	8.2E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.3E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R381	296900	6257654	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.0E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.6E-10	9.3E-08	8.4E-09	5.5E-11	5.3E-09	6.3E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R382	296950	6257654	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	7.0E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.8E-10	9.6E-08	8.6E-09	5.7E-11	5.5E-09	6.5E-08	3.8E-08	2.4E-07	4.5E-07	5.7E-07	4.2E-08	1.4E-08	1.6E-07
	R383	297000	6257654	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.2E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.1E-10	9.9E-08	8.9E-09	5.9E-11	5.6E-09	6.7E-08	3.9E-08	2.5E-07	4.6E-07	5.9E-07	4.3E-08	1.5E-08	1.6E-07
	R384	297050	6257654	2.7E-06	2.7E-06	2.5E-05	1.4E-06	2.7E-06	7.4E-05	3.3E-04	6.3E-05	5.5E-06	1.1E-08	2.5E-08	2.7E-09	1.9E-11	9.3E-10	1.0E-07	9.1E-09	6.0E-11	5.8E-09	6.9E-08	4.1E-08	2.5E-07	4.7E-07	6.0E-07	4.5E-08	1.5E-08	1.6E-07
	R385	297100	6257654	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.6E-05	3.4E-04	6.5E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.6E-10	1.0E-07	9.4E-09	6.2E-11	6.0E-09	7.0E-08	4.2E-08	2.6E-07	4.8E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R386	297150	6257654	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.8E-05	3.5E-04	6.6E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.8E-10	1.1E-07	9.6E-09	6.3E-11	6.1E-09	7.2E-08	4.3E-08	2.6E-07	4.9E-07	6.3E-07	4.7E-08	1.6E-08	1.7E-07
	R387	297200	6257654	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.0E-05	3.6E-04	6.8E-05	5.9E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	9.9E-09	6.5E-11	6.3E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.7E-08	1.8E-07
	R388	297250	6257654	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.2E-05	3.6E-04	7.0E-05	6.1E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.4E-09	7.6E-08	4.5E-08	2.8E-07	5.2E-07	6.7E-07	5.0E-08	1.7E-08	1.8E-07
	R389	297300	6257654	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.4E-05	3.8E-04	7.2E-05	6.3E-06	1.3E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.2E-07	1.0E-08	6.9E-11	6.6E-09	7.8E-08	4.6E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.8E-08	1.9E-07
	R390	297350	6257654	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.7E-05	3.9E-04	7.4E-05	6.5E-06	1.3E-08	2.9E-08	3.2E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.8E-09	8.1E-08	4.8E-08	3.0E-07	5.5E-07	7.1E-07	5.3E-08	1.8E-08	1.9E-07
	R391	296500	6257704	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.5E-04	4.8E-05	4.2E-06	8.4E-09	1.9E-08	2.1E-09	1.5E-11	7.1E-10	7.8E-08	7.0E-09	4.6E-11	4.5E-09	5.3E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.3E-07
	R392	296550	6257704	2.2E-06	2.2E-06	1.9E-05	1.1E-06	2.2E-06	5.8E-05	2.6E-04	5.0E-05	4.3E-06	8.6E-09	1.9E-08	2.2E-09	1.5E-11	7.3E-10	8.0E-08	7.2E-09	4.8E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.8E-07	3.5E-08	1.2E-08	1.3E-07
	R393	296600	6257704	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.4E-06	8.8E-09	2.0E-08	2.2E-09	1.5E-11	7.5E-10	8.2E-08	7.4E-09	4.9E-11	4.7E-09	5.5E-08	3.3E-08	2.0E-07	3.8E-07	4.9E-07	3.6E-08	1.2E-08	1.3E-07
	R394	296650	6257704	2.3E-06	2.3E-06	2.0E-05	1.1E-06	2.3E-06	6.1E-05	2.7E-04	5.2E-05	4.5E-06	9.1E-09	2.0E-08	2.3E-09	1.6E-11	7.7E-10	8.4E-08	7.5E-09	5.0E-11	4.8E-09	5.7E-08	3.3E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R395	296700	6257704	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.2E-05	2.8E-04	5.3E-05	4.6E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.7E-09	5.1E-11	4.9E-09	5.8E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R396	296750	6257704	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.8E-04	5.5E-05	4.7E-06	9.5E-09	2.1E-08	2.4E-09	1.7E-11	8.1E-10	8.8E-08	7.9E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.9E-08	1.3E-08	1.4E-07
	R397	296800	6257704	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.7E-09	2.2E-08	2.4E-09	1.7E-11	8.3E-10	9.0E-08	8.1E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.2E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R398	296850	6257704	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.7E-05	3.0E-04	5.7E-05	5.0E-06	1.0E-08	2.2E-08	2.5E-09	1.7E-11	8.5E-10	9.2E-08	8.3E-09	5.5E-11	5.3E-09	6.2E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R399	296900	6257704	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.7E-10	9.5E-08	8.5E-09	5.6E-11	5.4E-09	6.4E-08	3.8E-08	2.4E-07	4.4E-07	5.6E-07	4.2E-08	1.4E-08	1.5E-07
	R400	296950	6257704	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.6E-09	1.8E-11	9.0E-10	9.8E-08	8.8E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.5E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R401	297000	6257704	2.7E-06	2.7E-06	2.4E-05	1.4E-06	2.7E-06	7.3E-05	3.3E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.2E-10	1.0E-07	9.0E-09	6.0E-11	5.8E-09	6.8E-08	4.0E-08	2.5E-07	4.7E-07	6.0E-07	4.4E-08	1.5E-08	1.6E-07
	R402	297050	6257704	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.5E-05	3.3E-04	6.4E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.5E-10	1.0E-07	9.3E-09	6.1E-11	5.9E-09	7.0E-08	4.1E-08	2.6E-07	4.8E-07	6.1E-07	4.5E-08	1.6E-08	1.7E-07
	R403	297100	6257704	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.7E-05	3.4E-04	6.6E-05	5.7E-06	1.1E-08	2.6E-08	2.9E-09	2.0E-11	9.7E-10	1.1E-07	9.5E-09	6.3E-11	6.1E-09	7.1E-08	4.2E-08	2.6E-07	4.9E-07	6.3E-07	4.7E-08	1.6E-08	1.7E-07
	R404	297150	6257704	2.9E-06	2.9E-06	2.6E-05	1.5E-06	2.9E-06	7.9E-05	3.5E-04	6.7E-05	5.9E-06	1.2E-08	2.6E-08	2.9E-09	2.1E-11	1.0E-09	1.1E-07	9.8E-09	6.4E-11	6.2E-09	7.3E-08	4.3E-08	2.7E-07	5.0E-07	6.4E-07	4.8E-08	1.6E-08	1.8E-07
	R405	297200	6257704	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.1E-05	3.6E-04	6.9E-05	6.0E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.6E-11	6.4E-09	7.5E-08	4.5E-08	2.8E-07	5.2E-07	6.6E-07	4.9E-08	1.7E-08	1.8E-07
	R406	297250	6257704	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.4E-05	3.7E-04	7.2E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.2E-07	1.0E-08	6.8E-11	6.6E-09	7.8E-08	4.6E-08	2.9E-07	5.3E-07	6.8E-07	5.1E-08	1.7E-08	1.9E-07
	R407	297300	6257704	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.7E-05	3.8E-04	7.4E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.8E-09	8.0E-08	4.7E-08	2.9E-07	5.5E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R408	297350	6257704	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	8.9E-05	4.0E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.0E-09	8.3E-08	4.9E-08	3.0E-07	5.7E-07	7.3E-07	5.4E-08	1.9E-08	2.0E-07
	R409	296500	6257754	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.6E-04	4.9E-05	4.3E-06	8.5E-09	1.9E-08	2.1E-09	1.5E-11	7.2E-10	7.9E-08	7.1E-09	4.7E-11	4.5E-09	5.3E-08	3.2E-08	2.0E-07	3.7E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
	R410	296550	6257754	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	5.9E-05	2.6E-04	5.0E-05	4.4E-06	8.7E-09	2.0E-08	2.2E-09	1.5E-11	7.4E-10	8.1E-08	7.3E-09	4.8E-11	4.6E-09	5.5E-08	3.2E-08	2.0E-07	3.8E-07	4.8E-07	3.6E-08	1.2E-08	1.3E-07
	R411	296600	6257754	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.2E-05	4.5E-06	9.0E-09	2.0E-08	2.2E-09	1.6E-11	7.6E-10	8.3E-08	7.5E-09	4.9E-11	4.7E-09	5.6E-08	3.3E-08	2.1E-07	3.9E-07	4.9E-07	3.7E-08	1.3E-08	1.3E-07
	R412	296650	6257754	2.3E-06	2.3E-06	2.1E-05	1.1E-06	2.3E-06	6.2E-05	2.8E-04	5.3E-05	4.6E-06	9.2E-09	2.1E-08	2.3E-09	1.6E-11	7.8E-10	8.5E-08	7.6E-09	5.0E-11	4.9E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R413	296700	6257754	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.4E-09	2.1E-08	2.3E-09	1.6E-11	8.0E-10	8.7E-08	7.8E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.0E-07	5.2E-07	3.8E-08	1.3E-08	1.4E-07
	R414	296750	6257754	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.5E-05	4.8E-06	9.6E-09	2.2E-08	2.4E-09	1.7E-11	8.2E-10	8.9E-08	8.0E-09	5.3E-11	5.1E-09	6.0E-08	3.6E-08	2.2E-07	4.1E-07	5.3E-07	3.9E-08	1.3E-08	1.4E-07
	R415	296800	6257754	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.7E-05	3.0E-04	5.7E-05	4.9E-06	9.9E-09	2.2E-08	2.5E-09	1.7E-11	8.4E-10	9.2E-08	8.2E-09	5.4E-11	5.2E-09	6.2E-08	3.7E-08	2.3E-07	4.3E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R416	296850	6257754	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.1E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.6E-10	9.4E-08	8.4E-09	5.6E-11	5.4E-09	6.3E-08	3.8E-08	2.3E-07	4.4E-07	5.6E-07	4.1E-08	1.4E-08	1.5E-07
	R417	296900	6257754	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	7.0E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.9E-10	9.7E-08	8.7E-09	5.7E-11	5.5E-09	6.5E-08	3.9E-08	2.4E-07	4.5E-07	5.7E-07	4.3E-08	1.5E-08	1.6E-07
	R418	296950	6257754	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.2E-05	3.2E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.1E-10	9.9E-08	8.9E-09	5.9E-11	5.7E-09	6.7E-08	4.0E-08	2.5E-07	4.6E-07	5.9E-07	4.4E-08	1.5E-08	1.6E-07
	R419	297000	6257754	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.4E-05	3.3E-04	6.3E-05	5.5E-06	1.1E-08	2.5E-08	2.8E-09	1.9E-11	9.4E-10	1.0E-07	9.2E-09	6.1E-11	5.8E-09	6.9E-08	4.1E-08	2.5E-07	4.7E-07	6.1E-07	4.5E-08	1.5E-08	1.7E-07
	R420	297050	6257754	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.6E-05	3.4E-04	6.5E-05	5.7E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.6E-10	1.0E-07	9.4E-09	6.2E-11	6.0E-09	7.1E-08	4.2E-08	2.6E-07	4.9E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R421	297100	6257754	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.8E-05	3.5E-04	6.7E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.9E-10	1.1E-07	9.7E-09	6.4E-11	6.1E-09	7.2E-08	4.3E-08	2.7E-07	5.0E-07	6.4E-07	4.7E-08	1.6E-08	1.7E-07
	R422	297150	6257754	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.1E-05	3.6E-04	6.9E-05	6.0E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	9.9E-09	6.6E-11	6.3E-09	7.5E-08	4.4E-08	2.7E-07	5.1E-07	6.6E-07	4.9E-08	1.7E-08	1.8E-07
	R423	297200	6257754	3.1E-06	3.1E-06	2.8E-05	1.5E-06	3.1E-06	8.3E-05	3.7E-04	7.1E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.0E-09	1.1E-07	1.0E-08	6.8E-11	6.5E-09	7.7E-08	4.6E-08	2.8E-07	5.3E-07	6.8E-07	5.0E-08	1.7E-08	1.8E-07
	R424	297250	6257754	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.6E-05	3.8E-04	7.3E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.7E-09	8.0E-08	4.7E-08	2.9E-07	5.5E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R425	297300	6257754	3.3E-06	3.3E-06	3.0E-05	1.6E-06	3.3E-06	8.9E-05	3.9E-04	7.5E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.2E-11	6.9E-09	8.2E-08	4.9E-08	3.0E-07	5.6E-07	7.2E-07	5.3E-08	1.8E-08	2.0E-07
	R426	297350	6257754	3.4E-06	3.4E-06	3.0E-05	1.7E-06	3.4E-06	9.1E-05	4.1E-04	7.8E-05	6.8E-06	1.4E-08	3.0E-08	3.4E-09	2.4E-11	1.1E-09	1.3E-07	1.1E-08	7.4E-11	7.2E-09	8.5E-08	5.0E-08	3.1E-07	5.8E-07	7.4E-07	5.5E-08	1.9E-08	2.0E-07
	R427	296500	6257804	2.2E-06	2.2E-06	1.9E-05	1.1E-06	2.2E-06	5.8E-05	2.6E-04	5.0E-05	4.3E-06	8.6E-09	1.9E-08	2.2E-09	1.5E-11	7.3E-10	8.0E-08	7.2E-09	4.7E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

				Annual GLCs																									
													Metal									Heavy Metal							
Sensitive Receptor	ID	X	Y	PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3
In-stack Concentration (mg/Nm^3)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R428	296550	6257804	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.4E-06	8.9E-09	2.0E-08	2.2E-09	1.5E-11	7.5E-10	8.2E-08	7.4E-09	4.9E-11	4.7E-09	5.5E-08	3.3E-08	2.0E-07	3.8E-07	4.9E-07	3.6E-08	1.2E-08	1.3E-07
	R429	296600	6257804	2.3E-06	2.3E-06	2.0E-05	1.1E-06	2.3E-06	6.1E-05	2.7E-04	5.2E-05	4.5E-06	9.1E-09	2.0E-08	2.3E-09	1.6E-11	7.7E-10	8.4E-08	7.5E-09	5.0E-11	4.8E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R430	296650	6257804	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.3E-05	4.6E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.7E-09	5.1E-11	4.9E-09	5.8E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R431	296700	6257804	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.9E-04	5.5E-05	4.8E-06	9.5E-09	2.1E-08	2.4E-09	1.7E-11	8.1E-10	8.8E-08	7.9E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.9E-08	1.3E-08	1.4E-07
	R432	296750	6257804	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.8E-09	2.2E-08	2.4E-09	1.7E-11	8.3E-10	9.0E-08	8.1E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.2E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R433	296800	6257804	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.0E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.5E-10	9.3E-08	8.3E-09	5.5E-11	5.3E-09	6.3E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R434	296850	6257804	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.7E-10	9.5E-08	8.6E-09	5.7E-11	5.4E-09	6.4E-08	3.8E-08	2.4E-07	4.4E-07	5.7E-07	4.2E-08	1.4E-08	1.5E-07
	R435	296900	6257804	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.6E-09	1.9E-11	9.0E-10	9.8E-08	8.8E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.5E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R436	296950	6257804	2.7E-06	2.7E-06	2.4E-05	1.4E-06	2.7E-06	7.3E-05	3.3E-04	6.3E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.2E-10	1.0E-07	9.1E-09	6.0E-11	5.8E-09	6.8E-08	4.0E-08	2.5E-07	4.7E-07	6.0E-07	4.4E-08	1.5E-08	1.6E-07
	R437	297000	6257804	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.5E-05	3.4E-04	6.4E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.5E-10	1.0E-07	9.3E-09	6.1E-11	5.9E-09	7.0E-08	4.1E-08	2.6E-07	4.8E-07	6.1E-07	4.6E-08	1.6E-08	1.7E-07
	R438	297050	6257804	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.7E-05	3.4E-04	6.6E-05	5.7E-06	1.1E-08	2.6E-08	2.9E-09	2.0E-11	9.8E-10	1.1E-07	9.6E-09	6.3E-11	6.1E-09	7.2E-08	4.2E-08	2.6E-07	4.9E-07	6.3E-07	4.7E-08	1.6E-08	1.7E-07
	R439	297100	6257804	2.9E-06	2.9E-06	2.7E-05	1.5E-06	2.9E-06	8.0E-05	3.5E-04	6.8E-05	5.9E-06	1.2E-08	2.7E-08	2.9E-09	2.1E-11	1.0E-09	1.1E-07	9.8E-09	6.5E-11	6.2E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.7E-08	1.8E-07
	R440	297150	6257804	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.2E-05	3.6E-04	7.0E-05	6.1E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.4E-09	7.6E-08	4.5E-08	2.8E-07	5.2E-07	6.7E-07	5.0E-08	1.7E-08	1.8E-07
	R441	297200	6257804	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.5E-05	3.8E-04	7.2E-05	6.3E-06	1.3E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.2E-07	1.0E-08	6.9E-11	6.7E-09	7.9E-08	4.6E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.8E-08	1.9E-07
	R442	297250	6257804	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.8E-05	3.9E-04	7.5E-05	6.5E-06	1.3E-08	2.9E-08	3.2E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.9E-09	8.1E-08	4.8E-08	3.0E-07	5.6E-07	7.1E-07	5.3E-08	1.8E-08	1.9E-07
	R443	297300	6257804	3.4E-06	3.4E-06	3.0E-05	1.7E-06	3.4E-06	9.1E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.4E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.4E-11	7.1E-09	8.4E-08	5.0E-08	3.1E-07	5.8E-07	7.4E-07	5.5E-08	1.9E-08	2.0E-07
	R444	297350	6257804	3.5E-06	3.5E-06	3.1E-05	1.7E-06	3.5E-06	9.3E-05	4.2E-04	8.0E-05	6.9E-06	1.4E-08	3.1E-08	3.5E-09	2.4E-11	1.2E-09	1.3E-07	1.2E-08	7.6E-11	7.3E-09	8.7E-08	5.1E-08	3.2E-07	6.0E-07	7.6E-07	5.6E-08	1.9E-08	2.1E-07
	R445	296500	6257854	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	5.9E-05	2.6E-04	5.0E-05	4.4E-06	8.7E-09	2.0E-08	2.2E-09	1.5E-11	7.4E-10	8.1E-08	7.2E-09	4.8E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.8E-07	3.5E-08	1.2E-08	1.3E-07
	R446	296550	6257854	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.5E-06	8.9E-09	2.0E-08	2.2E-09	1.6E-11	7.6E-10	8.3E-08	7.4E-09	4.9E-11	4.7E-09	5.6E-08	3.3E-08	2.1E-07	3.8E-07	4.9E-07	3.6E-08	1.3E-08	1.3E-07
	R447	296600	6257854	2.3E-06	2.3E-06	2.1E-05	1.1E-06	2.3E-06	6.2E-05	2.7E-04	5.3E-05	4.6E-06	9.2E-09	2.1E-08	2.3E-09	1.6E-11	7.8E-10	8.5E-08	7.6E-09	5.0E-11	4.9E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R448	296650	6257854	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.4E-09	2.1E-08	2.3E-09	1.6E-11	8.0E-10	8.7E-08	7.8E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.0E-07	5.2E-07	3.8E-08	1.3E-08	1.4E-07
	R449	296700	6257854	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.5E-05	4.8E-06	9.6E-09	2.2E-08	2.4E-09	1.7E-11	8.2E-10	8.9E-08	8.0E-09	5.3E-11	5.1E-09	6.0E-08	3.6E-08	2.2E-07	4.1E-07	5.3E-07	3.9E-08	1.3E-08	1.4E-07
	R450	296750	6257854	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.7E-05	3.0E-04	5.7E-05	4.9E-06	9.9E-09	2.2E-08	2.5E-09	1.7E-11	8.4E-10	9.2E-08	8.2E-09	5.4E-11	5.2E-09	6.2E-08	3.7E-08	2.3E-07	4.3E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R451	296800	6257854	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.9E-05	3.0E-04	5.8E-05	5.1E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.6E-10	9.4E-08	8.5E-09	5.6E-11	5.4E-09	6.3E-08	3.8E-08	2.3E-07	4.4E-07	5.6E-07	4.1E-08	1.4E-08	1.5E-07
	R452	296850	6257854	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	7.0E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.9E-10	9.6E-08	8.7E-09	5.7E-11	5.5E-09	6.5E-08	3.9E-08	2.4E-07	4.5E-07	5.7E-07	4.2E-08	1.5E-08	1.6E-07
	R453	296900	6257854	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.2E-05	3.2E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.1E-10	9.9E-08	8.9E-09	5.9E-11	5.7E-09	6.7E-08	4.0E-08	2.5E-07	4.6E-07	5.9E-07	4.4E-08	1.5E-08	1.6E-07
	R454	296950	6257854	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.4E-05	3.3E-04	6.3E-05	5.5E-06	1.1E-08	2.5E-08	2.8E-09	1.9E-11	9.4E-10	1.0E-07	9.2E-09	6.1E-11	5.8E-09	6.9E-08	4.1E-08	2.5E-07	4.7E-07	6.1E-07	4.5E-08	1.5E-08	1.7E-07
	R455	297000	6257854	2.8E-06	2.8E-06	2.6E-05	1.4E-06	2.8E-06	7.7E-05	3.4E-04	6.5E-05	5.7E-06	1.1E-08	2.6E-08	2.8E-09	2.0E-11	9.7E-10	1.1E-07	9.5E-09	6.2E-11	6.0E-09	7.1E-08	4.2E-08	2.6E-07	4.9E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R456	297050	6257854	2.9E-06	2.9E-06	2.6E-05	1.5E-06	2.9E-06	7.9E-05	3.5E-04	6.7E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.9E-10	1.1E-07	9.7E-09	6.4E-11	6.2E-09	7.3E-08	4.3E-08	2.7E-07	5.0E-07	6.4E-07	4.8E-08	1.6E-08	1.8E-07
	R457	297100	6257854	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.1E-05	3.6E-04	6.9E-05	6.0E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.6E-11	6.4E-09	7.5E-08	4.4E-08	2.8E-07	5.2E-07	6.6E-07	4.9E-08	1.7E-08	1.8E-07
	R458	297150	6257854	3.1E-06	3.1E-06	2.8E-05	1.5E-06	3.1E-06	8.4E-05	3.7E-04	7.1E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.1E-07	1.0E-08	6.8E-11	6.6E-09	7.7E-08	4.6E-08	2.8E-07	5.3E-07	6.8E-07	5.0E-08	1.7E-08	1.9E-07
	R459	297200	6257854	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.6E-05	3.8E-04	7.4E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.8E-09	8.0E-08	4.7E-08	2.9E-07	5.5E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R460	297250	6257854	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	8.9E-05	4.0E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.0E-09	8.3E-08	4.9E-08	3.0E-07	5.7E-07	7.3E-07	5.4E-08	1.9E-08	2.0E-07
	R461	297300	6257854	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.2E-05	4.1E-04	7.9E-05	6.8E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.5E-11	7.3E-09	8.6E-08	5.1E-08	3.1E-07	5.9E-07	7.5E-07	5.6E-08	1.9E-08	2.1E-07
	R462	297350	6257854	3.5E-06	3.5E-06	3.2E-05	1.8E-06	3.5E-06	9.6E-05	4.3E-04	8.1E-05	7.1E-06	1.4E-08	3.2E-08	3.5E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.8E-11	7.5E-09	8.9E-08	5.2E-08	3.3E-07	6.1E-07	7.8E-07	5.8E-08	2.0E-08	2.1E-07
	R463	296500	6257904	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	5.9E-05	2.6E-04	5.1E-05	4.4E-06	8.8E-09	2.0E-08	2.2E-09	1.5E-11	7.5E-10	8.1E-08	7.3E-09	4.8E-11	4.7E-09	5.5E-08	3.2E-08	2.0E-07	3.8E-07	4.8E-07	3.6E-08	1.2E-08	1.3E-07
	R464	296550	6257904	2.3E-06	2.3E-06	2.0E-05	1.1E-06	2.3E-06	6.1E-05	2.7E-04	5.2E-05	4.5E-06	9.1E-09	2.0E-08	2.3E-09	1.6E-11	7.7E-10	8.4E-08	7.5E-09	5.0E-11	4.8E-09	5.7E-08	3.3E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R465	296600	6257904	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.3E-05	4.6E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.7E-09	5.1E-11	4.9E-09	5.8E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R466	296650	6257904	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.9E-04	5.5E-05	4.8E-06	9.5E-09	2.1E-08	2.4E-09	1.7E-11	8.1E-10	8.8E-08	7.9E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.9E-08	1.3E-08	1.4E-07
	R467	296700	6257904	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.7E-09	2.2E-08	2.4E-09	1.7E-11	8.3E-10	9.0E-08	8.1E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.2E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R468	296750	6257904	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.0E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.5E-10	9.3E-08	8.4E-09	5.5E-11	5.3E-09	6.3E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R469	296800	6257904	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	7.0E-05	3.1E-04	5.9E-05	5.2E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.8E-10	9.5E-08	8.6E-09	5.7E-11	5.5E-09	6.4E-08	3.8E-08	2.4E-07	4.4E-07	5.7E-07	4.2E-08	1.4E-08	1.5E-07
	R470	296850	6257904	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.6E-09	1.8E-11	9.0E-10	9.8E-08	8.8E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.5E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R471	296900	6257904	2.7E-06	2.7E-06	2.4E-05	1.4E-06	2.7E-06	7.3E-05	3.3E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.2E-10	1.0E-07	9.0E-09	6.0E-11	5.7E-09	6.8E-08	4.0E-08	2.5E-07	4.7E-07	6.0E-07	4.4E-08	1.5E-08	1.6E-07
	R472	296950	6257904	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.5E-05	3.3E-04	6.4E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.5E-10	1.0E-07	9.3E-09	6.1E-11	5.9E-09	7.0E-08	4.1E-08	2.6E-07	4.8E-07	6.1E-07	4.5E-08	1.6E-08	1.7E-07
	R473	297000	6257904	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.8E-05	3.5E-04	6.6E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.8E-10	1.1E-07	9.6E-09	6.3E-11	6.1E-09	7.2E-08	4.3E-08	2.6E-07	4.9E-07	6.3E-07	4.7E-08	1.6E-08	1.7E-07
	R474	297050	6257904	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.0E-05	3.6E-04	6.8E-05	5.9E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	9.9E-09	6.5E-11	6.3E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.7E-08	1.8E-07
	R475	297100	6257904	3.1E-06	3.1E-06	2.8E-05	1.5E-06	3.1E-06	8.3E-05	3.7E-04	7.0E-05	6.1E-06	1.2E-08	2.8E-08	3.1E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.5E-09	7.7E-08	4.5E-08	2.8E-07	5.3E-07	6.7E-07	5.0E-08	1.7E-08	1.8E-07
	R476	297150	6257904	3.2E-06	3.2E-06	2.8E-05	1.6E-06	3.2E-06	8.5E-05	3.8E-04	7.3E-05	6.3E-06	1.3E-08	2.8E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	6.9E-11	6.7E-09	7.9E-08	4.7E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.8E-08	1.9E-07
	R477	297200	6257904	3.3E-06	3.3E-06	2.9E-05	1.6E-06	3.3E-06	8.8E-05	3.9E-04	7.5E-05	6.5E-06	1.3E-08	2.9E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.2E-11	6.9E-09	8.1E-08	4.8E-08	3.0E-07	5.6E-07	7.2E-07	5.3E-08	1.8E-08	2.0E-07
	R478	297250	6257904	3.4E-06	3.4E-06	3.0E-05	1.7E-06	3.4E-06	9.1E-05	4.0E-04	7.8E-05	6.7E-06	1.3E-08	3.0E-08	3.4E-09	2.4E-11	1.1E-09	1.2E-07	1.1E-08	7.4E-11	7.1E-09	8.4E-08	5.0E-08	3.1E-07	5.8E-07	7.4E-07	5.5E-08	1.9E-08	2.0E-07
	R479	297300	6257904	3.5E-06	3.5E-06	3.1E-05	1.7E-06	3.5E-06	9.4E-05	4.2E-04	8.0E-05	7.0E-06	1.4E-08	3.1E-08	3.5E-09	2.4E-11	1.2E-09	1.3E-07	1.2E-08	7.7E-11	7.4E-09	8.7E-08	5.2E-08	3.2E-07	6.0E-07	7.7E-07	5.7E-08	2.0E-08	2.1E-07
	R480	296500	6257954	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.4E-06	8.9E-09	2.0E-08	2.2E-09	1.6E-11	7.6E-10	8.2E-08	7.4E-09	4.9E-11	4.7E-09	5.6E-08	3.3E-08	2.0E-07	3.8E-07	4.9E-07	3.6E-08	1.2E-08	1.3E-07
	R481	296550	6257954	2.3E-06	2.3E-06	2.1E-05	1.1E-06	2.3E-06	6.2E-05	2.7E-04	5.3E-05	4.6E-06	9.1E-09	2.1E-08	2.3E-09	1.6E-11	7.8E-10	8.5E-08	7.6E-09	5.0E-11	4.8E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R482	296600	6257954	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.4E-09	2.1E-08	2.3E-09	1.6E-11	8.0E-10	8.7E-08	7.8E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.0E-07	5.2E-07	3.8E-08	1.3E-08	1.4E-07
	R483	296650	6257954	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.5E-05	4.8E-06	9.6E-09	2.2E-08	2.4E-09	1.7E-11	8.2E-10	8.9E-08	8.0E-09	5.3E-11	5.1E-09	6.0E-08	3.6E-08	2.2E-07	4.1E-07	5.3E-07	3.9E-08	1.3E-08	1.4E-07
	R484	296700	6257954	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.7E-05	3.0E-04	5.7E-05	4.9E-06	9.9E-09	2.2E-08	2.5E-09	1.7E-11	8.4E-10	9.1E-08	8.2E-09	5.4E-11	5.2E-09	6.2E-08	3.7E-08	2.3E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R485	296750	6257954	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.1E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.6E-10	9.4E-08	8.4E-09	5.6E-11	5.4E-09	6.3E-08	3.7E-08	2.3E-07	4.4E-07	5.6E-07	4.1E-08	1.4E-08	1.5E-07
	R486	296800	6257954	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	7.0E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.9E-10	9.6E-08	8.7E-09	5.7E-11	5.5E-09	6.5E-08	3.9E-08	2.4E-07	4.5E-07	5.7E-07	4.2E-08	1.5E-08	1.6E-07
	R487	296850	6257954	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.2E-05	3.2E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.1E-10	9.9E-08	8.9E-09	5.9E-11	5.7E-09	6.7E-08	4.0E-08	2.5E-07	4.6E-07	5.9E-07	4.4E-08	1.5E-08	1.6E-07
	R488	296900	6257954	2.7E-06	2.7E-06	2.5E-05	1.4E-06	2.7E-06	7.4E-05	3.3E-04	6.3E-05	5.5E-06	1.1E-08	2.5E-08	2.7E-09	1.9E-11	9.3E-10	1.0E-07	9.2E-09	6.0E-11	5.8E-09	6.9E-08	4.1E-08	2.5E-07	4.7E-07	6.0E-07	4.5E-08	1.5E-08	1.6E-07

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																								
													Metal									Heavy Metal						
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R489	296950	6257954	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.6E-05	3.4E-04	6.5E-05	5.7E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.6E-10	1.0E-07	9.4E-09	6.2E-11	6.0E-09	7.1E-08	4.2E-08	2.6E-07	4.9E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R490	297000	6257954	2.9E-06	2.9E-06	2.6E-05	1.5E-06	2.9E-06	7.9E-05	3.5E-04	6.7E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.9E-10	1.1E-07	9.7E-09	6.4E-11	6.2E-09	7.3E-08	4.3E-08	2.7E-07	5.0E-07	6.4E-07	4.8E-08	1.6E-08	1.7E-07
	R491	297050	6257954	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.1E-05	3.6E-04	6.9E-05	6.0E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.6E-11	6.4E-09	7.5E-08	4.4E-08	2.8E-07	5.2E-07	6.6E-07	4.9E-08	1.7E-08	1.8E-07
	R492	297100	6257954	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.4E-05	3.7E-04	7.1E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.1E-07	1.0E-08	6.8E-11	6.6E-09	7.8E-08	4.6E-08	2.9E-07	5.3E-07	6.8E-07	5.1E-08	1.7E-08	1.9E-07
	R493	297150	6257954	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.7E-05	3.8E-04	7.4E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.8E-09	8.0E-08	4.7E-08	2.9E-07	5.5E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R494	297200	6257954	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	8.9E-05	4.0E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.0E-09	8.3E-08	4.9E-08	3.0E-07	5.7E-07	7.3E-07	5.4E-08	1.9E-08	2.0E-07
	R495	297250	6257954	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.2E-05	4.1E-04	7.9E-05	6.8E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.5E-11	7.3E-09	8.6E-08	5.1E-08	3.1E-07	5.9E-07	7.5E-07	5.6E-08	1.9E-08	2.1E-07
	R496	297300	6257954	3.5E-06	3.5E-06	3.2E-05	1.8E-06	3.5E-06	9.6E-05	4.3E-04	8.2E-05	7.1E-06	1.4E-08	3.2E-08	3.5E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.8E-11	7.5E-09	8.9E-08	5.2E-08	3.3E-07	6.1E-07	7.8E-07	5.8E-08	2.0E-08	2.1E-07
	R497	296500	6258004	2.3E-06	2.3E-06	2.0E-05	1.1E-06	2.3E-06	6.1E-05	2.7E-04	5.2E-05	4.5E-06	9.0E-09	2.0E-08	2.3E-09	1.6E-11	7.7E-10	8.3E-08	7.5E-09	5.0E-11	4.8E-09	5.6E-08	3.3E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R498	296550	6258004	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.2E-05	2.8E-04	5.3E-05	4.6E-06	9.2E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.5E-08	7.7E-09	5.1E-11	4.9E-09	5.8E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R499	296600	6258004	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.8E-04	5.4E-05	4.7E-06	9.5E-09	2.1E-08	2.4E-09	1.7E-11	8.0E-10	8.8E-08	7.9E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.9E-08	1.3E-08	1.4E-07
	R500	296650	6258004	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.7E-09	2.2E-08	2.4E-09	1.7E-11	8.3E-10	9.0E-08	8.1E-09	5.3E-11	5.1E-09	6.1E-08	3.6E-08	2.2E-07	4.2E-07	5.3E-07	4.0E-08	1.4E-08	1.5E-07
	R501	296700	6258004	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.7E-05	3.0E-04	5.7E-05	5.0E-06	1.0E-08	2.2E-08	2.5E-09	1.7E-11	8.5E-10	9.2E-08	8.3E-09	5.5E-11	5.3E-09	6.2E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R502	296750	6258004	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.7E-10	9.4E-08	8.5E-09	5.6E-11	5.4E-09	6.4E-08	3.8E-08	2.3E-07	4.4E-07	5.6E-07	4.2E-08	1.4E-08	1.5E-07
	R503	296800	6258004	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.2E-04	6.0E-05	5.3E-06	1.1E-08	2.4E-08	2.6E-09	1.8E-11	8.9E-10	9.7E-08	8.8E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.5E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R504	296850	6258004	2.7E-06	2.7E-06	2.4E-05	1.4E-06	2.7E-06	7.3E-05	3.2E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.2E-10	1.0E-07	9.0E-09	6.0E-11	5.7E-09	6.8E-08	4.0E-08	2.5E-07	4.7E-07	6.0E-07	4.4E-08	1.5E-08	1.6E-07
	R505	296900	6258004	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.5E-05	3.3E-04	6.4E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	1.9E-11	9.5E-10	1.0E-07	9.3E-09	6.1E-11	5.9E-09	7.0E-08	4.1E-08	2.6E-07	4.8E-07	6.1E-07	4.5E-08	1.6E-08	1.7E-07
	R506	296950	6258004	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.7E-05	3.4E-04	6.6E-05	5.7E-06	1.1E-08	2.6E-08	2.9E-09	2.0E-11	9.8E-10	1.1E-07	9.6E-09	6.3E-11	6.1E-09	7.2E-08	4.2E-08	2.6E-07	4.9E-07	6.3E-07	4.7E-08	1.6E-08	1.7E-07
	R507	297000	6258004	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.0E-05	3.5E-04	6.8E-05	5.9E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	9.8E-09	6.5E-11	6.3E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.7E-08	1.8E-07
	R508	297050	6258004	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.2E-05	3.6E-04	7.0E-05	6.1E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.4E-09	7.6E-08	4.5E-08	2.8E-07	5.2E-07	6.7E-07	5.0E-08	1.7E-08	1.8E-07
	R509	297100	6258004	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.5E-05	3.8E-04	7.2E-05	6.3E-06	1.3E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.2E-07	1.0E-08	6.9E-11	6.6E-09	7.8E-08	4.6E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.8E-08	1.9E-07
	R510	297150	6258004	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.8E-05	3.9E-04	7.5E-05	6.5E-06	1.3E-08	2.9E-08	3.2E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.9E-09	8.1E-08	4.8E-08	3.0E-07	5.6E-07	7.1E-07	5.3E-08	1.8E-08	1.9E-07
	R511	297200	6258004	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	9.0E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.4E-11	7.1E-09	8.4E-08	4.9E-08	3.1E-07	5.7E-07	7.4E-07	5.4E-08	1.9E-08	2.0E-07
	R512	297250	6258004	3.5E-06	3.5E-06	3.1E-05	1.7E-06	3.5E-06	9.4E-05	4.2E-04	8.0E-05	6.9E-06	1.4E-08	3.1E-08	3.5E-09	2.4E-11	1.2E-09	1.3E-07	1.2E-08	7.6E-11	7.4E-09	8.7E-08	5.1E-08	3.2E-07	6.0E-07	7.6E-07	5.7E-08	1.9E-08	2.1E-07
	R513	297300	6258004	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.7E-05	4.3E-04	8.3E-05	7.2E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.9E-11	7.7E-09	9.0E-08	5.3E-08	3.3E-07	6.2E-07	7.9E-07	5.9E-08	2.0E-08	2.2E-07
	R514	296500	6258054	2.3E-06	2.3E-06	2.0E-05	1.1E-06	2.3E-06	6.1E-05	2.7E-04	5.2E-05	4.5E-06	9.1E-09	2.0E-08	2.3E-09	1.6E-11	7.7E-10	8.4E-08	7.5E-09	5.0E-11	4.8E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R515	296550	6258054	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.3E-05	4.6E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.7E-09	5.1E-11	4.9E-09	5.8E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R516	296600	6258054	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.9E-04	5.5E-05	4.8E-06	9.6E-09	2.1E-08	2.4E-09	1.7E-11	8.1E-10	8.8E-08	8.0E-09	5.3E-11	5.1E-09	6.0E-08	3.5E-08	2.2E-07	4.1E-07	5.3E-07	3.9E-08	1.3E-08	1.4E-07
	R517	296650	6258054	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.8E-09	2.2E-08	2.4E-09	1.7E-11	8.3E-10	9.1E-08	8.1E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.3E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R518	296700	6258054	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.0E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.6E-10	9.3E-08	8.4E-09	5.5E-11	5.3E-09	6.3E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R519	296750	6258054	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	7.0E-05	3.1E-04	5.9E-05	5.2E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.8E-10	9.6E-08	8.6E-09	5.7E-11	5.5E-09	6.5E-08	3.8E-08	2.4E-07	4.4E-07	5.7E-07	4.2E-08	1.4E-08	1.6E-07
	R520	296800	6258054	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.2E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.0E-10	9.8E-08	8.9E-09	5.9E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.6E-07	5.9E-07	4.3E-08	1.5E-08	1.6E-07
	R521	296850	6258054	2.7E-06	2.7E-06	2.5E-05	1.4E-06	2.7E-06	7.4E-05	3.3E-04	6.3E-05	5.5E-06	1.1E-08	2.5E-08	2.7E-09	1.9E-11	9.3E-10	1.0E-07	9.1E-09	6.0E-11	5.8E-09	6.8E-08	4.0E-08	2.5E-07	4.7E-07	6.0E-07	4.5E-08	1.5E-08	1.6E-07
	R522	296900	6258054	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.6E-05	3.4E-04	6.5E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.6E-10	1.0E-07	9.4E-09	6.2E-11	6.0E-09	7.0E-08	4.2E-08	2.6E-07	4.8E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R523	296950	6258054	2.9E-06	2.9E-06	2.6E-05	1.5E-06	2.9E-06	7.8E-05	3.5E-04	6.7E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.9E-10	1.1E-07	9.7E-09	6.4E-11	6.1E-09	7.3E-08	4.3E-08	2.7E-07	5.0E-07	6.4E-07	4.7E-08	1.6E-08	1.7E-07
	R524	297000	6258054	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.1E-05	3.6E-04	6.9E-05	6.0E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.6E-11	6.3E-09	7.5E-08	4.4E-08	2.8E-07	5.1E-07	6.6E-07	4.9E-08	1.7E-08	1.8E-07
	R525	297050	6258054	3.1E-06	3.1E-06	2.8E-05	1.5E-06	3.1E-06	8.3E-05	3.7E-04	7.1E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.0E-09	1.1E-07	1.0E-08	6.8E-11	6.5E-09	7.7E-08	4.6E-08	2.8E-07	5.3E-07	6.8E-07	5.0E-08	1.7E-08	1.8E-07
	R526	297100	6258054	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.6E-05	3.8E-04	7.3E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.7E-09	7.9E-08	4.7E-08	2.9E-07	5.5E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R527	297150	6258054	3.3E-06	3.3E-06	3.0E-05	1.6E-06	3.3E-06	8.9E-05	3.9E-04	7.5E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.2E-11	6.9E-09	8.2E-08	4.9E-08	3.0E-07	5.6E-07	7.2E-07	5.3E-08	1.8E-08	2.0E-07
	R528	297200	6258054	3.4E-06	3.4E-06	3.0E-05	1.7E-06	3.4E-06	9.1E-05	4.1E-04	7.8E-05	6.8E-06	1.4E-08	3.0E-08	3.4E-09	2.4E-11	1.1E-09	1.3E-07	1.1E-08	7.4E-11	7.2E-09	8.5E-08	5.0E-08	3.1E-07	5.8E-07	7.4E-07	5.5E-08	1.9E-08	2.0E-07
	R529	297250	6258054	3.5E-06	3.5E-06	3.2E-05	1.8E-06	3.5E-06	9.5E-05	4.2E-04	8.1E-05	7.0E-06	1.4E-08	3.2E-08	3.5E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.7E-11	7.4E-09	8.8E-08	5.2E-08	3.2E-07	6.0E-07	7.7E-07	5.7E-08	2.0E-08	2.1E-07
	R530	297300	6258054	3.6E-06	3.6E-06	3.3E-05	1.8E-06	3.6E-06	9.8E-05	4.4E-04	8.4E-05	7.3E-06	1.5E-08	3.3E-08	3.6E-09	2.6E-11	1.2E-09	1.3E-07	1.2E-08	8.0E-11	7.7E-09	9.1E-08	5.4E-08	3.4E-07	6.3E-07	8.0E-07	5.9E-08	2.0E-08	2.2E-07
	R531	296500	6258104	2.3E-06	2.3E-06	2.1E-05	1.1E-06	2.3E-06	6.2E-05	2.7E-04	5.2E-05	4.6E-06	9.1E-09	2.1E-08	2.3E-09	1.6E-11	7.8E-10	8.4E-08	7.6E-09	5.0E-11	4.8E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R532	296550	6258104	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.4E-09	2.1E-08	2.3E-09	1.6E-11	8.0E-10	8.7E-08	7.8E-09	5.1E-11	5.0E-09	5.8E-08	3.5E-08	2.2E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R533	296600	6258104	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.5E-05	4.8E-06	9.6E-09	2.2E-08	2.4E-09	1.7E-11	8.2E-10	8.9E-08	8.0E-09	5.3E-11	5.1E-09	6.0E-08	3.6E-08	2.2E-07	4.1E-07	5.3E-07	3.9E-08	1.3E-08	1.4E-07
	R534	296650	6258104	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.6E-05	3.0E-04	5.7E-05	4.9E-06	9.9E-09	2.2E-08	2.5E-09	1.7E-11	8.4E-10	9.1E-08	8.2E-09	5.4E-11	5.2E-09	6.2E-08	3.6E-08	2.3E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R535	296700	6258104	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.1E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.6E-10	9.4E-08	8.4E-09	5.6E-11	5.4E-09	6.3E-08	3.8E-08	2.3E-07	4.4E-07	5.6E-07	4.1E-08	1.4E-08	1.5E-07
	R536	296750	6258104	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	7.0E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.9E-10	9.6E-08	8.7E-09	5.7E-11	5.5E-09	6.5E-08	3.9E-08	2.4E-07	4.5E-07	5.7E-07	4.2E-08	1.5E-08	1.6E-07
	R537	296800	6258104	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.2E-05	3.2E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.1E-10	9.9E-08	8.9E-09	5.9E-11	5.7E-09	6.7E-08	4.0E-08	2.5E-07	4.6E-07	5.9E-07	4.4E-08	1.5E-08	1.6E-07
	R538	296850	6258104	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.4E-05	3.3E-04	6.3E-05	5.5E-06	1.1E-08	2.5E-08	2.8E-09	1.9E-11	9.4E-10	1.0E-07	9.2E-09	6.1E-11	5.8E-09	6.9E-08	4.1E-08	2.5E-07	4.7E-07	6.1E-07	4.5E-08	1.5E-08	1.7E-07
	R539	296900	6258104	2.8E-06	2.8E-06	2.6E-05	1.4E-06	2.8E-06	7.7E-05	3.4E-04	6.5E-05	5.7E-06	1.1E-08	2.6E-08	2.8E-09	2.0E-11	9.7E-10	1.1E-07	9.5E-09	6.2E-11	6.0E-09	7.1E-08	4.2E-08	2.6E-07	4.9E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R540	296950	6258104	2.9E-06	2.9E-06	2.6E-05	1.5E-06	2.9E-06	7.9E-05	3.5E-04	6.7E-05	5.9E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.9E-10	1.1E-07	9.7E-09	6.4E-11	6.2E-09	7.3E-08	4.3E-08	2.7E-07	5.0E-07	6.4E-07	4.8E-08	1.6E-08	1.8E-07
	R541	297000	6258104	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.1E-05	3.6E-04	6.9E-05	6.0E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.6E-11	6.4E-09	7.5E-08	4.5E-08	2.8E-07	5.2E-07	6.6E-07	4.9E-08	1.7E-08	1.8E-07
	R542	297050	6258104	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.4E-05	3.7E-04	7.2E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.2E-07	1.0E-08	6.8E-11	6.6E-09	7.8E-08	4.6E-08	2.9E-07	5.4E-07	6.8E-07	5.1E-08	1.7E-08	1.9E-07
	R543	297100	6258104	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.7E-05	3.9E-04	7.4E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.8E-09	8.0E-08	4.8E-08	3.0E-07	5.5E-07	7.1E-07	5.2E-08	1.8E-08	1.9E-07
	R544	297150	6258104	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	9.0E-05	4.0E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.0E-09	8.3E-08	4.9E-08	3.1E-07	5.7E-07	7.3E-07	5.4E-08	1.9E-08	2.0E-07
	R545	297200	6258104	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.3E-05	4.1E-04	7.9E-05	6.9E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.5E-11	7.3E-09	8.6E-08	5.1E-08	3.2E-07	5.9E-07	7.5E-07	5.6E-08	1.9E-08	2.1E-07
	R546	297250	6258104	3.5E-06	3.5E-06	3.2E-05	1.8E-06	3.5E-06	9.5E-05	4.2E-04	8.1E-05	7.1E-06	1.4E-08	3.2E-08	3.5E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.8E-11	7.5E-09	8.8E-08	5.2E-08	3.3E-07	6.1E-07	7.8E-07	5.8E-08	2.0E-08	2.1E-07
	R547	297300	6258104	3.7E-06	3.7E-06	3.3E-05	1.8E-06	3.7E-06	9.9E-05	4.4E-04	8.4E-05	7.3E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.2E-09	1.4E-07	1.2E-08	8.1E-11	7.8E-09	9.2E-08	5.4E-08	3.4E-07	6.3E-07	8.1E-07	6.0E-08	2.1E-08	2.2E-07
	R548	296500	6258154	2.3E-06	2.3E-06	2.1E-05	1.1E-06	2.3E-06	6.2E-05	2.8E-04	5.3E-05	4.6E-06	9.2E-09	2.1E-08	2.3E-09	1.6E-11	7.8E-10	8.5E-08	7.7E-09	5.1E-11	4.9E-09	5.7E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.7E-08	1.3E-08	1.4E-07
	R549	296550	6258154	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.8E-04	5.4E-05	4.7E-06	9.4E-09	2.1E-08	2.4E-09	1.6E-11	8.0E-10	8.7E-08	7.8E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.8E-08	1.3E-08	1.4E-07

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																										
													Metal										Heavy Metal							
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm ³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R550	296600	6258154	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.5E-05	4.8E-06	9.6E-09	2.2E-08	2.4E-09	1.7E-11	8.2E-10	8.9E-08	8.0E-09	5.3E-11	5.1E-09	6.0E-08	3.6E-08	2.2E-07	4.1E-07	5.3E-07	3.9E-08	1.4E-08	1.4E-07
	R551	296650	6258154	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.7E-05	3.0E-04	5.7E-05	5.0E-06	9.9E-09	2.2E-08	2.5E-09	1.7E-11	8.4E-10	9.2E-08	8.2E-09	5.4E-11	5.2E-09	6.2E-08	3.7E-08	2.3E-07	4.3E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R552	296700	6258154	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.6E-10	9.4E-08	8.5E-09	5.6E-11	5.4E-09	6.4E-08	3.8E-08	2.3E-07	4.4E-07	5.6E-07	4.1E-08	1.4E-08	1.5E-07
	R553	296750	6258154	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.4E-08	2.6E-09	1.8E-11	8.9E-10	9.7E-08	8.7E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.5E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R554	296800	6258154	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.3E-05	3.2E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.2E-10	1.0E-07	9.0E-09	5.9E-11	5.7E-09	6.7E-08	4.0E-08	2.5E-07	4.6E-07	5.9E-07	4.4E-08	1.5E-08	1.6E-07
	R555	296850	6258154	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.5E-05	3.3E-04	6.4E-05	5.5E-06	1.1E-08	2.5E-08	2.8E-09	1.9E-11	9.4E-10	1.0E-07	9.2E-09	6.1E-11	5.9E-09	6.9E-08	4.1E-08	2.6E-07	4.8E-07	6.1E-07	4.5E-08	1.6E-08	1.7E-07
	R556	296900	6258154	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.7E-05	3.4E-04	6.6E-05	5.7E-06	1.1E-08	2.6E-08	2.9E-09	2.0E-11	9.7E-10	1.1E-07	9.5E-09	6.3E-11	6.1E-09	7.1E-08	4.2E-08	2.6E-07	4.9E-07	6.3E-07	4.7E-08	1.6E-08	1.7E-07
	R557	296950	6258154	2.9E-06	2.9E-06	2.6E-05	1.5E-06	2.9E-06	7.9E-05	3.5E-04	6.8E-05	5.9E-06	1.2E-08	2.6E-08	2.9E-09	2.1E-11	1.0E-09	1.1E-07	9.8E-09	6.5E-11	6.2E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.6E-08	1.8E-07
	R558	297000	6258154	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.2E-05	3.6E-04	7.0E-05	6.1E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.4E-09	7.6E-08	4.5E-08	2.8E-07	5.2E-07	6.7E-07	4.9E-08	1.7E-08	1.8E-07
	R559	297050	6258154	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.5E-05	3.8E-04	7.2E-05	6.3E-06	1.3E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.2E-07	1.0E-08	6.9E-11	6.7E-09	7.9E-08	4.7E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.8E-08	1.9E-07
	R560	297100	6258154	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.8E-05	3.9E-04	7.5E-05	6.5E-06	1.3E-08	2.9E-08	3.2E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.9E-09	8.1E-08	4.8E-08	3.0E-07	5.6E-07	7.1E-07	5.3E-08	1.8E-08	1.9E-07
	R561	297150	6258154	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	9.0E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.4E-11	7.1E-09	8.4E-08	5.0E-08	3.1E-07	5.8E-07	7.4E-07	5.5E-08	1.9E-08	2.0E-07
	R562	297200	6258154	3.5E-06	3.5E-06	3.1E-05	1.7E-06	3.5E-06	9.3E-05	4.1E-04	7.9E-05	6.9E-06	1.4E-08	3.1E-08	3.5E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.6E-11	7.3E-09	8.6E-08	5.1E-08	3.2E-07	5.9E-07	7.6E-07	5.6E-08	1.9E-08	2.1E-07
	R563	297250	6258154	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.6E-05	4.3E-04	8.2E-05	7.1E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.8E-11	7.6E-09	8.9E-08	5.3E-08	3.3E-07	6.1E-07	7.8E-07	5.8E-08	2.0E-08	2.1E-07
	R564	297300	6258154	3.7E-06	3.7E-06	3.3E-05	1.9E-06	3.7E-06	1.0E-04	4.4E-04	8.5E-05	7.4E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.1E-11	7.8E-09	9.3E-08	5.5E-08	3.4E-07	6.4E-07	8.1E-07	6.0E-08	2.1E-08	2.2E-07
	R565	296500	6258204	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.2E-05	2.8E-04	5.3E-05	4.6E-06	9.2E-09	2.1E-08	2.3E-09	1.6E-11	7.8E-10	8.5E-08	7.7E-09	5.1E-11	4.9E-09	5.8E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R566	296550	6258204	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.8E-04	5.4E-05	4.7E-06	9.5E-09	2.1E-08	2.4E-09	1.7E-11	8.0E-10	8.8E-08	7.9E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.9E-08	1.3E-08	1.4E-07
	R567	296600	6258204	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.7E-09	2.2E-08	2.4E-09	1.7E-11	8.3E-10	9.0E-08	8.1E-09	5.3E-11	5.1E-09	6.1E-08	3.6E-08	2.2E-07	4.2E-07	5.3E-07	4.0E-08	1.4E-08	1.5E-07
	R568	296650	6258204	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.7E-05	3.0E-04	5.7E-05	5.0E-06	1.0E-08	2.2E-08	2.5E-09	1.7E-11	8.5E-10	9.2E-08	8.3E-09	5.5E-11	5.3E-09	6.2E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R569	296700	6258204	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.7E-10	9.5E-08	8.5E-09	5.6E-11	5.4E-09	6.4E-08	3.8E-08	2.4E-07	4.4E-07	5.6E-07	4.2E-08	1.4E-08	1.5E-07
	R570	296750	6258204	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.2E-04	6.0E-05	5.3E-06	1.1E-08	2.4E-08	2.6E-09	1.8E-11	8.9E-10	9.7E-08	8.8E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.5E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R571	296800	6258204	2.7E-06	2.7E-06	2.4E-05	1.4E-06	2.7E-06	7.3E-05	3.3E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.2E-10	1.0E-07	9.0E-09	6.0E-11	5.7E-09	6.8E-08	4.0E-08	2.5E-07	4.7E-07	6.0E-07	4.4E-08	1.5E-08	1.6E-07
	R572	296850	6258204	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.5E-05	3.3E-04	6.4E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.5E-10	1.0E-07	9.3E-09	6.1E-11	5.9E-09	7.0E-08	4.1E-08	2.6E-07	4.8E-07	6.1E-07	4.6E-08	1.6E-08	1.7E-07
	R573	296900	6258204	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.8E-05	3.4E-04	6.6E-05	5.7E-06	1.1E-08	2.6E-08	2.9E-09	2.0E-11	9.8E-10	1.1E-07	9.6E-09	6.3E-11	6.1E-09	7.2E-08	4.3E-08	2.6E-07	4.9E-07	6.3E-07	4.7E-08	1.6E-08	1.7E-07
	R574	296950	6258204	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.0E-05	3.5E-04	6.8E-05	5.9E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	9.8E-09	6.5E-11	6.3E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.7E-08	1.8E-07
	R575	297000	6258204	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.2E-05	3.7E-04	7.0E-05	6.1E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.5E-09	7.6E-08	4.5E-08	2.8E-07	5.2E-07	6.7E-07	5.0E-08	1.7E-08	1.8E-07
	R576	297050	6258204	3.2E-06	3.2E-06	2.8E-05	1.6E-06	3.2E-06	8.5E-05	3.8E-04	7.3E-05	6.3E-06	1.3E-08	2.8E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.7E-09	7.9E-08	4.7E-08	2.9E-07	5.4E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R577	297100	6258204	3.3E-06	3.3E-06	2.9E-05	1.6E-06	3.3E-06	8.8E-05	3.9E-04	7.5E-05	6.5E-06	1.3E-08	2.9E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.2E-11	6.9E-09	8.2E-08	4.8E-08	3.0E-07	5.6E-07	7.2E-07	5.3E-08	1.8E-08	2.0E-07
	R578	297150	6258204	3.4E-06	3.4E-06	3.0E-05	1.7E-06	3.4E-06	9.1E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.4E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.4E-11	7.1E-09	8.4E-08	5.0E-08	3.1E-07	5.8E-07	7.4E-07	5.5E-08	1.9E-08	2.0E-07
	R579	297200	6258204	3.5E-06	3.5E-06	3.1E-05	1.7E-06	3.5E-06	9.4E-05	4.2E-04	8.0E-05	6.9E-06	1.4E-08	3.1E-08	3.5E-09	2.4E-11	1.2E-09	1.3E-07	1.2E-08	7.6E-11	7.3E-09	8.7E-08	5.1E-08	3.2E-07	6.0E-07	7.6E-07	5.6E-08	1.9E-08	2.1E-07
	R580	297250	6258204	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.7E-05	4.3E-04	8.2E-05	7.2E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.9E-11	7.6E-09	9.0E-08	5.3E-08	3.3E-07	6.2E-07	7.9E-07	5.8E-08	2.0E-08	2.2E-07
	R581	296500	6258254	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.3E-05	4.6E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.7E-09	5.1E-11	4.9E-09	5.8E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R582	296550	6258254	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.8E-04	5.5E-05	4.7E-06	9.5E-09	2.1E-08	2.4E-09	1.7E-11	8.1E-10	8.8E-08	7.9E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.9E-08	1.3E-08	1.4E-07
	R583	296600	6258254	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.8E-09	2.2E-08	2.4E-09	1.7E-11	8.3E-10	9.0E-08	8.1E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.2E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R584	296650	6258254	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.0E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.5E-10	9.3E-08	8.3E-09	5.5E-11	5.3E-09	6.3E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R585	296700	6258254	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.7E-10	9.5E-08	8.5E-09	5.6E-11	5.4E-09	6.4E-08	3.8E-08	2.4E-07	4.4E-07	5.6E-07	4.2E-08	1.4E-08	1.5E-07
	R586	296750	6258254	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.6E-09	1.8E-11	9.0E-10	9.8E-08	8.8E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.5E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R587	296800	6258254	2.7E-06	2.7E-06	2.4E-05	1.4E-06	2.7E-06	7.3E-05	3.3E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.2E-10	1.0E-07	9.0E-09	6.0E-11	5.8E-09	6.8E-08	4.0E-08	2.5E-07	4.7E-07	6.0E-07	4.4E-08	1.5E-08	1.6E-07
	R588	296850	6258254	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.6E-05	3.4E-04	6.4E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.5E-10	1.0E-07	9.3E-09	6.2E-11	5.9E-09	7.0E-08	4.1E-08	2.6E-07	4.8E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R589	296900	6258254	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.8E-05	3.5E-04	6.6E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.8E-10	1.1E-07	9.6E-09	6.3E-11	6.1E-09	7.2E-08	4.3E-08	2.6E-07	4.9E-07	6.3E-07	4.7E-08	1.6E-08	1.7E-07
	R590	296950	6258254	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.0E-05	3.6E-04	6.8E-05	5.9E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	9.9E-09	6.5E-11	6.3E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.7E-08	1.8E-07
	R591	297000	6258254	3.1E-06	3.1E-06	2.8E-05	1.5E-06	3.1E-06	8.3E-05	3.7E-04	7.0E-05	6.1E-06	1.2E-08	2.8E-08	3.1E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.5E-09	7.7E-08	4.5E-08	2.8E-07	5.3E-07	6.7E-07	5.0E-08	1.7E-08	1.8E-07
	R592	297050	6258254	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.6E-05	3.8E-04	7.3E-05	6.3E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.7E-09	7.9E-08	4.7E-08	2.9E-07	5.5E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R593	297100	6258254	3.3E-06	3.3E-06	2.9E-05	1.6E-06	3.3E-06	8.8E-05	3.9E-04	7.5E-05	6.5E-06	1.3E-08	2.9E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.2E-11	6.9E-09	8.2E-08	4.8E-08	3.0E-07	5.6E-07	7.2E-07	5.3E-08	1.8E-08	2.0E-07
	R594	297150	6258254	3.4E-06	3.4E-06	3.0E-05	1.7E-06	3.4E-06	9.1E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.4E-09	2.4E-11	1.1E-09	1.2E-07	1.1E-08	7.4E-11	7.1E-09	8.4E-08	5.0E-08	3.1E-07	5.8E-07	7.4E-07	5.5E-08	1.9E-08	2.0E-07
	R595	297200	6258254	3.5E-06	3.5E-06	3.1E-05	1.7E-06	3.5E-06	9.4E-05	4.2E-04	8.0E-05	6.9E-06	1.4E-08	3.1E-08	3.5E-09	2.4E-11	1.2E-09	1.3E-07	1.2E-08	7.6E-11	7.4E-09	8.7E-08	5.1E-08	3.2E-07	6.0E-07	7.6E-07	5.7E-08	1.9E-08	2.1E-07
	R596	297250	6258254	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.7E-05	4.3E-04	8.3E-05	7.2E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.9E-11	7.6E-09	9.0E-08	5.3E-08	3.3E-07	6.2E-07	7.9E-07	5.9E-08	2.0E-08	2.2E-07
	R597	296500	6258304	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.8E-09	5.1E-11	4.9E-09	5.8E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R598	296550	6258304	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.9E-04	5.5E-05	4.8E-06	9.5E-09	2.1E-08	2.4E-09	1.7E-11	8.1E-10	8.8E-08	7.9E-09	5.2E-11	5.1E-09	6.0E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.9E-08	1.3E-08	1.4E-07
	R599	296600	6258304	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.8E-09	2.2E-08	2.4E-09	1.7E-11	8.3E-10	9.0E-08	8.1E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.2E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R600	296650	6258304	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.0E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.5E-10	9.3E-08	8.3E-09	5.5E-11	5.3E-09	6.3E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R601	296700	6258304	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.7E-10	9.5E-08	8.6E-09	5.6E-11	5.4E-09	6.4E-08	3.8E-08	2.4E-07	4.4E-07	5.6E-07	4.2E-08	1.4E-08	1.5E-07
	R602	296750	6258304	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.6E-09	1.9E-11	9.0E-10	9.8E-08	8.8E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.6E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R603	296800	6258304	2.7E-06	2.7E-06	2.4E-05	1.4E-06	2.7E-06	7.3E-05	3.3E-04	6.3E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.3E-10	1.0E-07	9.1E-09	6.0E-11	5.8E-09	6.8E-08	4.0E-08	2.5E-07	4.7E-07	6.0E-07	4.4E-08	1.5E-08	1.6E-07
	R604	296850	6258304	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.6E-05	3.4E-04	6.4E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.5E-10	1.0E-07	9.3E-09	6.2E-11	5.9E-09	7.0E-08	4.1E-08	2.6E-07	4.8E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R605	296900	6258304	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.8E-05	3.5E-04	6.6E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.8E-10	1.1E-07	9.6E-09	6.4E-11	6.1E-09	7.2E-08	4.3E-08	2.7E-07	5.0E-07	6.4E-07	4.7E-08	1.6E-08	1.7E-07
	R606	296950	6258304	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.0E-05	3.6E-04	6.8E-05	5.9E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	9.9E-09	6.5E-11	6.3E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.7E-08	1.8E-07
	R607	297000	6258304	3.1E-06	3.1E-06	2.8E-05	1.5E-06	3.1E-06	8.3E-05	3.7E-04	7.0E-05	6.1E-06	1.2E-08	2.8E-08	3.1E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.5E-09	7.6E-08	4.5E-08	2.8E-07	5.3E-07	6.7E-07	5.0E-08	1.7E-08	1.8E-07
	R608	297050	6258304	3.2E-06	3.2E-06	2.8E-05	1.6E-06	3.2E-06	8.5E-05	3.8E-04	7.3E-05	6.3E-06	1.3E-08	2.8E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	6.9E-11	6.7E-09	7.9E-08	4.7E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.8E-08	1.9E-07
	R609	297100	6258304	3.3E-06	3.3E-06	2.9E-05	1.6E-06	3.3E-06	8.8E-05	3.9E-04	7.5E-05	6.5E-06	1.3E-08	2.9E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.2E-11	6.9E-09	8.1E-08	4.8E-08	3.0E-07	5.6E-07	7.2E-07	5.3E-08	1.8E-08	2.0E-07
	R610	297150	6258304	3.4E-06	3.4E-06	3.0E-05	1.7E-06	3.4E-06	9.1E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.4E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.4E-11	7.1E-09	8.4E-08	5.0E-08	3.1E-07	5.8E-07	7.4E-07	5.5E-08	1.9E-08	2.0E-07

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																									
													Metal									Heavy Metal							
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R611	297200	6258304	3.5E-06	3.5E-06	3.1E-05	1.7E-06	3.5E-06	9.4E-05	4.2E-04	8.0E-05	6.9E-06	1.4E-08	3.1E-08	3.5E-09	2.4E-11	1.2E-09	1.3E-07	1.2E-08	7.6E-11	7.3E-09	8.7E-08	5.1E-08	3.2E-07	6.0E-07	7.6E-07	5.6E-08	1.9E-08	2.1E-07
	R612	297250	6258304	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.7E-05	4.3E-04	8.2E-05	7.2E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.9E-11	7.6E-09	9.0E-08	5.3E-08	3.3E-07	6.2E-07	7.9E-07	5.8E-08	2.0E-08	2.2E-07
	R613	296500	6258354	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.4E-09	2.1E-08	2.3E-09	1.6E-11	8.0E-10	8.7E-08	7.8E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.0E-07	5.2E-07	3.8E-08	1.3E-08	1.4E-07
	R614	296550	6258354	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.5E-05	4.8E-06	9.6E-09	2.2E-08	2.4E-09	1.7E-11	8.1E-10	8.9E-08	8.0E-09	5.3E-11	5.1E-09	6.0E-08	3.5E-08	2.2E-07	4.1E-07	5.3E-07	3.9E-08	1.3E-08	1.4E-07
	R615	296600	6258354	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.8E-09	2.2E-08	2.5E-09	1.7E-11	8.3E-10	9.1E-08	8.2E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.3E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R616	296650	6258354	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.0E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.5E-10	9.3E-08	8.4E-09	5.5E-11	5.3E-09	6.3E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R617	296700	6258354	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	7.0E-05	3.1E-04	5.9E-05	5.2E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.8E-10	9.5E-08	8.6E-09	5.7E-11	5.5E-09	6.4E-08	3.8E-08	2.4E-07	4.4E-07	5.7E-07	4.2E-08	1.4E-08	1.5E-07
	R618	296750	6258354	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.2E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.0E-10	9.8E-08	8.8E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.6E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R619	296800	6258354	2.7E-06	2.7E-06	2.5E-05	1.4E-06	2.7E-06	7.4E-05	3.3E-04	6.3E-05	5.5E-06	1.1E-08	2.5E-08	2.7E-09	1.9E-11	9.3E-10	1.0E-07	9.1E-09	6.0E-11	5.8E-09	6.8E-08	4.0E-08	2.5E-07	4.7E-07	6.0E-07	4.4E-08	1.5E-08	1.6E-07
	R620	296850	6258354	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.6E-05	3.4E-04	6.5E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.5E-10	1.0E-07	9.3E-09	6.2E-11	6.0E-09	7.0E-08	4.2E-08	2.6E-07	4.8E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R621	296900	6258354	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.8E-05	3.5E-04	6.6E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.8E-10	1.1E-07	9.6E-09	6.4E-11	6.1E-09	7.2E-08	4.3E-08	2.7E-07	5.0E-07	6.4E-07	4.7E-08	1.6E-08	1.7E-07
	R622	296950	6258354	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.0E-05	3.6E-04	6.8E-05	5.9E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	9.9E-09	6.5E-11	6.3E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.7E-08	1.8E-07
	R623	297000	6258354	3.1E-06	3.1E-06	2.8E-05	1.5E-06	3.1E-06	8.3E-05	3.7E-04	7.0E-05	6.1E-06	1.2E-08	2.8E-08	3.1E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.5E-09	7.6E-08	4.5E-08	2.8E-07	5.3E-07	6.7E-07	5.0E-08	1.7E-08	1.8E-07
	R624	297050	6258354	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.5E-05	3.8E-04	7.2E-05	6.3E-06	1.3E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.2E-07	1.0E-08	6.9E-11	6.7E-09	7.9E-08	4.7E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.8E-08	1.9E-07
	R625	297100	6258354	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.8E-05	3.9E-04	7.5E-05	6.5E-06	1.3E-08	2.9E-08	3.2E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.9E-09	8.1E-08	4.8E-08	3.0E-07	5.6E-07	7.1E-07	5.3E-08	1.8E-08	1.9E-07
	R626	297150	6258354	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	9.0E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.1E-09	8.4E-08	4.9E-08	3.1E-07	5.7E-07	7.3E-07	5.4E-08	1.9E-08	2.0E-07
	R627	297200	6258354	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.3E-05	4.1E-04	7.9E-05	6.9E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.6E-11	7.3E-09	8.6E-08	5.1E-08	3.2E-07	5.9E-07	7.6E-07	5.6E-08	1.9E-08	2.1E-07
	R628	297250	6258354	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.6E-05	4.3E-04	8.2E-05	7.1E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.8E-11	7.6E-09	8.9E-08	5.3E-08	3.3E-07	6.1E-07	7.8E-07	5.8E-08	2.0E-08	2.1E-07
	R629	296500	6258404	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.8E-04	5.4E-05	4.7E-06	9.4E-09	2.1E-08	2.4E-09	1.6E-11	8.0E-10	8.7E-08	7.8E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.0E-07	5.2E-07	3.8E-08	1.3E-08	1.4E-07
	R630	296550	6258404	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.5E-05	4.8E-06	9.6E-09	2.2E-08	2.4E-09	1.7E-11	8.1E-10	8.9E-08	8.0E-09	5.3E-11	5.1E-09	6.0E-08	3.5E-08	2.2E-07	4.1E-07	5.3E-07	3.9E-08	1.3E-08	1.4E-07
	R631	296600	6258404	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.8E-09	2.2E-08	2.5E-09	1.7E-11	8.4E-10	9.1E-08	8.2E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.3E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R632	296650	6258404	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.0E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.6E-10	9.3E-08	8.4E-09	5.5E-11	5.3E-09	6.3E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R633	296700	6258404	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	7.0E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.8E-10	9.6E-08	8.6E-09	5.7E-11	5.5E-09	6.5E-08	3.8E-08	2.4E-07	4.4E-07	5.7E-07	4.2E-08	1.4E-08	1.6E-07
	R634	296750	6258404	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.2E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.0E-10	9.8E-08	8.8E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.6E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R635	296800	6258404	2.7E-06	2.7E-06	2.5E-05	1.4E-06	2.7E-06	7.4E-05	3.3E-04	6.3E-05	5.5E-06	1.1E-08	2.5E-08	2.7E-09	1.9E-11	9.3E-10	1.0E-07	9.1E-09	6.0E-11	5.8E-09	6.8E-08	4.0E-08	2.5E-07	4.7E-07	6.0E-07	4.5E-08	1.5E-08	1.6E-07
	R636	296850	6258404	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.6E-05	3.4E-04	6.5E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.5E-10	1.0E-07	9.3E-09	6.2E-11	6.0E-09	7.0E-08	4.2E-08	2.6E-07	4.8E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R637	296900	6258404	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.8E-05	3.5E-04	6.6E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.8E-10	1.1E-07	9.6E-09	6.3E-11	6.1E-09	7.2E-08	4.3E-08	2.7E-07	5.0E-07	6.3E-07	4.7E-08	1.6E-08	1.7E-07
	R638	296950	6258404	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.0E-05	3.6E-04	6.8E-05	5.9E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	9.9E-09	6.5E-11	6.3E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.7E-08	1.8E-07
	R639	297000	6258404	3.1E-06	3.1E-06	2.8E-05	1.5E-06	3.1E-06	8.3E-05	3.7E-04	7.0E-05	6.1E-06	1.2E-08	2.8E-08	3.1E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.5E-09	7.7E-08	4.5E-08	2.8E-07	5.3E-07	6.7E-07	5.0E-08	1.7E-08	1.8E-07
	R640	297050	6258404	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.5E-05	3.8E-04	7.2E-05	6.3E-06	1.3E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.2E-07	1.0E-08	6.9E-11	6.7E-09	7.8E-08	4.6E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.8E-08	1.9E-07
	R641	297100	6258404	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.7E-05	3.9E-04	7.4E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.8E-09	8.1E-08	4.8E-08	3.0E-07	5.5E-07	7.1E-07	5.3E-08	1.8E-08	1.9E-07
	R642	297150	6258404	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	9.0E-05	4.0E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.0E-09	8.3E-08	4.9E-08	3.1E-07	5.7E-07	7.3E-07	5.4E-08	1.9E-08	2.0E-07
	R643	297200	6258404	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.3E-05	4.1E-04	7.9E-05	6.9E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.5E-11	7.3E-09	8.6E-08	5.1E-08	3.2E-07	5.9E-07	7.5E-07	5.6E-08	1.9E-08	2.1E-07
	R644	297250	6258404	3.5E-06	3.5E-06	3.2E-05	1.8E-06	3.5E-06	9.5E-05	4.2E-04	8.1E-05	7.1E-06	1.4E-08	3.2E-08	3.5E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.8E-11	7.5E-09	8.8E-08	5.2E-08	3.3E-07	6.1E-07	7.8E-07	5.8E-08	2.0E-08	2.1E-07
	R645	296500	6258454	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.4E-09	2.1E-08	2.3E-09	1.6E-11	8.0E-10	8.7E-08	7.8E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.0E-07	5.2E-07	3.8E-08	1.3E-08	1.4E-07
	R646	296550	6258454	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.5E-05	4.8E-06	9.6E-09	2.2E-08	2.4E-09	1.7E-11	8.1E-10	8.9E-08	8.0E-09	5.3E-11	5.1E-09	6.0E-08	3.5E-08	2.2E-07	4.1E-07	5.3E-07	3.9E-08	1.3E-08	1.4E-07
	R647	296600	6258454	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.8E-09	2.2E-08	2.5E-09	1.7E-11	8.4E-10	9.1E-08	8.2E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.3E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R648	296650	6258454	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.0E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.6E-10	9.3E-08	8.4E-09	5.5E-11	5.3E-09	6.3E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R649	296700	6258454	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	7.0E-05	3.1E-04	5.9E-05	5.2E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.8E-10	9.6E-08	8.6E-09	5.7E-11	5.5E-09	6.5E-08	3.8E-08	2.4E-07	4.4E-07	5.7E-07	4.2E-08	1.4E-08	1.5E-07
	R650	296750	6258454	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.2E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.0E-10	9.8E-08	8.8E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.6E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R651	296800	6258454	2.7E-06	2.7E-06	2.5E-05	1.4E-06	2.7E-06	7.4E-05	3.3E-04	6.3E-05	5.4E-06	1.1E-08	2.5E-08	2.7E-09	1.9E-11	9.3E-10	1.0E-07	9.1E-09	6.0E-11	5.8E-09	6.8E-08	4.0E-08	2.5E-07	4.7E-07	6.0E-07	4.4E-08	1.5E-08	1.6E-07
	R652	296850	6258454	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.6E-05	3.4E-04	6.4E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.5E-10	1.0E-07	9.3E-09	6.2E-11	5.9E-09	7.0E-08	4.1E-08	2.6E-07	4.8E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R653	296900	6258454	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.8E-05	3.5E-04	6.6E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.8E-10	1.1E-07	9.6E-09	6.3E-11	6.1E-09	7.2E-08	4.3E-08	2.6E-07	4.9E-07	6.3E-07	4.7E-08	1.6E-08	1.7E-07
	R654	296950	6258454	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.0E-05	3.6E-04	6.8E-05	5.9E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	9.9E-09	6.5E-11	6.3E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.7E-08	1.8E-07
	R655	297000	6258454	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.2E-05	3.7E-04	7.0E-05	6.1E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.5E-09	7.6E-08	4.5E-08	2.8E-07	5.2E-07	6.7E-07	5.0E-08	1.7E-08	1.8E-07
	R656	297050	6258454	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.4E-05	3.7E-04	7.2E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.2E-07	1.0E-08	6.9E-11	6.6E-09	7.8E-08	4.6E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.7E-08	1.9E-07
	R657	297100	6258454	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.6E-05	3.8E-04	7.4E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.8E-09	8.0E-08	4.7E-08	2.9E-07	5.5E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R658	297150	6258454	3.3E-06	3.3E-06	3.0E-05	1.6E-06	3.3E-06	8.9E-05	4.0E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.0E-09	8.2E-08	4.9E-08	3.0E-07	5.7E-07	7.3E-07	5.4E-08	1.8E-08	2.0E-07
	R659	297200	6258454	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.2E-05	4.1E-04	7.8E-05	6.8E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.5E-11	7.2E-09	8.5E-08	5.0E-08	3.1E-07	5.8E-07	7.5E-07	5.5E-08	1.9E-08	2.0E-07
	R660	297250	6258454	3.5E-06	3.5E-06	3.2E-05	1.8E-06	3.5E-06	9.5E-05	4.2E-04	8.1E-05	7.0E-06	1.4E-08	3.2E-08	3.5E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.7E-11	7.4E-09	8.8E-08	5.2E-08	3.2E-07	6.0E-07	7.7E-07	5.7E-08	2.0E-08	2.1E-07
	R661	296500	6258504	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.4E-09	2.1E-08	2.3E-09	1.6E-11	8.0E-10	8.7E-08	7.8E-09	5.1E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R662	296550	6258504	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.5E-05	4.8E-06	9.6E-09	2.2E-08	2.4E-09	1.7E-11	8.1E-10	8.9E-08	8.0E-09	5.3E-11	5.1E-09	6.0E-08	3.5E-08	2.2E-07	4.1E-07	5.3E-07	3.9E-08	1.3E-08	1.4E-07
	R663	296600	6258504	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.8E-09	2.2E-08	2.5E-09	1.7E-11	8.3E-10	9.1E-08	8.2E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.3E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R664	296650	6258504	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.0E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.5E-10	9.3E-08	8.4E-09	5.5E-11	5.3E-09	6.3E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R665	296700	6258504	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	7.0E-05	3.1E-04	5.9E-05	5.2E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.8E-10	9.6E-08	8.6E-09	5.7E-11	5.5E-09	6.5E-08	3.8E-08	2.4E-07	4.4E-07	5.7E-07	4.2E-08	1.4E-08	1.5E-07
	R666	296750	6258504	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.6E-09	1.9E-11	9.0E-10	9.8E-08	8.8E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.6E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R667	296800	6258504	2.7E-06	2.7E-06	2.4E-05	1.4E-06	2.7E-06	7.3E-05	3.3E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.2E-10	1.0E-07	9.0E-09	6.0E-11	5.7E-09	6.8E-08	4.0E-08	2.5E-07	4.7E-07	6.0E-07	4.4E-08	1.5E-08	1.6E-07
	R668	296850	6258504	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.5E-05	3.3E-04	6.4E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.5E-10	1.0E-07	9.3E-09	6.1E-11	5.9E-09	7.0E-08	4.1E-08	2.6E-07	4.8E-07	6.1E-07	4.5E-08	1.6E-08	1.7E-07
	R669	296900	6258504	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.7E-05	3.4E-04	6.6E-05	5.7E-06	1.1E-08	2.6E-08	2.9E-09	2.0E-11	9.7E-10	1.1E-07	9.5E-09	6.3E-11	6.1E-09	7.2E-08	4.2E-08	2.6E-07	4.9E-07	6.3E-07	4.7E-08	1.6E-08	1.7E-07
	R670	296950	6258504	2.9E-06	2.9E-06	2.6E-05	1.5E-06	2.9E-06	7.9E-05	3.5E-04	6.8E-05	5.9E-06	1.2E-08	2.6E-08	2.9E-09	2.1E-11	1.0E-09	1.1E-07	9.8E-09	6.5E-11	6.2E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.6E-08	1.8E-07
	R671	297000	6258504	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.2E-05	3.6E-04	7.0E-05	6.1E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.4E-09	7.6E-08	4.5E-08	2.8E-07	5.2E-07	6.7E-07	4.9E-08	1.7E-08	1.8E-07

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																									
													Metal									Heavy Metal							
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R672	297050	6258504	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.4E-05	3.7E-04	7.1E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.1E-07	1.0E-08	6.8E-11	6.6E-09	7.8E-08	4.6E-08	2.9E-07	5.3E-07	6.8E-07	5.1E-08	1.7E-08	1.9E-07
	R673	297100	6258504	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.6E-05	3.8E-04	7.3E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.7E-09	7.9E-08	4.7E-08	2.9E-07	5.5E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R674	297150	6258504	3.3E-06	3.3E-06	2.9E-05	1.6E-06	3.3E-06	8.8E-05	3.9E-04	7.5E-05	6.5E-06	1.3E-08	2.9E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.2E-11	6.9E-09	8.2E-08	4.8E-08	3.0E-07	5.6E-07	7.2E-07	5.3E-08	1.8E-08	2.0E-07
	R675	297200	6258504	3.4E-06	3.4E-06	3.0E-05	1.7E-06	3.4E-06	9.1E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.4E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.4E-11	7.1E-09	8.4E-08	5.0E-08	3.1E-07	5.8E-07	7.4E-07	5.5E-08	1.9E-08	2.0E-07
	R676	297250	6258504	3.5E-06	3.5E-06	3.1E-05	1.7E-06	3.5E-06	9.3E-05	4.2E-04	8.0E-05	6.9E-06	1.4E-08	3.1E-08	3.5E-09	2.4E-11	1.2E-09	1.3E-07	1.2E-08	7.6E-11	7.3E-09	8.7E-08	5.1E-08	3.2E-07	6.0E-07	7.6E-07	5.6E-08	1.9E-08	2.1E-07
	R677	296500	6258554	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.8E-09	5.1E-11	4.9E-09	5.8E-08	3.5E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R678	296550	6258554	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.5E-05	4.8E-06	9.6E-09	2.2E-08	2.4E-09	1.7E-11	8.1E-10	8.8E-08	8.0E-09	5.3E-11	5.1E-09	6.0E-08	3.5E-08	2.2E-07	4.1E-07	5.3E-07	3.9E-08	1.3E-08	1.4E-07
	R679	296600	6258554	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.8E-09	2.2E-08	2.4E-09	1.7E-11	8.3E-10	9.1E-08	8.1E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.3E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R680	296650	6258554	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.0E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.5E-10	9.3E-08	8.3E-09	5.5E-11	5.3E-09	6.3E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R681	296700	6258554	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.7E-10	9.5E-08	8.6E-09	5.7E-11	5.4E-09	6.4E-08	3.8E-08	2.4E-07	4.4E-07	5.7E-07	4.2E-08	1.4E-08	1.5E-07
	R682	296750	6258554	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.6E-09	1.8E-11	8.9E-10	9.7E-08	8.8E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.5E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R683	296800	6258554	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.3E-05	3.2E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.2E-10	1.0E-07	9.0E-09	5.9E-11	5.7E-09	6.7E-08	4.0E-08	2.5E-07	4.6E-07	5.9E-07	4.4E-08	1.5E-08	1.6E-07
	R684	296850	6258554	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.5E-05	3.3E-04	6.4E-05	5.5E-06	1.1E-08	2.5E-08	2.8E-09	1.9E-11	9.4E-10	1.0E-07	9.2E-09	6.1E-11	5.9E-09	6.9E-08	4.1E-08	2.5E-07	4.8E-07	6.1E-07	4.5E-08	1.6E-08	1.7E-07
	R685	296900	6258554	2.8E-06	2.8E-06	2.6E-05	1.4E-06	2.8E-06	7.7E-05	3.4E-04	6.5E-05	5.7E-06	1.1E-08	2.6E-08	2.8E-09	2.0E-11	9.6E-10	1.0E-07	9.4E-09	6.2E-11	6.0E-09	7.1E-08	4.2E-08	2.6E-07	4.9E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R686	296950	6258554	2.9E-06	2.9E-06	2.6E-05	1.5E-06	2.9E-06	7.9E-05	3.5E-04	6.7E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.9E-10	1.1E-07	9.7E-09	6.4E-11	6.2E-09	7.3E-08	4.3E-08	2.7E-07	5.0E-07	6.4E-07	4.8E-08	1.6E-08	1.7E-07
	R687	297000	6258554	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.1E-05	3.6E-04	6.9E-05	6.0E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.6E-11	6.4E-09	7.5E-08	4.4E-08	2.8E-07	5.2E-07	6.6E-07	4.9E-08	1.7E-08	1.8E-07
	R688	297050	6258554	3.1E-06	3.1E-06	2.8E-05	1.5E-06	3.1E-06	8.3E-05	3.7E-04	7.1E-05	6.1E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.0E-09	1.1E-07	1.0E-08	6.8E-11	6.5E-09	7.7E-08	4.5E-08	2.8E-07	5.3E-07	6.8E-07	5.0E-08	1.7E-08	1.8E-07
	R689	297100	6258554	3.2E-06	3.2E-06	2.8E-05	1.6E-06	3.2E-06	8.5E-05	3.8E-04	7.3E-05	6.3E-06	1.3E-08	2.8E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	6.9E-11	6.7E-09	7.9E-08	4.7E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.8E-08	1.9E-07
	R690	297150	6258554	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.8E-05	3.9E-04	7.5E-05	6.5E-06	1.3E-08	2.9E-08	3.2E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.9E-09	8.1E-08	4.8E-08	3.0E-07	5.6E-07	7.1E-07	5.3E-08	1.8E-08	1.9E-07
	R691	297200	6258554	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	9.0E-05	4.0E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.0E-09	8.3E-08	4.9E-08	3.1E-07	5.7E-07	7.3E-07	5.4E-08	1.9E-08	2.0E-07
	R692	297250	6258554	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.2E-05	4.1E-04	7.9E-05	6.8E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.5E-11	7.3E-09	8.6E-08	5.1E-08	3.1E-07	5.9E-07	7.5E-07	5.6E-08	1.9E-08	2.1E-07
	R693	296500	6258604	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.3E-05	4.6E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.7E-09	5.1E-11	4.9E-09	5.8E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R694	296550	6258604	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.9E-04	5.5E-05	4.8E-06	9.5E-09	2.1E-08	2.4E-09	1.7E-11	8.1E-10	8.8E-08	7.9E-09	5.2E-11	5.0E-09	6.0E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.9E-08	1.3E-08	1.4E-07
	R695	296600	6258604	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.7E-09	2.2E-08	2.4E-09	1.7E-11	8.3E-10	9.0E-08	8.1E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.2E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R696	296650	6258604	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.7E-05	3.0E-04	5.7E-05	5.0E-06	1.0E-08	2.2E-08	2.5E-09	1.7E-11	8.5E-10	9.2E-08	8.3E-09	5.5E-11	5.3E-09	6.2E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R697	296700	6258604	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.7E-10	9.4E-08	8.5E-09	5.6E-11	5.4E-09	6.4E-08	3.8E-08	2.3E-07	4.4E-07	5.6E-07	4.2E-08	1.4E-08	1.5E-07
	R698	296750	6258604	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.4E-08	2.6E-09	1.8E-11	8.9E-10	9.7E-08	8.7E-09	5.8E-11	5.5E-09	6.5E-08	3.9E-08	2.4E-07	4.5E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R699	296800	6258604	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.2E-05	3.2E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.1E-10	9.9E-08	8.9E-09	5.9E-11	5.7E-09	6.7E-08	4.0E-08	2.5E-07	4.6E-07	5.9E-07	4.4E-08	1.5E-08	1.6E-07
	R700	296850	6258604	2.7E-06	2.7E-06	2.5E-05	1.4E-06	2.7E-06	7.4E-05	3.3E-04	6.3E-05	5.5E-06	1.1E-08	2.5E-08	2.7E-09	1.9E-11	9.3E-10	1.0E-07	9.2E-09	6.0E-11	5.8E-09	6.9E-08	4.1E-08	2.5E-07	4.7E-07	6.0E-07	4.5E-08	1.5E-08	1.6E-07
	R701	296900	6258604	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.6E-05	3.4E-04	6.5E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.6E-10	1.0E-07	9.4E-09	6.2E-11	6.0E-09	7.0E-08	4.2E-08	2.6E-07	4.8E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R702	296950	6258604	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.8E-05	3.5E-04	6.6E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.8E-10	1.1E-07	9.6E-09	6.4E-11	6.1E-09	7.2E-08	4.3E-08	2.7E-07	5.0E-07	6.4E-07	4.7E-08	1.6E-08	1.7E-07
	R703	297000	6258604	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.0E-05	3.6E-04	6.8E-05	5.9E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	9.9E-09	6.5E-11	6.3E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.7E-08	1.8E-07
	R704	297050	6258604	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.2E-05	3.7E-04	7.0E-05	6.1E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.5E-09	7.6E-08	4.5E-08	2.8E-07	5.2E-07	6.7E-07	5.0E-08	1.7E-08	1.8E-07
	R705	297100	6258604	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.4E-05	3.7E-04	7.2E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.2E-07	1.0E-08	6.9E-11	6.6E-09	7.8E-08	4.6E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.7E-08	1.9E-07
	R706	297150	6258604	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.7E-05	3.8E-04	7.4E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.8E-09	8.0E-08	4.7E-08	3.0E-07	5.5E-07	7.1E-07	5.2E-08	1.8E-08	1.9E-07
	R707	297200	6258604	3.3E-06	3.3E-06	3.0E-05	1.6E-06	3.3E-06	8.9E-05	4.0E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.0E-09	8.2E-08	4.9E-08	3.0E-07	5.7E-07	7.3E-07	5.4E-08	1.8E-08	2.0E-07
	R708	297250	6258604	3.4E-06	3.4E-06	3.0E-05	1.7E-06	3.4E-06	9.1E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.4E-09	2.4E-11	1.1E-09	1.2E-07	1.1E-08	7.4E-11	7.1E-09	8.4E-08	5.0E-08	3.1E-07	5.8E-07	7.4E-07	5.5E-08	1.9E-08	2.0E-07
	R709	296500	6258654	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.3E-05	4.6E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.7E-09	5.1E-11	4.9E-09	5.8E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R710	296550	6258654	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.8E-04	5.5E-05	4.7E-06	9.5E-09	2.1E-08	2.4E-09	1.7E-11	8.1E-10	8.8E-08	7.9E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.9E-08	1.3E-08	1.4E-07
	R711	296600	6258654	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.6E-05	4.8E-06	9.7E-09	2.2E-08	2.4E-09	1.7E-11	8.2E-10	9.0E-08	8.1E-09	5.3E-11	5.1E-09	6.1E-08	3.6E-08	2.2E-07	4.2E-07	5.3E-07	3.9E-08	1.4E-08	1.5E-07
	R712	296650	6258654	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.7E-05	3.0E-04	5.7E-05	5.0E-06	9.9E-09	2.2E-08	2.5E-09	1.7E-11	8.4E-10	9.2E-08	8.3E-09	5.5E-11	5.3E-09	6.2E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.0E-08	1.4E-08	1.5E-07
	R713	296700	6258654	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.1E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.6E-10	9.4E-08	8.4E-09	5.6E-11	5.4E-09	6.3E-08	3.7E-08	2.3E-07	4.4E-07	5.6E-07	4.1E-08	1.4E-08	1.5E-07
	R714	296750	6258654	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	7.0E-05	3.1E-04	5.9E-05	5.2E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.8E-10	9.6E-08	8.6E-09	5.7E-11	5.5E-09	6.5E-08	3.8E-08	2.4E-07	4.4E-07	5.7E-07	4.2E-08	1.4E-08	1.6E-07
	R715	296800	6258654	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.2E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.0E-10	9.8E-08	8.8E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.6E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R716	296850	6258654	2.7E-06	2.7E-06	2.4E-05	1.4E-06	2.7E-06	7.3E-05	3.3E-04	6.3E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.2E-10	1.0E-07	9.1E-09	6.0E-11	5.8E-09	6.8E-08	4.0E-08	2.5E-07	4.7E-07	6.0E-07	4.4E-08	1.5E-08	1.6E-07
	R717	296900	6258654	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.5E-05	3.3E-04	6.4E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	1.9E-11	9.5E-10	1.0E-07	9.3E-09	6.1E-11	5.9E-09	7.0E-08	4.1E-08	2.6E-07	4.8E-07	6.1E-07	4.5E-08	1.6E-08	1.7E-07
	R718	296950	6258654	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.7E-05	3.4E-04	6.6E-05	5.7E-06	1.1E-08	2.6E-08	2.9E-09	2.0E-11	9.7E-10	1.1E-07	9.5E-09	6.3E-11	6.1E-09	7.1E-08	4.2E-08	2.6E-07	4.9E-07	6.3E-07	4.7E-08	1.6E-08	1.7E-07
	R719	297000	6258654	2.9E-06	2.9E-06	2.6E-05	1.5E-06	2.9E-06	7.9E-05	3.5E-04	6.7E-05	5.9E-06	1.2E-08	2.6E-08	2.9E-09	2.1E-11	1.0E-09	1.1E-07	9.8E-09	6.5E-11	6.2E-09	7.3E-08	4.3E-08	2.7E-07	5.0E-07	6.5E-07	4.8E-08	1.6E-08	1.8E-07
	R720	297050	6258654	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.1E-05	3.6E-04	6.9E-05	6.0E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.6E-11	6.4E-09	7.5E-08	4.5E-08	2.8E-07	5.2E-07	6.6E-07	4.9E-08	1.7E-08	1.8E-07
	R721	297100	6258654	3.1E-06	3.1E-06	2.8E-05	1.5E-06	3.1E-06	8.3E-05	3.7E-04	7.1E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.1E-07	1.0E-08	6.8E-11	6.5E-09	7.7E-08	4.6E-08	2.8E-07	5.3E-07	6.8E-07	5.0E-08	1.7E-08	1.9E-07
	R722	297150	6258654	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.6E-05	3.8E-04	7.3E-05	6.3E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.7E-09	7.9E-08	4.7E-08	2.9E-07	5.5E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R723	297200	6258654	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.7E-05	3.9E-04	7.5E-05	6.5E-06	1.3E-08	2.9E-08	3.2E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.9E-09	8.1E-08	4.8E-08	3.0E-07	5.6E-07	7.1E-07	5.3E-08	1.8E-08	1.9E-07
	R724	297250	6258654	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	8.9E-05	4.0E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.0E-09	8.3E-08	4.9E-08	3.0E-07	5.7E-07	7.3E-07	5.4E-08	1.8E-08	2.0E-07
	R725	296500	6258704	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.2E-05	2.8E-04	5.3E-05	4.6E-06	9.2E-09	2.1E-08	2.3E-09	1.6E-11	7.8E-10	8.5E-08	7.7E-09	5.1E-11	4.9E-09	5.8E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R726	296550	6258704	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.8E-04	5.4E-05	4.7E-06	9.4E-09	2.1E-08	2.4E-09	1.7E-11	8.0E-10	8.7E-08	7.9E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.9E-08	1.3E-08	1.4E-07
	R727	296600	6258704	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.5E-05	4.8E-06	9.7E-09	2.2E-08	2.4E-09	1.7E-11	8.2E-10	8.9E-08	8.0E-09	5.3E-11	5.1E-09	6.0E-08	3.6E-08	2.2E-07	4.2E-07	5.3E-07	3.9E-08	1.4E-08	1.4E-07
	R728	296650	6258704	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.7E-05	3.0E-04	5.7E-05	4.9E-06	9.9E-09	2.2E-08	2.5E-09	1.7E-11	8.4E-10	9.1E-08	8.2E-09	5.4E-11	5.2E-09	6.2E-08	3.6E-08	2.3E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R729	296700	6258704	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.0E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.5E-10	9.3E-08	8.4E-09	5.5E-11	5.3E-09	6.3E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R730	296750	6258704	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.7E-10	9.5E-08	8.5E-09	5.6E-11	5.4E-09	6.4E-08	3.8E-08	2.4E-07	4.4E-07	5.6E-07	4.2E-08	1.4E-08	1.5E-07
	R731	296800	6258704	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.4E-08	2.6E-09	1.8E-11	8.9E-10	9.7E-08	8.7E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.5E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R732	296850	6258704	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.3E-05	3.2E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.2E-10	1.0E-07	9.0E-09	5.9E-11	5.7E-09	6.7E-08	4.0E-08	2.5E-07	4.6E-07	5.9E-07	4.4E-08	1.5E-08	1.6E-07

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																									
													Metal										Heavy Metal						
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R733	296900	6258704	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.4E-05	3.3E-04	6.3E-05	5.5E-06	1.1E-08	2.5E-08	2.8E-09	1.9E-11	9.4E-10	1.0E-07	9.2E-09	6.1E-11	5.8E-09	6.9E-08	4.1E-08	2.5E-07	4.7E-07	6.1E-07	4.5E-08	1.5E-08	1.7E-07
	R734	296950	6258704	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.6E-05	3.4E-04	6.5E-05	5.7E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.6E-10	1.0E-07	9.4E-09	6.2E-11	6.0E-09	7.1E-08	4.2E-08	2.6E-07	4.9E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R735	297000	6258704	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.8E-05	3.5E-04	6.7E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.9E-10	1.1E-07	9.7E-09	6.4E-11	6.1E-09	7.2E-08	4.3E-08	2.7E-07	5.0E-07	6.4E-07	4.7E-08	1.6E-08	1.7E-07
	R736	297050	6258704	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.0E-05	3.6E-04	6.8E-05	5.9E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	9.9E-09	6.5E-11	6.3E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.7E-08	1.8E-07
	R737	297100	6258704	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.2E-05	3.6E-04	7.0E-05	6.1E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.4E-09	7.6E-08	4.5E-08	2.8E-07	5.2E-07	6.7E-07	5.0E-08	1.7E-08	1.8E-07
	R738	297150	6258704	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.4E-05	3.7E-04	7.2E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.2E-07	1.0E-08	6.9E-11	6.6E-09	7.8E-08	4.6E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.7E-08	1.9E-07
	R739	297200	6258704	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.6E-05	3.8E-04	7.3E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.7E-09	7.9E-08	4.7E-08	2.9E-07	5.5E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R740	297250	6258704	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.8E-05	3.9E-04	7.5E-05	6.5E-06	1.3E-08	2.9E-08	3.2E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.9E-09	8.1E-08	4.8E-08	3.0E-07	5.6E-07	7.1E-07	5.3E-08	1.8E-08	1.9E-07
	R741	296500	6258754	2.3E-06	2.3E-06	2.1E-05	1.1E-06	2.3E-06	6.2E-05	2.8E-04	5.3E-05	4.6E-06	9.2E-09	2.1E-08	2.3E-09	1.6E-11	7.8E-10	8.5E-08	7.6E-09	5.0E-11	4.9E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R742	296550	6258754	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.4E-09	2.1E-08	2.3E-09	1.6E-11	8.0E-10	8.7E-08	7.8E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.0E-07	5.2E-07	3.8E-08	1.3E-08	1.4E-07
	R743	296600	6258754	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.5E-05	4.8E-06	9.6E-09	2.2E-08	2.4E-09	1.7E-11	8.1E-10	8.9E-08	8.0E-09	5.3E-11	5.1E-09	6.0E-08	3.5E-08	2.2E-07	4.1E-07	5.3E-07	3.9E-08	1.3E-08	1.4E-07
	R744	296650	6258754	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.8E-09	2.2E-08	2.4E-09	1.7E-11	8.3E-10	9.0E-08	8.1E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.2E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R745	296700	6258754	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.7E-05	3.0E-04	5.7E-05	5.0E-06	1.0E-08	2.2E-08	2.5E-09	1.7E-11	8.5E-10	9.2E-08	8.3E-09	5.5E-11	5.3E-09	6.2E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R746	296750	6258754	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.7E-10	9.4E-08	8.5E-09	5.6E-11	5.4E-09	6.4E-08	3.8E-08	2.3E-07	4.4E-07	5.6E-07	4.2E-08	1.4E-08	1.5E-07
	R747	296800	6258754	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	7.0E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.9E-10	9.6E-08	8.7E-09	5.7E-11	5.5E-09	6.5E-08	3.9E-08	2.4E-07	4.5E-07	5.7E-07	4.2E-08	1.5E-08	1.6E-07
	R748	296850	6258754	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.2E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.1E-10	9.9E-08	8.9E-09	5.9E-11	5.7E-09	6.7E-08	3.9E-08	2.5E-07	4.6E-07	5.9E-07	4.3E-08	1.5E-08	1.6E-07
	R749	296900	6258754	2.7E-06	2.7E-06	2.5E-05	1.4E-06	2.7E-06	7.4E-05	3.3E-04	6.3E-05	5.5E-06	1.1E-08	2.5E-08	2.7E-09	1.9E-11	9.3E-10	1.0E-07	9.1E-09	6.0E-11	5.8E-09	6.8E-08	4.0E-08	2.5E-07	4.7E-07	6.0E-07	4.4E-08	1.5E-08	1.6E-07
	R750	296950	6258754	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.5E-05	3.4E-04	6.4E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.5E-10	1.0E-07	9.3E-09	6.1E-11	5.9E-09	7.0E-08	4.1E-08	2.6E-07	4.8E-07	6.1E-07	4.6E-08	1.6E-08	1.7E-07
	R751	297000	6258754	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.7E-05	3.4E-04	6.6E-05	5.7E-06	1.1E-08	2.6E-08	2.9E-09	2.0E-11	9.7E-10	1.1E-07	9.5E-09	6.3E-11	6.1E-09	7.1E-08	4.2E-08	2.6E-07	4.9E-07	6.3E-07	4.7E-08	1.6E-08	1.7E-07
	R752	297050	6258754	2.9E-06	2.9E-06	2.6E-05	1.5E-06	2.9E-06	7.9E-05	3.5E-04	6.7E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.9E-10	1.1E-07	9.7E-09	6.4E-11	6.2E-09	7.3E-08	4.3E-08	2.7E-07	5.0E-07	6.4E-07	4.8E-08	1.6E-08	1.7E-07
	R753	297100	6258754	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.0E-05	3.6E-04	6.8E-05	5.9E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	9.9E-09	6.5E-11	6.3E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.7E-08	1.8E-07
	R754	297150	6258754	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.2E-05	3.6E-04	7.0E-05	6.1E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.4E-09	7.6E-08	4.5E-08	2.8E-07	5.2E-07	6.7E-07	4.9E-08	1.7E-08	1.8E-07
	R755	297200	6258754	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.4E-05	3.7E-04	7.1E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.1E-07	1.0E-08	6.8E-11	6.6E-09	7.8E-08	4.6E-08	2.9E-07	5.3E-07	6.8E-07	5.1E-08	1.7E-08	1.9E-07
	R756	297250	6258754	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.6E-05	3.8E-04	7.3E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.7E-09	7.9E-08	4.7E-08	2.9E-07	5.5E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R757	299462	6258797	4.0E-06	4.0E-06	3.6E-05	2.0E-06	4.0E-06	1.1E-04	4.8E-04	9.2E-05	8.0E-06	1.6E-08	3.6E-08	4.0E-09	2.8E-11	1.4E-09	1.5E-07	1.3E-08	8.8E-11	8.5E-09	1.0E-07	5.9E-08	3.7E-07	6.9E-07	8.8E-07	6.5E-08	2.2E-08	2.4E-07
	R758	299512	6258797	3.9E-06	3.9E-06	3.5E-05	1.9E-06	3.9E-06	1.0E-04	4.6E-04	8.9E-05	7.7E-06	1.5E-08	3.5E-08	3.9E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.5E-11	8.2E-09	9.6E-08	5.7E-08	3.5E-07	6.6E-07	8.5E-07	6.3E-08	2.2E-08	2.3E-07
	R759	299562	6258797	3.7E-06	3.7E-06	3.4E-05	1.9E-06	3.7E-06	1.0E-04	4.5E-04	8.6E-05	7.5E-06	1.5E-08	3.4E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.2E-11	7.9E-09	9.4E-08	5.5E-08	3.4E-07	6.4E-07	8.2E-07	6.1E-08	2.1E-08	2.2E-07
	R760	299612	6258797	3.6E-06	3.6E-06	3.3E-05	1.8E-06	3.6E-06	9.8E-05	4.4E-04	8.4E-05	7.3E-06	1.5E-08	3.3E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	8.0E-11	7.7E-09	9.1E-08	5.4E-08	3.3E-07	6.2E-07	8.0E-07	5.9E-08	2.0E-08	2.2E-07
	R761	299662	6258797	3.5E-06	3.5E-06	3.2E-05	1.8E-06	3.5E-06	9.5E-05	4.2E-04	8.1E-05	7.1E-06	1.4E-08	3.2E-08	3.5E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.8E-11	7.5E-09	8.8E-08	5.2E-08	3.2E-07	6.1E-07	7.8E-07	5.7E-08	2.0E-08	2.1E-07
	R762	299712	6258797	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.2E-05	4.1E-04	7.9E-05	6.8E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.5E-11	7.2E-09	8.5E-08	5.1E-08	3.1E-07	5.9E-07	7.5E-07	5.6E-08	1.9E-08	2.0E-07
	R763	299762	6258797	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	8.9E-05	4.0E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.0E-09	8.3E-08	4.9E-08	3.0E-07	5.7E-07	7.3E-07	5.4E-08	1.9E-08	2.0E-07
	R764	299812	6258797	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.7E-05	3.9E-04	7.4E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.8E-09	8.0E-08	4.8E-08	3.0E-07	5.5E-07	7.1E-07	5.2E-08	1.8E-08	1.9E-07
	R765	299862	6258797	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.4E-05	3.7E-04	7.2E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.2E-07	1.0E-08	6.9E-11	6.6E-09	7.8E-08	4.6E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.7E-08	1.9E-07
	R766	299912	6258797	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.2E-05	3.6E-04	7.0E-05	6.1E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.4E-09	7.6E-08	4.5E-08	2.8E-07	5.2E-07	6.7E-07	4.9E-08	1.7E-08	1.8E-07
	R767	299962	6258797	2.9E-06	2.9E-06	2.6E-05	1.5E-06	2.9E-06	7.9E-05	3.5E-04	6.8E-05	5.9E-06	1.2E-08	2.6E-08	2.9E-09	2.1E-11	1.0E-09	1.1E-07	9.8E-09	6.5E-11	6.2E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.6E-08	1.8E-07
	R768	300012	6258797	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.7E-05	3.4E-04	6.6E-05	5.7E-06	1.1E-08	2.6E-08	2.9E-09	2.0E-11	9.7E-10	1.1E-07	9.5E-09	6.3E-11	6.1E-09	7.2E-08	4.2E-08	2.6E-07	4.9E-07	6.3E-07	4.7E-08	1.6E-08	1.7E-07
	R769	300062	6258797	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.5E-05	3.3E-04	6.4E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	1.9E-11	9.5E-10	1.0E-07	9.3E-09	6.1E-11	5.9E-09	7.0E-08	4.1E-08	2.6E-07	4.8E-07	6.1E-07	4.5E-08	1.6E-08	1.7E-07
	R770	300112	6258797	2.7E-06	2.7E-06	2.4E-05	1.4E-06	2.7E-06	7.3E-05	3.3E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.2E-10	1.0E-07	9.0E-09	6.0E-11	5.7E-09	6.8E-08	4.0E-08	2.5E-07	4.7E-07	6.0E-07	4.4E-08	1.5E-08	1.6E-07
	R771	300162	6258797	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.6E-09	1.8E-11	9.0E-10	9.8E-08	8.8E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.5E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R772	300212	6258797	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.7E-10	9.5E-08	8.6E-09	5.7E-11	5.5E-09	6.4E-08	3.8E-08	2.4E-07	4.4E-07	5.7E-07	4.2E-08	1.4E-08	1.5E-07
	R773	300262	6258797	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.0E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.5E-10	9.3E-08	8.4E-09	5.5E-11	5.3E-09	6.3E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R774	300312	6258797	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.8E-09	2.2E-08	2.4E-09	1.7E-11	8.3E-10	9.1E-08	8.1E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.3E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R775	300362	6258797	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.9E-04	5.5E-05	4.8E-06	9.5E-09	2.1E-08	2.4E-09	1.7E-11	8.1E-10	8.8E-08	7.9E-09	5.2E-11	5.1E-09	6.0E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.9E-08	1.3E-08	1.4E-07
	R776	300412	6258797	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.8E-09	5.1E-11	4.9E-09	5.8E-08	3.5E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R777	300462	6258797	2.3E-06	2.3E-06	2.1E-05	1.1E-06	2.3E-06	6.2E-05	2.7E-04	5.2E-05	4.6E-06	9.1E-09	2.1E-08	2.3E-09	1.6E-11	7.8E-10	8.4E-08	7.6E-09	5.0E-11	4.8E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R778	300512	6258797	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.4E-06	8.9E-09	2.0E-08	2.2E-09	1.6E-11	7.6E-10	8.2E-08	7.4E-09	4.9E-11	4.7E-09	5.6E-08	3.3E-08	2.0E-07	3.8E-07	4.9E-07	3.6E-08	1.2E-08	1.3E-07
	R779	300562	6258797	2.2E-06	2.2E-06	1.9E-05	1.1E-06	2.2E-06	5.8E-05	2.6E-04	5.0E-05	4.3E-06	8.7E-09	1.9E-08	2.2E-09	1.5E-11	7.4E-10	8.0E-08	7.2E-09	4.8E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.8E-07	3.5E-08	1.2E-08	1.3E-07
	R780	300612	6258797	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.5E-04	4.9E-05	4.2E-06	8.5E-09	1.9E-08	2.1E-09	1.5E-11	7.2E-10	7.8E-08	7.0E-09	4.7E-11	4.5E-09	5.3E-08	3.1E-08	1.9E-07	3.6E-07	4.7E-07	3.4E-08	1.2E-08	1.3E-07
	R781	300662	6258797	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.8E-05	4.1E-06	8.3E-09	1.9E-08	2.1E-09	1.4E-11	7.0E-10	7.6E-08	6.9E-09	4.5E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.6E-07	4.5E-07	3.4E-08	1.2E-08	1.2E-07
	R782	300712	6258797	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.5E-05	2.4E-04	4.7E-05	4.0E-06	8.1E-09	1.8E-08	2.0E-09	1.4E-11	6.9E-10	7.5E-08	6.7E-09	4.4E-11	4.3E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.4E-07	3.3E-08	1.1E-08	1.2E-07
	R783	300762	6258797	2.0E-06	2.0E-06	1.8E-05	9.9E-07	2.0E-06	5.3E-05	2.4E-04	4.5E-05	3.9E-06	7.9E-09	1.8E-08	2.0E-09	1.4E-11	6.7E-10	7.3E-08	6.6E-09	4.3E-11	4.2E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R784	300812	6258797	1.9E-06	1.9E-06	1.7E-05	9.7E-07	1.9E-06	5.2E-05	2.3E-04	4.4E-05	3.9E-06	7.7E-09	1.7E-08	1.9E-09	1.4E-11	6.6E-10	7.1E-08	6.4E-09	4.2E-11	4.1E-09	4.8E-08	2.9E-08	1.8E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.2E-07
	R785	299212	6258847	4.7E-06	4.7E-06	4.2E-05	2.3E-06	4.7E-06	1.3E-04	5.6E-04	1.1E-04	9.3E-06	1.9E-08	4.2E-08	4.7E-09	3.3E-11	1.6E-09	1.7E-07	1.6E-08	1.0E-10	9.9E-09	1.2E-07	6.9E-08	4.3E-07	8.0E-07	1.0E-06	7.6E-08	2.6E-08	2.8E-07
	R786	299262	6258847	4.5E-06	4.5E-06	4.1E-05	2.3E-06	4.5E-06	1.2E-04	5.4E-04	1.0E-04	9.0E-06	1.8E-08	4.1E-08	4.5E-09	3.2E-11	1.5E-09	1.7E-07	1.5E-08	1.0E-10	9.6E-09	1.1E-07	6.7E-08	4.2E-07	7.8E-07	1.0E-06	7.4E-08	2.5E-08	2.7E-07
	R787	299312	6258847	4.4E-06	4.4E-06	4.0E-05	2.2E-06	4.4E-06	1.2E-04	5.3E-04	1.0E-04	8.8E-06	1.8E-08	4.0E-08	4.4E-09	3.1E-11	1.5E-09	1.6E-07	1.5E-08	9.7E-11	9.3E-09	1.1E-07	6.5E-08	4.0E-07	7.6E-07	9.7E-07	7.2E-08	2.5E-08	2.6E-07
	R788	299362	6258847	4.3E-06	4.3E-06	3.8E-05	2.1E-06	4.3E-06	1.2E-04	5.1E-04	9.8E-05	8.5E-06	1.7E-08	3.8E-08	4.3E-09	3.0E-11	1.5E-09	1.6E-07	1.4E-08	9.4E-11	9.1E-09	1.1E-07	6.3E-08	3.9E-07	7.3E-07	9.4E-07	7.0E-08	2.4E-08	2.6E-07
	R789	299412	6258847	4.1E-06	4.1E-06	3.7E-05	2.1E-06	4.1E-06	1.1E-04	4.9E-04	9.5E-05	8.2E-06	1.6E-08	3.7E-08	4.1E-09	2.9E-11	1.4E-09	1.5E-07	1.4E-08	9.1E-11	8.7E-09	1.0E-07	6.1E-08	3.8E-07	7.1E-07	9.1E-07	6.7E-08	2.3E-08	2.5E-07
	R790	299462	6258847	3.9E-06	3.9E-06	3.5E-05	2.0E-06	3.9E-06	1.1E-04	4.7E-04	9.1E-05	7.9E-06	1.6E-08	3.5E-08	3.9E-09	2.8E-11	1.3E-09	1.5E-07	1.3E-08	8.7E-11	8.4E-09	9.8E-08	5.8E-08	3.6E-07	6.8E-07	8.7E-07	6.4E-08	2.2E-08	2.4E-07
	R791	299512	6258847	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.6E-04	8.7E-05	7.6E-06	1.5E-08	3.4E-08	3.8E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.4E-11	8.1E-09	9.5E-08	5.6E-08	3.5E-07	6.5E-07	8.4E-07	6.2E-08	2.1E-08	2.3E-07
	R792	299562	6258847	3.7E-06	3.7E-06	3.3E-05	1.9E-06	3.7E-06	1.0E-04	4.4E-04	8.5E-05	7.4E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.2E-11	7.9E-09	9.3E-08	5.5E-08	3.4E-07	6.4E-07	8.2E-07	6.0E-08	2.1E-08	2.2E-07
	R793	299612	6258847	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.7E-05	4.3E-04	8.3E-05	7.2E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.9E-11	7.6E-09	9.0E-08	5.3E-08	3.3E-07	6.2E-07	7.9E-07	5.9E-08	2.0E-08	2.2E-07

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																									
													Metal										Heavy Metal							
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3
In-stack Concentration (mg/Nm^3)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R794	299662	6258847	3.5E-06	3.5E-06	3.2E-05	1.8E-06	3.5E-06	9.5E-05	4.2E-04	8.1E-05	7.0E-06	1.4E-08	3.2E-08	3.5E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.7E-11	7.4E-09	8.8E-08	5.2E-08	3.2E-07	6.0E-07	7.7E-07	5.7E-08	2.0E-08	2.1E-07
	R795	299712	6258847	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.2E-05	4.1E-04	7.8E-05	6.8E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.5E-11	7.2E-09	8.5E-08	5.0E-08	3.1E-07	5.9E-07	7.5E-07	5.6E-08	1.9E-08	2.0E-07
	R796	299762	6258847	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	8.9E-05	4.0E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.0E-09	8.3E-08	4.9E-08	3.0E-07	5.7E-07	7.3E-07	5.4E-08	1.9E-08	2.0E-07
	R797	299812	6258847	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.7E-05	3.8E-04	7.4E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.8E-09	8.0E-08	4.7E-08	3.0E-07	5.5E-07	7.1E-07	5.2E-08	1.8E-08	1.9E-07
	R798	299862	6258847	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.4E-05	3.7E-04	7.2E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.2E-07	1.0E-08	6.9E-11	6.6E-09	7.8E-08	4.6E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.7E-08	1.9E-07
	R799	299912	6258847	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.2E-05	3.6E-04	7.0E-05	6.0E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.6E-11	6.4E-09	7.6E-08	4.5E-08	2.8E-07	5.2E-07	6.6E-07	4.9E-08	1.7E-08	1.8E-07
	R800	299962	6258847	2.9E-06	2.9E-06	2.6E-05	1.5E-06	2.9E-06	7.9E-05	3.5E-04	6.8E-05	5.9E-06	1.2E-08	2.6E-08	2.9E-09	2.1E-11	1.0E-09	1.1E-07	9.8E-09	6.5E-11	6.2E-09	7.3E-08	4.3E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.6E-08	1.8E-07
	R801	300012	6258847	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.7E-05	3.4E-04	6.6E-05	5.7E-06	1.1E-08	2.6E-08	2.9E-09	2.0E-11	9.7E-10	1.1E-07	9.5E-09	6.3E-11	6.1E-09	7.1E-08	4.2E-08	2.6E-07	4.9E-07	6.3E-07	4.7E-08	1.6E-08	1.7E-07
	R802	300062	6258847	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.5E-05	3.3E-04	6.4E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	1.9E-11	9.4E-10	1.0E-07	9.2E-09	6.1E-11	5.9E-09	6.9E-08	4.1E-08	2.6E-07	4.8E-07	6.1E-07	4.5E-08	1.6E-08	1.7E-07
	R803	300112	6258847	2.7E-06	2.7E-06	2.4E-05	1.4E-06	2.7E-06	7.3E-05	3.2E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.2E-10	1.0E-07	9.0E-09	6.0E-11	5.7E-09	6.8E-08	4.0E-08	2.5E-07	4.7E-07	6.0E-07	4.4E-08	1.5E-08	1.6E-07
	R804	300162	6258847	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.6E-09	1.8E-11	9.0E-10	9.8E-08	8.8E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.5E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R805	300212	6258847	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.7E-10	9.5E-08	8.6E-09	5.7E-11	5.5E-09	6.4E-08	3.8E-08	2.4E-07	4.4E-07	5.7E-07	4.2E-08	1.4E-08	1.5E-07
	R806	300262	6258847	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.0E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.6E-10	9.3E-08	8.4E-09	5.5E-11	5.3E-09	6.3E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R807	300312	6258847	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.8E-09	2.2E-08	2.4E-09	1.7E-11	8.3E-10	9.1E-08	8.1E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.3E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R808	300362	6258847	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.9E-04	5.5E-05	4.8E-06	9.5E-09	2.1E-08	2.4E-09	1.7E-11	8.1E-10	8.8E-08	7.9E-09	5.2E-11	5.1E-09	6.0E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.9E-08	1.3E-08	1.4E-07
	R809	300412	6258847	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.3E-05	4.6E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.7E-09	5.1E-11	4.9E-09	5.8E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R810	300462	6258847	2.3E-06	2.3E-06	2.1E-05	1.1E-06	2.3E-06	6.2E-05	2.7E-04	5.2E-05	4.6E-06	9.1E-09	2.1E-08	2.3E-09	1.6E-11	7.8E-10	8.4E-08	7.6E-09	5.0E-11	4.8E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R811	300512	6258847	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.5E-06	8.9E-09	2.0E-08	2.2E-09	1.6E-11	7.6E-10	8.2E-08	7.4E-09	4.9E-11	4.7E-09	5.6E-08	3.3E-08	2.0E-07	3.8E-07	4.9E-07	3.6E-08	1.2E-08	1.3E-07
	R812	300562	6258847	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	5.9E-05	2.6E-04	5.0E-05	4.3E-06	8.7E-09	2.0E-08	2.2E-09	1.5E-11	7.4E-10	8.0E-08	7.2E-09	4.8E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.8E-07	3.5E-08	1.2E-08	1.3E-07
	R813	300612	6258847	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.5E-04	4.9E-05	4.2E-06	8.5E-09	1.9E-08	2.1E-09	1.5E-11	7.2E-10	7.8E-08	7.1E-09	4.7E-11	4.5E-09	5.3E-08	3.1E-08	1.9E-07	3.6E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
	R814	300662	6258847	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.8E-05	4.1E-06	8.3E-09	1.9E-08	2.1E-09	1.4E-11	7.0E-10	7.7E-08	6.9E-09	4.6E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.2E-07
	R815	300712	6258847	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	8.1E-09	1.8E-08	2.0E-09	1.4E-11	6.9E-10	7.5E-08	6.7E-09	4.4E-11	4.3E-09	5.0E-08	3.0E-08	1.9E-07	3.5E-07	4.4E-07	3.3E-08	1.1E-08	1.2E-07
	R816	300762	6258847	2.0E-06	2.0E-06	1.8E-05	9.8E-07	2.0E-06	5.3E-05	2.4E-04	4.5E-05	3.9E-06	7.9E-09	1.8E-08	2.0E-09	1.4E-11	6.7E-10	7.3E-08	6.6E-09	4.3E-11	4.2E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R817	300812	6258847	1.9E-06	1.9E-06	1.7E-05	9.6E-07	1.9E-06	5.2E-05	2.3E-04	4.4E-05	3.9E-06	7.7E-09	1.7E-08	1.9E-09	1.3E-11	6.6E-10	7.1E-08	6.4E-09	4.2E-11	4.1E-09	4.8E-08	2.9E-08	1.8E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.2E-07
	R818	298912	6258897	4.9E-06	4.9E-06	4.4E-05	2.5E-06	4.9E-06	1.3E-04	5.9E-04	1.1E-04	9.8E-06	2.0E-08	4.4E-08	4.9E-09	3.4E-11	1.7E-09	1.8E-07	1.6E-08	1.1E-10	1.0E-08	1.2E-07	7.3E-08	4.5E-07	8.5E-07	1.1E-06	8.0E-08	2.8E-08	3.0E-07
	R819	298962	6258897	4.9E-06	4.9E-06	4.4E-05	2.5E-06	4.9E-06	1.3E-04	5.9E-04	1.1E-04	9.8E-06	2.0E-08	4.4E-08	4.9E-09	3.4E-11	1.7E-09	1.8E-07	1.6E-08	1.1E-10	1.0E-08	1.2E-07	7.3E-08	4.5E-07	8.5E-07	1.1E-06	8.0E-08	2.8E-08	3.0E-07
	R820	299012	6258897	4.9E-06	4.9E-06	4.4E-05	2.5E-06	4.9E-06	1.3E-04	5.9E-04	1.1E-04	9.8E-06	2.0E-08	4.4E-08	4.9E-09	3.4E-11	1.7E-09	1.8E-07	1.6E-08	1.1E-10	1.0E-08	1.2E-07	7.3E-08	4.5E-07	8.5E-07	1.1E-06	8.0E-08	2.8E-08	2.9E-07
	R821	299062	6258897	4.9E-06	4.9E-06	4.4E-05	2.4E-06	4.9E-06	1.3E-04	5.8E-04	1.1E-04	9.7E-06	1.9E-08	4.4E-08	4.9E-09	3.4E-11	1.7E-09	1.8E-07	1.6E-08	1.1E-10	1.0E-08	1.2E-07	7.2E-08	4.5E-07	8.4E-07	1.1E-06	7.9E-08	2.7E-08	2.9E-07
	R822	299112	6258897	4.8E-06	4.8E-06	4.3E-05	2.4E-06	4.8E-06	1.3E-04	5.8E-04	1.1E-04	9.6E-06	1.9E-08	4.3E-08	4.8E-09	3.4E-11	1.6E-09	1.8E-07	1.6E-08	1.1E-10	1.0E-08	1.2E-07	7.1E-08	4.4E-07	8.3E-07	1.1E-06	7.8E-08	2.7E-08	2.9E-07
	R823	299162	6258897	4.7E-06	4.7E-06	4.2E-05	2.4E-06	4.7E-06	1.3E-04	5.7E-04	1.1E-04	9.4E-06	1.9E-08	4.2E-08	4.7E-09	3.3E-11	1.6E-09	1.7E-07	1.6E-08	1.0E-10	1.0E-08	1.2E-07	7.0E-08	4.3E-07	8.1E-07	1.0E-06	7.7E-08	2.6E-08	2.8E-07
	R824	299212	6258897	4.6E-06	4.6E-06	4.1E-05	2.3E-06	4.6E-06	1.2E-04	5.5E-04	1.1E-04	9.2E-06	1.8E-08	4.1E-08	4.6E-09	3.2E-11	1.6E-09	1.7E-07	1.5E-08	1.0E-10	9.8E-09	1.2E-07	6.8E-08	4.2E-07	7.9E-07	1.0E-06	7.5E-08	2.6E-08	2.8E-07
	R825	299262	6258897	4.5E-06	4.5E-06	4.0E-05	2.2E-06	4.5E-06	1.2E-04	5.4E-04	1.0E-04	9.0E-06	1.8E-08	4.0E-08	4.5E-09	3.1E-11	1.5E-09	1.7E-07	1.5E-08	9.8E-11	9.5E-09	1.1E-07	6.6E-08	4.1E-07	7.7E-07	9.8E-07	7.3E-08	2.5E-08	2.7E-07
	R826	299312	6258897	4.4E-06	4.4E-06	3.9E-05	2.2E-06	4.4E-06	1.2E-04	5.2E-04	1.0E-04	8.7E-06	1.7E-08	3.9E-08	4.4E-09	3.0E-11	1.5E-09	1.6E-07	1.4E-08	9.6E-11	9.2E-09	1.1E-07	6.4E-08	4.0E-07	7.5E-07	9.6E-07	7.1E-08	2.4E-08	2.6E-07
	R827	299362	6258897	4.2E-06	4.2E-06	3.8E-05	2.1E-06	4.2E-06	1.1E-04	5.1E-04	9.7E-05	8.5E-06	1.7E-08	3.8E-08	4.2E-09	3.0E-11	1.4E-09	1.6E-07	1.4E-08	9.3E-11	9.0E-09	1.1E-07	6.3E-08	3.9E-07	7.3E-07	9.3E-07	6.9E-08	2.4E-08	2.5E-07
	R828	299412	6258897	4.1E-06	4.1E-06	3.7E-05	2.0E-06	4.1E-06	1.1E-04	4.9E-04	9.4E-05	8.2E-06	1.6E-08	3.7E-08	4.1E-09	2.9E-11	1.4E-09	1.5E-07	1.4E-08	9.0E-11	8.7E-09	1.0E-07	6.1E-08	3.8E-07	7.0E-07	9.0E-07	6.7E-08	2.3E-08	2.5E-07
	R829	299462	6258897	3.9E-06	3.9E-06	3.5E-05	2.0E-06	3.9E-06	1.1E-04	4.7E-04	9.0E-05	7.9E-06	1.6E-08	3.5E-08	3.9E-09	2.8E-11	1.3E-09	1.5E-07	1.3E-08	8.6E-11	8.3E-09	9.8E-08	5.8E-08	3.6E-07	6.8E-07	8.6E-07	6.4E-08	2.2E-08	2.4E-07
	R830	299512	6258897	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.6E-04	8.7E-05	7.6E-06	1.5E-08	3.4E-08	3.8E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.4E-11	8.1E-09	9.5E-08	5.6E-08	3.5E-07	6.5E-07	8.4E-07	6.2E-08	2.1E-08	2.3E-07
	R831	299562	6258897	3.7E-06	3.7E-06	3.3E-05	1.9E-06	3.7E-06	1.0E-04	4.4E-04	8.5E-05	7.4E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.1E-11	7.9E-09	9.3E-08	5.5E-08	3.4E-07	6.4E-07	8.1E-07	6.0E-08	2.1E-08	2.2E-07
	R832	299612	6258897	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.7E-05	4.3E-04	8.2E-05	7.2E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.9E-11	7.6E-09	9.0E-08	5.3E-08	3.3E-07	6.2E-07	7.9E-07	5.8E-08	2.0E-08	2.2E-07
	R833	299662	6258897	3.5E-06	3.5E-06	3.1E-05	1.7E-06	3.5E-06	9.4E-05	4.2E-04	8.0E-05	7.0E-06	1.4E-08	3.1E-08	3.5E-09	2.4E-11	1.2E-09	1.3E-07	1.2E-08	7.7E-11	7.4E-09	8.7E-08	5.2E-08	3.2E-07	6.0E-07	7.7E-07	5.7E-08	2.0E-08	2.1E-07
	R834	299712	6258897	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.2E-05	4.1E-04	7.8E-05	6.8E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.5E-11	7.2E-09	8.5E-08	5.0E-08	3.1E-07	5.8E-07	7.5E-07	5.5E-08	1.9E-08	2.0E-07
	R835	299762	6258897	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	8.9E-05	4.0E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.0E-09	8.3E-08	4.9E-08	3.0E-07	5.7E-07	7.3E-07	5.4E-08	1.8E-08	2.0E-07
	R836	299812	6258897	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.6E-05	3.8E-04	7.4E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.8E-09	8.0E-08	4.7E-08	2.9E-07	5.5E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R837	299862	6258897	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.4E-05	3.7E-04	7.1E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.1E-07	1.0E-08	6.8E-11	6.6E-09	7.8E-08	4.6E-08	2.9E-07	5.3E-07	6.8E-07	5.1E-08	1.7E-08	1.9E-07
	R838	299912	6258897	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.1E-05	3.6E-04	6.9E-05	6.0E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.6E-11	6.4E-09	7.5E-08	4.5E-08	2.8E-07	5.2E-07	6.6E-07	4.9E-08	1.7E-08	1.8E-07
	R839	299962	6258897	2.9E-06	2.9E-06	2.6E-05	1.5E-06	2.9E-06	7.9E-05	3.5E-04	6.7E-05	5.9E-06	1.2E-08	2.6E-08	2.9E-09	2.1E-11	1.0E-09	1.1E-07	9.8E-09	6.4E-11	6.2E-09	7.3E-08	4.3E-08	2.7E-07	5.0E-07	6.4E-07	4.8E-08	1.6E-08	1.8E-07
	R840	300012	6258897	2.8E-06	2.8E-06	2.6E-05	1.4E-06	2.8E-06	7.7E-05	3.4E-04	6.6E-05	5.7E-06	1.1E-08	2.6E-08	2.8E-09	2.0E-11	9.7E-10	1.1E-07	9.5E-09	6.3E-11	6.0E-09	7.1E-08	4.2E-08	2.6E-07	4.9E-07	6.3E-07	4.6E-08	1.6E-08	1.7E-07
	R841	300062	6258897	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.5E-05	3.3E-04	6.4E-05	5.5E-06	1.1E-08	2.5E-08	2.8E-09	1.9E-11	9.4E-10	1.0E-07	9.2E-09	6.1E-11	5.9E-09	6.9E-08	4.1E-08	2.6E-07	4.8E-07	6.1E-07	4.5E-08	1.6E-08	1.7E-07
	R842	300112	6258897	2.7E-06	2.7E-06	2.4E-05	1.4E-06	2.7E-06	7.3E-05	3.2E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.2E-10	1.0E-07	9.0E-09	5.9E-11	5.7E-09	6.8E-08	4.0E-08	2.5E-07	4.6E-07	5.9E-07	4.4E-08	1.5E-08	1.6E-07
	R843	300162	6258897	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.6E-09	1.8E-11	9.0E-10	9.8E-08	8.8E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.5E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R844	300212	6258897	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.7E-10	9.5E-08	8.6E-09	5.7E-11	5.4E-09	6.4E-08	3.8E-08	2.4E-07	4.4E-07	5.7E-07	4.2E-08	1.4E-08	1.5E-07
	R845	300262	6258897	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.0E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.5E-10	9.3E-08	8.3E-09	5.5E-11	5.3E-09	6.3E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R846	300312	6258897	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.6E-05	3.0E-04	5.7E-05	4.9E-06	9.8E-09	2.2E-08	2.5E-09	1.7E-11	8.4E-10	9.1E-08	8.2E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.3E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R847	300362	6258897	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.9E-04	5.5E-05	4.8E-06	9.5E-09	2.1E-08	2.4E-09	1.7E-11	8.1E-10	8.8E-08	7.9E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.9E-08	1.3E-08	1.4E-07
	R848	300412	6258897	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.3E-05	4.7E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.7E-09	5.1E-11	4.9E-09	5.8E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R849	300462	6258897	2.3E-06	2.3E-06	2.1E-05	1.1E-06	2.3E-06	6.2E-05	2.7E-04	5.2E-05	4.6E-06	9.1E-09	2.1E-08	2.3E-09	1.6E-11	7.8E-10	8.4E-08	7.6E-09	5.0E-11	4.8E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R850	300512	6258897	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.4E-06	8.9E-09	2.0E-08	2.2E-09	1.6E-11	7.6E-10	8.2E-08	7.4E-09	4.9E-11	4.7E-09	5.6E-08	3.3E-08	2.0E-07	3.8E-07	4.9E-07	3.6E-08	1.2E-08	1.3E-07
	R851	300562	6258897	2.2E-06	2.2E-06	1.9E-05	1.1E-06	2.2E-06	5.8E-05	2.6E-04	5.0E-05	4.3E-06	8.7E-09	1.9E-08	2.2E-09	1.5E-11	7.4E-10	8.0E-08	7.2E-09	4.8E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.8E-07	3.5E-08	1.2E-08	1.3E-07
	R852	300612	6258897	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.5E-04	4.9E-05	4.2E-06	8.4E-09	1.9E-08	2.1E-09	1.5E-11	7.2E-10	7.8E-08	7.0E-09	4.6E-11	4.5E-09	5.3E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.3E-07
	R853	300662	6258897	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.8E-05	4.1E-06	8.3E-09	1.9E-08	2.1E-09	1.4E-11	7.0E-10	7.6E-08	6.9E-09	4.5E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.6E-07	4.5E-07	3.4E-08	1.2E-08	1.2E-07
	R854	300712	6258897	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	8.1E-09	1.8E-08	2.0E-09	1.4E-11	6.9E-10	7.5E-08	6.7E-09	4.4E-11	4.3E-09	5.0E-08	3.0E-08	1.9E-07	3.5E-07	4.4E-07	3.3E-08	1.1E-08	1.2E-07

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																									
													Metal										Heavy Metal							
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3
In-stack Concentration (mg/Nm^3)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R855	300762	6258897	2.0E-06	2.0E-06	1.8E-05	9.9E-07	2.0E-06	5.3E-05	2.4E-04	4.5E-05	3.9E-06	7.9E-09	1.8E-08	2.0E-09	1.4E-11	6.7E-10	7.3E-08	6.6E-09	4.3E-11	4.2E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R856	300812	6258897	1.9E-06	1.9E-06	1.7E-05	9.7E-07	1.9E-06	5.2E-05	2.3E-04	4.4E-05	3.9E-06	7.7E-09	1.7E-08	1.9E-09	1.4E-11	6.6E-10	7.1E-08	6.4E-09	4.2E-11	4.1E-09	4.8E-08	2.9E-08	1.8E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.2E-07
	R857	298412	6258947	4.3E-06	4.3E-06	3.9E-05	2.2E-06	4.3E-06	1.2E-04	5.2E-04	1.0E-04	8.7E-06	1.7E-08	3.9E-08	4.3E-09	3.0E-11	1.5E-09	1.6E-07	1.4E-08	9.6E-11	9.2E-09	1.1E-07	6.4E-08	4.0E-07	7.5E-07	9.6E-07	7.1E-08	2.4E-08	2.6E-07
	R858	298462	6258947	4.5E-06	4.5E-06	4.0E-05	2.2E-06	4.5E-06	1.2E-04	5.3E-04	1.0E-04	8.9E-06	1.8E-08	4.0E-08	4.5E-09	3.1E-11	1.5E-09	1.6E-07	1.5E-08	9.8E-11	9.4E-09	1.1E-07	6.6E-08	4.1E-07	7.7E-07	9.8E-07	7.3E-08	2.5E-08	2.7E-07
	R859	298512	6258947	4.5E-06	4.5E-06	4.1E-05	2.3E-06	4.5E-06	1.2E-04	5.4E-04	1.0E-04	9.1E-06	1.8E-08	4.1E-08	4.5E-09	3.2E-11	1.5E-09	1.7E-07	1.5E-08	1.0E-10	9.6E-09	1.1E-07	6.7E-08	4.2E-07	7.8E-07	1.0E-06	7.4E-08	2.5E-08	2.7E-07
	R860	298562	6258947	4.6E-06	4.6E-06	4.1E-05	2.3E-06	4.6E-06	1.2E-04	5.5E-04	1.1E-04	9.2E-06	1.8E-08	4.1E-08	4.6E-09	3.2E-11	1.6E-09	1.7E-07	1.5E-08	1.0E-10	9.7E-09	1.1E-07	6.8E-08	4.2E-07	7.9E-07	1.0E-06	7.5E-08	2.6E-08	2.8E-07
	R861	298612	6258947	4.6E-06	4.6E-06	4.2E-05	2.3E-06	4.6E-06	1.2E-04	5.5E-04	1.1E-04	9.2E-06	1.8E-08	4.2E-08	4.6E-09	3.2E-11	1.6E-09	1.7E-07	1.5E-08	1.0E-10	9.8E-09	1.2E-07	6.8E-08	4.2E-07	7.9E-07	1.0E-06	7.5E-08	2.6E-08	2.8E-07
	R862	298662	6258947	4.6E-06	4.6E-06	4.2E-05	2.3E-06	4.6E-06	1.2E-04	5.5E-04	1.1E-04	9.2E-06	1.8E-08	4.2E-08	4.6E-09	3.2E-11	1.6E-09	1.7E-07	1.5E-08	1.0E-10	9.8E-09	1.2E-07	6.8E-08	4.2E-07	7.9E-07	1.0E-06	7.5E-08	2.6E-08	2.8E-07
	R863	298712	6258947	4.7E-06	4.7E-06	4.2E-05	2.3E-06	4.7E-06	1.3E-04	5.6E-04	1.1E-04	9.3E-06	1.9E-08	4.2E-08	4.7E-09	3.3E-11	1.6E-09	1.7E-07	1.6E-08	1.0E-10	9.9E-09	1.2E-07	6.9E-08	4.3E-07	8.0E-07	1.0E-06	7.6E-08	2.6E-08	2.8E-07
	R864	298762	6258947	4.7E-06	4.7E-06	4.3E-05	2.4E-06	4.7E-06	1.3E-04	5.7E-04	1.1E-04	9.5E-06	1.9E-08	4.3E-08	4.7E-09	3.3E-11	1.6E-09	1.8E-07	1.6E-08	1.0E-10	1.0E-08	1.2E-07	7.0E-08	4.4E-07	8.2E-07	1.0E-06	7.7E-08	2.7E-08	2.8E-07
	R865	298812	6258947	4.8E-06	4.8E-06	4.3E-05	2.4E-06	4.8E-06	1.3E-04	5.7E-04	1.1E-04	9.5E-06	1.9E-08	4.3E-08	4.8E-09	3.3E-11	1.6E-09	1.8E-07	1.6E-08	1.0E-10	1.0E-08	1.2E-07	7.1E-08	4.4E-07	8.2E-07	1.0E-06	7.8E-08	2.7E-08	2.9E-07
	R866	298862	6258947	4.8E-06	4.8E-06	4.3E-05	2.4E-06	4.8E-06	1.3E-04	5.8E-04	1.1E-04	9.6E-06	1.9E-08	4.3E-08	4.8E-09	3.4E-11	1.6E-09	1.8E-07	1.6E-08	1.1E-10	1.0E-08	1.2E-07	7.1E-08	4.4E-07	8.2E-07	1.1E-06	7.8E-08	2.7E-08	2.9E-07
	R867	298912	6258947	4.8E-06	4.8E-06	4.3E-05	2.4E-06	4.8E-06	1.3E-04	5.8E-04	1.1E-04	9.6E-06	1.9E-08	4.3E-08	4.8E-09	3.4E-11	1.6E-09	1.8E-07	1.6E-08	1.1E-10	1.0E-08	1.2E-07	7.1E-08	4.4E-07	8.3E-07	1.1E-06	7.8E-08	2.7E-08	2.9E-07
	R868	298962	6258947	4.8E-06	4.8E-06	4.3E-05	2.4E-06	4.8E-06	1.3E-04	5.8E-04	1.1E-04	9.6E-06	1.9E-08	4.3E-08	4.8E-09	3.4E-11	1.6E-09	1.8E-07	1.6E-08	1.1E-10	1.0E-08	1.2E-07	7.1E-08	4.4E-07	8.3E-07	1.1E-06	7.8E-08	2.7E-08	2.9E-07
	R869	299012	6258947	4.8E-06	4.8E-06	4.3E-05	2.4E-06	4.8E-06	1.3E-04	5.8E-04	1.1E-04	9.6E-06	1.9E-08	4.3E-08	4.8E-09	3.4E-11	1.6E-09	1.8E-07	1.6E-08	1.1E-10	1.0E-08	1.2E-07	7.1E-08	4.4E-07	8.3E-07	1.1E-06	7.8E-08	2.7E-08	2.9E-07
	R870	299062	6258947	4.8E-06	4.8E-06	4.3E-05	2.4E-06	4.8E-06	1.3E-04	5.7E-04	1.1E-04	9.5E-06	1.9E-08	4.3E-08	4.8E-09	3.3E-11	1.6E-09	1.8E-07	1.6E-08	1.0E-10	1.0E-08	1.2E-07	7.1E-08	4.4E-07	8.2E-07	1.0E-06	7.8E-08	2.7E-08	2.9E-07
	R871	299112	6258947	4.7E-06	4.7E-06	4.2E-05	2.4E-06	4.7E-06	1.3E-04	5.7E-04	1.1E-04	9.4E-06	1.9E-08	4.2E-08	4.7E-09	3.3E-11	1.6E-09	1.7E-07	1.6E-08	1.0E-10	1.0E-08	1.2E-07	7.0E-08	4.3E-07	8.1E-07	1.0E-06	7.7E-08	2.6E-08	2.8E-07
	R872	299162	6258947	4.6E-06	4.6E-06	4.2E-05	2.3E-06	4.6E-06	1.3E-04	5.6E-04	1.1E-04	9.3E-06	1.9E-08	4.2E-08	4.6E-09	3.3E-11	1.6E-09	1.7E-07	1.5E-08	1.0E-10	9.8E-09	1.2E-07	6.9E-08	4.3E-07	8.0E-07	1.0E-06	7.6E-08	2.6E-08	2.8E-07
	R873	299212	6258947	4.5E-06	4.5E-06	4.1E-05	2.3E-06	4.5E-06	1.2E-04	5.5E-04	1.0E-04	9.1E-06	1.8E-08	4.1E-08	4.5E-09	3.2E-11	1.5E-09	1.7E-07	1.5E-08	1.0E-10	9.6E-09	1.1E-07	6.7E-08	4.2E-07	7.8E-07	1.0E-06	7.4E-08	2.5E-08	2.7E-07
	R874	299262	6258947	4.4E-06	4.4E-06	4.0E-05	2.2E-06	4.4E-06	1.2E-04	5.3E-04	1.0E-04	8.9E-06	1.8E-08	4.0E-08	4.4E-09	3.1E-11	1.5E-09	1.6E-07	1.5E-08	9.7E-11	9.4E-09	1.1E-07	6.6E-08	4.1E-07	7.6E-07	9.7E-07	7.2E-08	2.5E-08	2.7E-07
	R875	299312	6258947	4.3E-06	4.3E-06	3.9E-05	2.2E-06	4.3E-06	1.2E-04	5.2E-04	9.9E-05	8.6E-06	1.7E-08	3.9E-08	4.3E-09	3.0E-11	1.5E-09	1.6E-07	1.4E-08	9.5E-11	9.1E-09	1.1E-07	6.4E-08	4.0E-07	7.4E-07	9.5E-07	7.0E-08	2.4E-08	2.6E-07
	R876	299362	6258947	4.2E-06	4.2E-06	3.8E-05	2.1E-06	4.2E-06	1.1E-04	5.0E-04	9.7E-05	8.4E-06	1.7E-08	3.8E-08	4.2E-09	2.9E-11	1.4E-09	1.6E-07	1.4E-08	9.2E-11	8.9E-09	1.0E-07	6.2E-08	3.9E-07	7.2E-07	9.2E-07	6.8E-08	2.3E-08	2.5E-07
	R877	299412	6258947	4.1E-06	4.1E-06	3.6E-05	2.0E-06	4.1E-06	1.1E-04	4.9E-04	9.3E-05	8.1E-06	1.6E-08	3.6E-08	4.1E-09	2.8E-11	1.4E-09	1.5E-07	1.3E-08	8.9E-11	8.6E-09	1.0E-07	6.0E-08	3.7E-07	7.0E-07	8.9E-07	6.6E-08	2.3E-08	2.4E-07
	R878	299462	6258947	3.9E-06	3.9E-06	3.5E-05	2.0E-06	3.9E-06	1.1E-04	4.7E-04	9.0E-05	7.8E-06	1.6E-08	3.5E-08	3.9E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.6E-11	8.3E-09	9.8E-08	5.8E-08	3.6E-07	6.7E-07	8.6E-07	6.4E-08	2.2E-08	2.3E-07
	R879	299512	6258947	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.5E-04	8.7E-05	7.6E-06	1.5E-08	3.4E-08	3.8E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.3E-11	8.0E-09	9.5E-08	5.6E-08	3.5E-07	6.5E-07	8.3E-07	6.2E-08	2.1E-08	2.3E-07
	R880	299562	6258947	3.7E-06	3.7E-06	3.3E-05	1.9E-06	3.7E-06	1.0E-04	4.4E-04	8.5E-05	7.4E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.1E-11	7.8E-09	9.3E-08	5.5E-08	3.4E-07	6.4E-07	8.1E-07	6.0E-08	2.1E-08	2.2E-07
	R881	299612	6258947	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.7E-05	4.3E-04	8.3E-05	7.2E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.9E-11	7.6E-09	9.0E-08	5.3E-08	3.3E-07	6.2E-07	7.9E-07	5.9E-08	2.0E-08	2.2E-07
	R882	299662	6258947	3.5E-06	3.5E-06	3.1E-05	1.7E-06	3.5E-06	9.4E-05	4.2E-04	8.0E-05	7.0E-06	1.4E-08	3.1E-08	3.5E-09	2.4E-11	1.2E-09	1.3E-07	1.2E-08	7.6E-11	7.4E-09	8.7E-08	5.1E-08	3.2E-07	6.0E-07	7.6E-07	5.7E-08	1.9E-08	2.1E-07
	R883	299712	6258947	3.4E-06	3.4E-06	3.0E-05	1.7E-06	3.4E-06	9.1E-05	4.0E-04	7.8E-05	6.7E-06	1.3E-08	3.0E-08	3.4E-09	2.4E-11	1.1E-09	1.2E-07	1.1E-08	7.4E-11	7.1E-09	8.4E-08	5.0E-08	3.1E-07	5.8E-07	7.4E-07	5.5E-08	1.9E-08	2.0E-07
	R884	299762	6258947	3.3E-06	3.3E-06	3.0E-05	1.6E-06	3.3E-06	8.9E-05	3.9E-04	7.5E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.2E-11	6.9E-09	8.2E-08	4.9E-08	3.0E-07	5.6E-07	7.2E-07	5.3E-08	1.8E-08	2.0E-07
	R885	299812	6258947	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.6E-05	3.8E-04	7.3E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.7E-09	8.0E-08	4.7E-08	2.9E-07	5.5E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R886	299862	6258947	3.1E-06	3.1E-06	2.8E-05	1.5E-06	3.1E-06	8.3E-05	3.7E-04	7.1E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.1E-07	1.0E-08	6.8E-11	6.5E-09	7.7E-08	4.6E-08	2.8E-07	5.3E-07	6.8E-07	5.0E-08	1.7E-08	1.9E-07
	R887	299912	6258947	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.1E-05	3.6E-04	6.9E-05	6.0E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.6E-11	6.4E-09	7.5E-08	4.4E-08	2.8E-07	5.2E-07	6.6E-07	4.9E-08	1.7E-08	1.8E-07
	R888	299962	6258947	2.9E-06	2.9E-06	2.6E-05	1.5E-06	2.9E-06	7.9E-05	3.5E-04	6.7E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.9E-10	1.1E-07	9.7E-09	6.4E-11	6.2E-09	7.3E-08	4.3E-08	2.7E-07	5.0E-07	6.4E-07	4.8E-08	1.6E-08	1.8E-07
	R889	300012	6258947	2.8E-06	2.8E-06	2.6E-05	1.4E-06	2.8E-06	7.7E-05	3.4E-04	6.5E-05	5.7E-06	1.1E-08	2.6E-08	2.8E-09	2.0E-11	9.7E-10	1.1E-07	9.5E-09	6.3E-11	6.0E-09	7.1E-08	4.2E-08	2.6E-07	4.9E-07	6.3E-07	4.6E-08	1.6E-08	1.7E-07
	R890	300062	6258947	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.5E-05	3.3E-04	6.4E-05	5.5E-06	1.1E-08	2.5E-08	2.8E-09	1.9E-11	9.4E-10	1.0E-07	9.2E-09	6.1E-11	5.9E-09	6.9E-08	4.1E-08	2.5E-07	4.8E-07	6.1E-07	4.5E-08	1.5E-08	1.7E-07
	R891	300112	6258947	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.3E-05	3.2E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.2E-10	1.0E-07	9.0E-09	5.9E-11	5.7E-09	6.7E-08	4.0E-08	2.5E-07	4.6E-07	5.9E-07	4.4E-08	1.5E-08	1.6E-07
	R892	300162	6258947	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.2E-04	6.0E-05	5.3E-06	1.1E-08	2.4E-08	2.6E-09	1.8E-11	8.9E-10	9.7E-08	8.8E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.5E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R893	300212	6258947	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.7E-10	9.5E-08	8.5E-09	5.6E-11	5.4E-09	6.4E-08	3.8E-08	2.4E-07	4.4E-07	5.6E-07	4.2E-08	1.4E-08	1.5E-07
	R894	300262	6258947	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.0E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.5E-10	9.3E-08	8.3E-09	5.5E-11	5.3E-09	6.3E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R895	300312	6258947	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.8E-09	2.2E-08	2.5E-09	1.7E-11	8.3E-10	9.1E-08	8.2E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.3E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R896	300362	6258947	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.9E-04	5.5E-05	4.8E-06	9.5E-09	2.1E-08	2.4E-09	1.7E-11	8.1E-10	8.8E-08	7.9E-09	5.2E-11	5.0E-09	6.0E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.9E-08	1.3E-08	1.4E-07
	R897	300412	6258947	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.8E-09	5.1E-11	5.0E-09	5.8E-08	3.5E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R898	300462	6258947	2.3E-06	2.3E-06	2.1E-05	1.1E-06	2.3E-06	6.2E-05	2.7E-04	5.3E-05	4.6E-06	9.1E-09	2.1E-08	2.3E-09	1.6E-11	7.8E-10	8.4E-08	7.6E-09	5.0E-11	4.8E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R899	300512	6258947	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.4E-06	8.9E-09	2.0E-08	2.2E-09	1.6E-11	7.6E-10	8.2E-08	7.4E-09	4.9E-11	4.7E-09	5.6E-08	3.3E-08	2.0E-07	3.8E-07	4.9E-07	3.6E-08	1.2E-08	1.3E-07
	R900	300562	6258947	2.2E-06	2.2E-06	1.9E-05	1.1E-06	2.2E-06	5.8E-05	2.6E-04	5.0E-05	4.3E-06	8.7E-09	1.9E-08	2.2E-09	1.5E-11	7.4E-10	8.0E-08	7.2E-09	4.8E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.8E-07	3.5E-08	1.2E-08	1.3E-07
	R901	300612	6258947	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.5E-04	4.9E-05	4.2E-06	8.4E-09	1.9E-08	2.1E-09	1.5E-11	7.2E-10	7.8E-08	7.0E-09	4.6E-11	4.5E-09	5.3E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.3E-07
	R902	300662	6258947	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.7E-05	4.1E-06	8.2E-09	1.9E-08	2.1E-09	1.4E-11	7.0E-10	7.6E-08	6.9E-09	4.5E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.5E-07	4.5E-07	3.4E-08	1.2E-08	1.2E-07
	R903	300712	6258947	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	8.1E-09	1.8E-08	2.0E-09	1.4E-11	6.9E-10	7.5E-08	6.7E-09	4.4E-11	4.3E-09	5.0E-08	3.0E-08	1.9E-07	3.5E-07	4.4E-07	3.3E-08	1.1E-08	1.2E-07
	R904	300762	6258947	2.0E-06	2.0E-06	1.8E-05	9.9E-07	2.0E-06	5.3E-05	2.4E-04	4.5E-05	3.9E-06	7.9E-09	1.8E-08	2.0E-09	1.4E-11	6.7E-10	7.3E-08	6.6E-09	4.3E-11	4.2E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R905	300812	6258947	1.9E-06	1.9E-06	1.7E-05	9.6E-07	1.9E-06	5.2E-05	2.3E-04	4.4E-05	3.9E-06	7.7E-09	1.7E-08	1.9E-09	1.4E-11	6.6E-10	7.1E-08	6.4E-09	4.2E-11	4.1E-09	4.8E-08	2.9E-08	1.8E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.2E-07
	R906	298412	6258997	4.2E-06	4.2E-06	3.8E-05	2.1E-06	4.2E-06	1.1E-04	5.0E-04	9.7E-05	8.4E-06	1.7E-08	3.8E-08	4.2E-09	2.9E-11	1.4E-09	1.6E-07	1.4E-08	9.2E-11	8.9E-09	1.1E-07	6.2E-08	3.9E-07	7.2E-07	9.2E-07	6.8E-08	2.4E-08	2.5E-07
	R907	298462	6258997	4.3E-06	4.3E-06	3.9E-05	2.1E-06	4.3E-06	1.2E-04	5.1E-04	9.9E-05	8.6E-06	1.7E-08	3.9E-08	4.3E-09	3.0E-11	1.5E-09	1.6E-07	1.4E-08	9.4E-11	9.1E-09	1.1E-07	6.3E-08	3.9E-07	7.4E-07	9.4E-07	7.0E-08	2.4E-08	2.6E-07
	R908	298512	6258997	4.4E-06	4.4E-06	3.9E-05	2.2E-06	4.4E-06	1.2E-04	5.3E-04	1.0E-04	8.8E-06	1.8E-08	3.9E-08	4.4E-09	3.1E-11	1.5E-09	1.6E-07	1.5E-08	9.6E-11	9.3E-09	1.1E-07	6.5E-08	4.0E-07	7.5E-07	9.6E-07	7.1E-08	2.5E-08	2.6E-07
	R909	298562	6258997	4.4E-06	4.4E-06	4.0E-05	2.2E-06	4.4E-06	1.2E-04	5.3E-04	1.0E-04	8.9E-06	1.8E-08	4.0E-08	4.4E-09	3.1E-11	1.5E-09	1.6E-07	1.5E-08	9.8E-11	9.4E-09	1.1E-07	6.6E-08	4.1E-07	7.6E-07	9.8E-07	7.2E-08	2.5E-08	2.7E-07
	R910	298612	6258997	4.5E-06	4.5E-06	4.0E-05	2.2E-06	4.5E-06	1.2E-04	5.4E-04	1.0E-04	9.0E-06	1.8E-08	4.0E-08	4.5E-09	3.1E-11	1.5E-09	1.7E-07	1.5E-08	9.9E-11	9.5E-09	1.1E-07	6.7E-08	4.1E-07	7.7E-07	9.9E-07	7.3E-08	2.5E-08	2.7E-07
	R911	298662	6258997	4.5E-06	4.5E-06	4.0E-05	2.2E-06	4.5E-06	1.2E-04	5.4E-04	1.0E-04	9.0E-06	1.8E-08	4.0E-08	4.5E-09	3.1E-11	1.5E-09	1.7E-07	1.5E-08	9.9E-11	9.5E-09	1.1E-07	6.6E-08	4.1E-07	7.7E-07	9.9E-07	7.3E-08	2.5E-08	2.7E-07
	R912	298712	6258997	4.5E-06	4.5E-06	4.1E-05	2.3E-06	4.5E-06	1.2E-04	5.4E-04	1.0E-04	9.1E-06	1.8E-08	4.1E-08	4.5E-09	3.2E-11	1.5E-09	1.7E-07	1.5E-08	1.0E-10	9.6E-09	1.1E-07	6.7E-08	4.2E-07	7.8E-07	1.0E-06	7.4E-08	2.5E-08	2.7E-07
	R913	298762	6258997	4.6E-06	4.6E-06	4.1E-05	2.3E-06	4.6E-06	1.2E-04	5.5E-04	1.1E-04	9.2E-06	1.8E-08	4.1E-08	4.6E-09	3.2E-11	1.6E-09	1.7E-07	1.5E-08	1.0E-10	9.7E-09	1.1E-07	6.8E-08	4.2E-07	7.9E-07	1.0E-06	7.5E-08	2.6E-08	2.8E-07
	R914	298812	6258997	4.6E-06	4.6E-06	4.2E-05	2.3E-06	4.6E-06	1.3E-04	5.6E-04	1.1E-04	9.3E-06	1.9E-08	4.2E-08	4.6E-09	3.2E-11	1.6E-09	1.7E-07	1.5E-08	1.0E-10	9.8E-09	1.2E-07	6.9E-08	4.3E-07	8.0E-07	1.0E-06	7.6E-08	2.6E-08	2.8E-07
	R915	298862	6258997	4.7E-06	4.7E-06	4.2E-05	2.3E-06	4.7E-06	1.3E-04	5.6E-04	1.1E-04	9.3E-06	1.9E-08	4.2E-08	4.7E-09	3.3E-11	1.6E-09	1.7E-07	1.6E-08	1.0E-10	9.9E-09	1.2E-07	6.9E-08	4.3E-07	8.0E-07	1.0E-06	7.6E-08	2.6E-08	2.8E-07

Scenario 1 and Scenario 3 Weighted Average
Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																								
													Metal									Heavy Metal						
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3
In-stack Concentration (mg/Nm^3)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R916	298912	6258997	4.7E-06	4.7E-06	4.2E-05	2.3E-06	4.7E-06	1.3E-04	5.6E-04	1.1E-04	9.4E-06	1.9E-08	4.2E-08	4.7E-09	3.3E-11	1.6E-09	1.7E-07	1.6E-08	1.0E-10	9.9E-09	1.2E-07	6.9E-08	4.3E-07	8.1E-07	1.0E-06	7.6E-08	2.6E-08	2.8E-07
	R917	298962	6258997	4.7E-06	4.7E-06	4.2E-05	2.3E-06	4.7E-06	1.3E-04	5.6E-04	1.1E-04	9.4E-06	1.9E-08	4.2E-08	4.7E-09	3.3E-11	1.6E-09	1.7E-07	1.6E-08	1.0E-10	9.9E-09	1.2E-07	6.9E-08	4.3E-07	8.1E-07	1.0E-06	7.6E-08	2.6E-08	2.8E-07
	R918	299012	6258997	4.7E-06	4.7E-06	4.2E-05	2.3E-06	4.7E-06	1.3E-04	5.6E-04	1.1E-04	9.4E-06	1.9E-08	4.2E-08	4.7E-09	3.3E-11	1.6E-09	1.7E-07	1.6E-08	1.0E-10	1.0E-08	1.2E-07	6.9E-08	4.3E-07	8.1E-07	1.0E-06	7.7E-08	2.6E-08	2.8E-07
	R919	299062	6258997	4.7E-06	4.7E-06	4.2E-05	2.3E-06	4.7E-06	1.3E-04	5.6E-04	1.1E-04	9.3E-06	1.9E-08	4.2E-08	4.7E-09	3.3E-11	1.6E-09	1.7E-07	1.6E-08	1.0E-10	9.9E-09	1.2E-07	6.9E-08	4.3E-07	8.0E-07	1.0E-06	7.6E-08	2.6E-08	2.8E-07
	R920	299112	6258997	4.6E-06	4.6E-06	4.2E-05	2.3E-06	4.6E-06	1.2E-04	5.5E-04	1.1E-04	9.2E-06	1.8E-08	4.2E-08	4.6E-09	3.2E-11	1.6E-09	1.7E-07	1.5E-08	1.0E-10	9.8E-09	1.2E-07	6.8E-08	4.3E-07	8.0E-07	1.0E-06	7.5E-08	2.6E-08	2.8E-07
	R921	299162	6258997	4.6E-06	4.6E-06	4.1E-05	2.3E-06	4.6E-06	1.2E-04	5.5E-04	1.1E-04	9.1E-06	1.8E-08	4.1E-08	4.6E-09	3.2E-11	1.6E-09	1.7E-07	1.5E-08	1.0E-10	9.7E-09	1.1E-07	6.8E-08	4.2E-07	7.9E-07	1.0E-06	7.4E-08	2.6E-08	2.7E-07
	R922	299212	6258997	4.5E-06	4.5E-06	4.0E-05	2.2E-06	4.5E-06	1.2E-04	5.4E-04	1.0E-04	9.0E-06	1.8E-08	4.0E-08	4.5E-09	3.1E-11	1.5E-09	1.7E-07	1.5E-08	9.9E-11	9.5E-09	1.1E-07	6.6E-08	4.1E-07	7.7E-07	9.9E-07	7.3E-08	2.5E-08	2.7E-07
	R923	299262	6258997	4.4E-06	4.4E-06	3.9E-05	2.2E-06	4.4E-06	1.2E-04	5.2E-04	1.0E-04	8.7E-06	1.7E-08	3.9E-08	4.4E-09	3.1E-11	1.5E-09	1.6E-07	1.5E-08	9.6E-11	9.3E-09	1.1E-07	6.5E-08	4.0E-07	7.5E-07	9.6E-07	7.1E-08	2.4E-08	2.6E-07
	R924	299312	6258997	4.3E-06	4.3E-06	3.8E-05	2.1E-06	4.3E-06	1.1E-04	5.1E-04	9.8E-05	8.5E-06	1.7E-08	3.8E-08	4.3E-09	3.0E-11	1.4E-09	1.6E-07	1.4E-08	9.4E-11	9.0E-09	1.1E-07	6.3E-08	3.9E-07	7.3E-07	9.4E-07	6.9E-08	2.4E-08	2.6E-07
	R925	299362	6258997	4.2E-06	4.2E-06	3.7E-05	2.1E-06	4.2E-06	1.1E-04	5.0E-04	9.5E-05	8.3E-06	1.7E-08	3.7E-08	4.2E-09	2.9E-11	1.4E-09	1.5E-07	1.4E-08	9.1E-11	8.8E-09	1.0E-07	6.1E-08	3.8E-07	7.1E-07	9.1E-07	6.8E-08	2.3E-08	2.5E-07
	R926	299412	6258997	4.0E-06	4.0E-06	3.6E-05	2.0E-06	4.0E-06	1.1E-04	4.8E-04	9.2E-05	8.0E-06	1.6E-08	3.6E-08	4.0E-09	2.8E-11	1.4E-09	1.5E-07	1.3E-08	8.8E-11	8.5E-09	1.0E-07	5.9E-08	3.7E-07	6.9E-07	8.8E-07	6.5E-08	2.2E-08	2.4E-07
	R927	299462	6258997	3.9E-06	3.9E-06	3.5E-05	1.9E-06	3.9E-06	1.0E-04	4.6E-04	8.9E-05	7.7E-06	1.5E-08	3.5E-08	3.9E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.5E-11	8.2E-09	9.7E-08	5.7E-08	3.6E-07	6.7E-07	8.5E-07	6.3E-08	2.2E-08	2.3E-07
	R928	299512	6258997	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.5E-04	8.7E-05	7.5E-06	1.5E-08	3.4E-08	3.8E-09	2.6E-11	1.3E-09	1.4E-07	1.3E-08	8.3E-11	8.0E-09	9.4E-08	5.6E-08	3.5E-07	6.5E-07	8.3E-07	6.1E-08	2.1E-08	2.3E-07
	R929	299562	6258997	3.7E-06	3.7E-06	3.3E-05	1.8E-06	3.7E-06	1.0E-04	4.4E-04	8.5E-05	7.4E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.1E-11	7.8E-09	9.2E-08	5.5E-08	3.4E-07	6.3E-07	8.1E-07	6.0E-08	2.1E-08	2.2E-07
	R930	299612	6258997	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.6E-05	4.3E-04	8.2E-05	7.1E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.9E-11	7.6E-09	8.9E-08	5.3E-08	3.3E-07	6.1E-07	7.9E-07	5.8E-08	2.0E-08	2.1E-07
	R931	299662	6258997	3.5E-06	3.5E-06	3.1E-05	1.7E-06	3.5E-06	9.3E-05	4.1E-04	7.9E-05	6.9E-06	1.4E-08	3.1E-08	3.5E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.6E-11	7.3E-09	8.6E-08	5.1E-08	3.2E-07	5.9E-07	7.6E-07	5.6E-08	1.9E-08	2.1E-07
	R932	299712	6258997	3.4E-06	3.4E-06	3.0E-05	1.7E-06	3.4E-06	9.0E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.4E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.4E-11	7.1E-09	8.4E-08	5.0E-08	3.1E-07	5.8E-07	7.4E-07	5.5E-08	1.9E-08	2.0E-07
	R933	299762	6258997	3.3E-06	3.3E-06	2.9E-05	1.6E-06	3.3E-06	8.8E-05	3.9E-04	7.5E-05	6.5E-06	1.3E-08	2.9E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.2E-11	6.9E-09	8.1E-08	4.8E-08	3.0E-07	5.6E-07	7.2E-07	5.3E-08	1.8E-08	2.0E-07
	R934	299812	6258997	3.2E-06	3.2E-06	2.8E-05	1.6E-06	3.2E-06	8.5E-05	3.8E-04	7.3E-05	6.3E-06	1.3E-08	2.8E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.7E-09	7.9E-08	4.7E-08	2.9E-07	5.4E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R935	299862	6258997	3.1E-06	3.1E-06	2.8E-05	1.5E-06	3.1E-06	8.3E-05	3.7E-04	7.1E-05	6.1E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.0E-09	1.1E-07	1.0E-08	6.8E-11	6.5E-09	7.7E-08	4.6E-08	2.8E-07	5.3E-07	6.8E-07	5.0E-08	1.7E-08	1.8E-07
	R936	299912	6258997	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.1E-05	3.6E-04	6.9E-05	6.0E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.6E-11	6.3E-09	7.5E-08	4.4E-08	2.8E-07	5.1E-07	6.6E-07	4.9E-08	1.7E-08	1.8E-07
	R937	299962	6258997	2.9E-06	2.9E-06	2.6E-05	1.5E-06	2.9E-06	7.9E-05	3.5E-04	6.7E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.9E-10	1.1E-07	9.7E-09	6.4E-11	6.2E-09	7.3E-08	4.3E-08	2.7E-07	5.0E-07	6.4E-07	4.7E-08	1.6E-08	1.7E-07
	R938	300012	6258997	2.8E-06	2.8E-06	2.6E-05	1.4E-06	2.8E-06	7.7E-05	3.4E-04	6.5E-05	5.7E-06	1.1E-08	2.6E-08	2.8E-09	2.0E-11	9.6E-10	1.0E-07	9.4E-09	6.2E-11	6.0E-09	7.1E-08	4.2E-08	2.6E-07	4.9E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R939	300062	6258997	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.4E-05	3.3E-04	6.3E-05	5.5E-06	1.1E-08	2.5E-08	2.8E-09	1.9E-11	9.4E-10	1.0E-07	9.2E-09	6.1E-11	5.8E-09	6.9E-08	4.1E-08	2.5E-07	4.7E-07	6.1E-07	4.5E-08	1.5E-08	1.7E-07
	R940	300112	6258997	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.3E-05	3.2E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.1E-10	9.9E-08	8.9E-09	5.9E-11	5.7E-09	6.7E-08	4.0E-08	2.5E-07	4.6E-07	5.9E-07	4.4E-08	1.5E-08	1.6E-07
	R941	300162	6258997	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.4E-08	2.6E-09	1.8E-11	8.9E-10	9.7E-08	8.7E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.5E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R942	300212	6258997	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.7E-10	9.5E-08	8.5E-09	5.6E-11	5.4E-09	6.4E-08	3.8E-08	2.4E-07	4.4E-07	5.6E-07	4.2E-08	1.4E-08	1.5E-07
	R943	300262	6258997	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.7E-05	3.0E-04	5.7E-05	5.0E-06	1.0E-08	2.2E-08	2.5E-09	1.7E-11	8.5E-10	9.2E-08	8.3E-09	5.5E-11	5.3E-09	6.2E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R944	300312	6258997	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.8E-09	2.2E-08	2.4E-09	1.7E-11	8.3E-10	9.0E-08	8.1E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.2E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R945	300362	6258997	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.5E-05	4.8E-06	9.6E-09	2.2E-08	2.4E-09	1.7E-11	8.1E-10	8.8E-08	8.0E-09	5.3E-11	5.1E-09	6.0E-08	3.5E-08	2.2E-07	4.1E-07	5.3E-07	3.9E-08	1.3E-08	1.4E-07
	R946	300412	6258997	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.8E-09	5.1E-11	4.9E-09	5.8E-08	3.5E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R947	300462	6258997	2.3E-06	2.3E-06	2.1E-05	1.1E-06	2.3E-06	6.2E-05	2.7E-04	5.2E-05	4.6E-06	9.1E-09	2.1E-08	2.3E-09	1.6E-11	7.8E-10	8.4E-08	7.6E-09	5.0E-11	4.8E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R948	300512	6258997	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.4E-06	8.9E-09	2.0E-08	2.2E-09	1.6E-11	7.6E-10	8.2E-08	7.4E-09	4.9E-11	4.7E-09	5.6E-08	3.3E-08	2.0E-07	3.8E-07	4.9E-07	3.6E-08	1.2E-08	1.3E-07
	R949	300562	6258997	2.2E-06	2.2E-06	1.9E-05	1.1E-06	2.2E-06	5.8E-05	2.6E-04	5.0E-05	4.3E-06	8.7E-09	1.9E-08	2.2E-09	1.5E-11	7.4E-10	8.0E-08	7.2E-09	4.8E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.8E-07	3.5E-08	1.2E-08	1.3E-07
	R950	300612	6258997	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.5E-04	4.9E-05	4.2E-06	8.4E-09	1.9E-08	2.1E-09	1.5E-11	7.2E-10	7.8E-08	7.0E-09	4.6E-11	4.5E-09	5.3E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.3E-07
	R951	300662	6258997	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.7E-05	4.1E-06	8.2E-09	1.9E-08	2.1E-09	1.4E-11	7.0E-10	7.6E-08	6.9E-09	4.5E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.5E-07	4.5E-07	3.4E-08	1.2E-08	1.2E-07
	R952	300712	6258997	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.5E-05	2.4E-04	4.6E-05	4.0E-06	8.1E-09	1.8E-08	2.0E-09	1.4E-11	6.9E-10	7.5E-08	6.7E-09	4.4E-11	4.3E-09	5.0E-08	3.0E-08	1.9E-07	3.5E-07	4.4E-07	3.3E-08	1.1E-08	1.2E-07
	R953	300762	6258997	2.0E-06	2.0E-06	1.8E-05	9.9E-07	2.0E-06	5.3E-05	2.4E-04	4.5E-05	3.9E-06	7.9E-09	1.8E-08	2.0E-09	1.4E-11	6.7E-10	7.3E-08	6.6E-09	4.3E-11	4.2E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R954	300812	6258997	1.9E-06	1.9E-06	1.7E-05	9.6E-07	1.9E-06	5.2E-05	2.3E-04	4.4E-05	3.9E-06	7.7E-09	1.7E-08	1.9E-09	1.3E-11	6.6E-10	7.1E-08	6.4E-09	4.2E-11	4.1E-09	4.8E-08	2.9E-08	1.8E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.2E-07
	R955	298412	6259047	4.1E-06	4.1E-06	3.7E-05	2.0E-06	4.1E-06	1.1E-04	4.9E-04	9.4E-05	8.2E-06	1.6E-08	3.7E-08	4.1E-09	2.9E-11	1.4E-09	1.5E-07	1.4E-08	9.0E-11	8.7E-09	1.0E-07	6.1E-08	3.8E-07	7.0E-07	9.0E-07	6.7E-08	2.3E-08	2.5E-07
	R956	298462	6259047	4.1E-06	4.1E-06	3.7E-05	2.1E-06	4.1E-06	1.1E-04	5.0E-04	9.5E-05	8.3E-06	1.7E-08	3.7E-08	4.1E-09	2.9E-11	1.4E-09	1.5E-07	1.4E-08	9.1E-11	8.8E-09	1.0E-07	6.1E-08	3.8E-07	7.1E-07	9.1E-07	6.8E-08	2.3E-08	2.5E-07
	R957	298512	6259047	4.2E-06	4.2E-06	3.8E-05	2.1E-06	4.2E-06	1.1E-04	5.0E-04	9.7E-05	8.4E-06	1.7E-08	3.8E-08	4.2E-09	2.9E-11	1.4E-09	1.6E-07	1.4E-08	9.3E-11	8.9E-09	1.1E-07	6.2E-08	3.9E-07	7.2E-07	9.3E-07	6.9E-08	2.4E-08	2.5E-07
	R958	298562	6259047	4.3E-06	4.3E-06	3.8E-05	2.1E-06	4.3E-06	1.2E-04	5.1E-04	9.8E-05	8.5E-06	1.7E-08	3.8E-08	4.3E-09	3.0E-11	1.5E-09	1.6E-07	1.4E-08	9.4E-11	9.1E-09	1.1E-07	6.3E-08	3.9E-07	7.4E-07	9.4E-07	7.0E-08	2.4E-08	2.6E-07
	R959	298612	6259047	4.4E-06	4.4E-06	3.9E-05	2.2E-06	4.4E-06	1.2E-04	5.2E-04	1.0E-04	8.7E-06	1.7E-08	3.9E-08	4.4E-09	3.1E-11	1.5E-09	1.6E-07	1.5E-08	9.6E-11	9.3E-09	1.1E-07	6.5E-08	4.0E-07	7.5E-07	9.6E-07	7.1E-08	2.4E-08	2.6E-07
	R960	298662	6259047	4.4E-06	4.4E-06	4.0E-05	2.2E-06	4.4E-06	1.2E-04	5.3E-04	1.0E-04	8.8E-06	1.8E-08	4.0E-08	4.4E-09	3.1E-11	1.5E-09	1.6E-07	1.5E-08	9.7E-11	9.3E-09	1.1E-07	6.5E-08	4.0E-07	7.6E-07	9.7E-07	7.2E-08	2.5E-08	2.6E-07
	R961	298712	6259047	4.4E-06	4.4E-06	4.0E-05	2.2E-06	4.4E-06	1.2E-04	5.3E-04	1.0E-04	8.9E-06	1.8E-08	4.0E-08	4.4E-09	3.1E-11	1.5E-09	1.6E-07	1.5E-08	9.7E-11	9.4E-09	1.1E-07	6.6E-08	4.1E-07	7.6E-07	9.7E-07	7.2E-08	2.5E-08	2.7E-07
	R962	298762	6259047	4.5E-06	4.5E-06	4.0E-05	2.2E-06	4.5E-06	1.2E-04	5.3E-04	1.0E-04	8.9E-06	1.8E-08	4.0E-08	4.5E-09	3.1E-11	1.5E-09	1.6E-07	1.5E-08	9.8E-11	9.5E-09	1.1E-07	6.6E-08	4.1E-07	7.7E-07	9.8E-07	7.3E-08	2.5E-08	2.7E-07
	R963	298812	6259047	4.5E-06	4.5E-06	4.0E-05	2.2E-06	4.5E-06	1.2E-04	5.4E-04	1.0E-04	9.0E-06	1.8E-08	4.0E-08	4.5E-09	3.1E-11	1.5E-09	1.7E-07	1.5E-08	9.9E-11	9.5E-09	1.1E-07	6.6E-08	4.1E-07	7.7E-07	9.9E-07	7.3E-08	2.5E-08	2.7E-07
	R964	298862	6259047	4.5E-06	4.5E-06	4.1E-05	2.3E-06	4.5E-06	1.2E-04	5.4E-04	1.0E-04	9.1E-06	1.8E-08	4.1E-08	4.5E-09	3.2E-11	1.5E-09	1.7E-07	1.5E-08	1.0E-10	9.6E-09	1.1E-07	6.7E-08	4.2E-07	7.8E-07	1.0E-06	7.4E-08	2.5E-08	2.7E-07
	R965	298912	6259047	4.6E-06	4.6E-06	4.1E-05	2.3E-06	4.6E-06	1.2E-04	5.5E-04	1.0E-04	9.1E-06	1.8E-08	4.1E-08	4.6E-09	3.2E-11	1.5E-09	1.7E-07	1.5E-08	1.0E-10	9.6E-09	1.1E-07	6.7E-08	4.2E-07	7.8E-07	1.0E-06	7.4E-08	2.5E-08	2.7E-07
	R966	298962	6259047	4.6E-06	4.6E-06	4.1E-05	2.3E-06	4.6E-06	1.2E-04	5.5E-04	1.0E-04	9.1E-06	1.8E-08	4.1E-08	4.6E-09	3.2E-11	1.5E-09	1.7E-07	1.5E-08	1.0E-10	9.6E-09	1.1E-07	6.7E-08	4.2E-07	7.8E-07	1.0E-06	7.4E-08	2.5E-08	2.7E-07
	R967	299012	6259047	4.6E-06	4.6E-06	4.1E-05	2.3E-06	4.6E-06	1.2E-04	5.5E-04	1.1E-04	9.2E-06	1.8E-08	4.1E-08	4.6E-09	3.2E-11	1.6E-09	1.7E-07	1.5E-08	1.0E-10	9.7E-09	1.1E-07	6.8E-08	4.2E-07	7.9E-07	1.0E-06	7.5E-08	2.6E-08	2.8E-07
	R968	299062	6259047	4.6E-06	4.6E-06	4.1E-05	2.3E-06	4.6E-06	1.2E-04	5.5E-04	1.1E-04	9.1E-06	1.8E-08	4.1E-08	4.6E-09	3.2E-11	1.6E-09	1.7E-07	1.5E-08	1.0E-10	9.7E-09	1.1E-07	6.8E-08	4.2E-07	7.9E-07	1.0E-06	7.4E-08	2.6E-08	2.7E-07
	R969	299112	6259047	4.5E-06	4.5E-06	4.1E-05	2.3E-06	4.5E-06	1.2E-04	5.4E-04	1.0E-04	9.1E-06	1.8E-08	4.1E-08	4.5E-09	3.2E-11	1.5E-09	1.7E-07	1.5E-08	1.0E-10	9.6E-09	1.1E-07	6.7E-08	4.2E-07	7.8E-07	1.0E-06	7.4E-08	2.5E-08	2.7E-07
	R970	299162	6259047	4.5E-06	4.5E-06	4.0E-05	2.2E-06	4.5E-06	1.2E-04	5.4E-04	1.0E-04	9.0E-06	1.8E-08	4.0E-08	4.5E-09	3.1E-11	1.5E-09	1.7E-07	1.5E-08	9.8E-11	9.5E-09	1.1E-07	6.6E-08	4.1E-07	7.7E-07	9.8E-07	7.3E-08	2.5E-08	2.7E-07
	R971	299212	6259047	4.4E-06	4.4E-06	4.0E-05	2.2E-06	4.4E-06	1.2E-04	5.3E-04	1.0E-04	8.8E-06	1.8E-08	4.0E-08	4.4E-09	3.1E-11	1.5E-09	1.6E-07	1.5E-08	9.7E-11	9.3E-09	1.1E-07	6.5E-08	4.0E-07	7.6E-07	9.7E-07	7.2E-08	2.5E-08	2.6E-07
	R972	299262	6259047	4.3E-06	4.3E-06	3.9E-05	2.1E-06	4.3E-06	1.2E-04	5.2E-04	9.9E-05	8.6E-06	1.7E-08	3.9E-08	4.3E-09	3.0E-11	1.5E-09	1.6E-07	1.4E-08	9.5E-11	9.1E-09	1.1E-07	6.4E-08	4.0E-07	7.4E-07	9.5E-07	7.0E-08	2.4E-08	2.6E-07
	R973	299312	6259047	4.2E-06	4.2E-06	3.8E-05	2.1E-06	4.2E-06	1.1E-04	5.0E-04	9.7E-05	8.4E-06	1.7E-08	3.8E-08	4.2E-09	2.9E-11	1.4E-09	1.6E-07	1.4E-08	9.2E-11	8.9E-09	1.1E-07	6.2E-08	3.9E-07	7.2E-07	9.2E-07	6.8E-08	2.4E-08	2.5E-07
	R974	299362	6259047	4.1E-06	4.1E-06	3.7E-05	2.1E-06	4.1E-06	1.1E-04	4.9E-04	9.4E-05	8.2E-06	1.6E-08	3.7E-08	4.1E-09	2.9E-11	1.4E-09	1.5E-07	1.4E-08	9.0E-11	8.7E-09	1.0E-07	6.1E-08	3.8E-07	7.1E-07	9.0E-07	6.7E-08	2.3E-08	2.5E-07
	R975	299412	6259047	4.0E-06	4.0E-06	3.6E-05	2.0E-06	4.0E-06	1.1E-04	4.8E-04	9.2E-05	8.0E-06	1.6E-08	3.6E-08	4.0E-09	2.8E-11	1.4E-09	1.5E-07	1.3E-08	8.8E-11	8.5E-09	1.0E-07	5.9E-08	3.7E-07	6.9E-07	8.8E-07	6.5E-08	2.2E-08	2.4E-07
	R976	299462	6259047	3.9E-06	3.9E-06	3.5E-05	1.9E-06	3.9E-06	1.0E-04	4.6E-04	8.9E-05	7.7E-06	1.5E-08	3.5E-08	3.9E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.5E-11	8.2E-09	9.7E-08	5.7E-08	3.6E-07	6.6E-07	8.5E-07	6.3E-08	2.2E-08	2.3E-07

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	PM$_{10}$	PM$_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				Annual GLCs																									
													Metal									Heavy Metal							
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R977	299512	6259047	3.7E-06	3.7E-06	3.4E-05	1.9E-06	3.7E-06	1.0E-04	4.5E-04	8.6E-05	7.5E-06	1.5E-08	3.4E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.2E-11	7.9E-09	9.4E-08	5.5E-08	3.4E-07	6.4E-07	8.2E-07	6.1E-08	2.1E-08	2.2E-07
	R978	299562	6259047	3.7E-06	3.7E-06	3.3E-05	1.8E-06	3.7E-06	9.9E-05	4.4E-04	8.4E-05	7.3E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.2E-09	1.4E-07	1.2E-08	8.0E-11	7.7E-09	9.1E-08	5.4E-08	3.4E-07	6.3E-07	8.0E-07	6.0E-08	2.0E-08	2.2E-07
	R979	299612	6259047	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.6E-05	4.3E-04	8.2E-05	7.1E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.8E-11	7.5E-09	8.9E-08	5.3E-08	3.3E-07	6.1E-07	7.8E-07	5.8E-08	2.0E-08	2.1E-07
	R980	299662	6259047	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.3E-05	4.1E-04	7.9E-05	6.9E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.6E-11	7.3E-09	8.6E-08	5.1E-08	3.2E-07	5.9E-07	7.6E-07	5.6E-08	1.9E-08	2.1E-07
	R981	299712	6259047	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	9.0E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.1E-09	8.3E-08	4.9E-08	3.1E-07	5.7E-07	7.3E-07	5.4E-08	1.9E-08	2.0E-07
	R982	299762	6259047	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.7E-05	3.9E-04	7.4E-05	6.5E-06	1.3E-08	2.9E-08	3.2E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.9E-09	8.1E-08	4.8E-08	3.0E-07	5.6E-07	7.1E-07	5.3E-08	1.8E-08	1.9E-07
	R983	299812	6259047	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.5E-05	3.8E-04	7.2E-05	6.3E-06	1.3E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.2E-07	1.0E-08	6.9E-11	6.7E-09	7.9E-08	4.7E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.8E-08	1.9E-07
	R984	299862	6259047	3.1E-06	3.1E-06	2.8E-05	1.5E-06	3.1E-06	8.3E-05	3.7E-04	7.0E-05	6.1E-06	1.2E-08	2.8E-08	3.1E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.5E-09	7.7E-08	4.5E-08	2.8E-07	5.3E-07	6.7E-07	5.0E-08	1.7E-08	1.8E-07
	R985	299912	6259047	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.0E-05	3.6E-04	6.9E-05	6.0E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	9.9E-09	6.6E-11	6.3E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.6E-07	4.9E-08	1.7E-08	1.8E-07
	R986	299962	6259047	2.9E-06	2.9E-06	2.6E-05	1.5E-06	2.9E-06	7.8E-05	3.5E-04	6.7E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.9E-10	1.1E-07	9.7E-09	6.4E-11	6.2E-09	7.3E-08	4.3E-08	2.7E-07	5.0E-07	6.4E-07	4.7E-08	1.6E-08	1.7E-07
	R987	300012	6259047	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.6E-05	3.4E-04	6.5E-05	5.7E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.6E-10	1.0E-07	9.4E-09	6.2E-11	6.0E-09	7.1E-08	4.2E-08	2.6E-07	4.9E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R988	300062	6259047	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.4E-05	3.3E-04	6.3E-05	5.5E-06	1.1E-08	2.5E-08	2.8E-09	1.9E-11	9.4E-10	1.0E-07	9.2E-09	6.1E-11	5.8E-09	6.9E-08	4.1E-08	2.5E-07	4.7E-07	6.1E-07	4.5E-08	1.5E-08	1.7E-07
	R989	300112	6259047	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.2E-05	3.2E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.1E-10	9.9E-08	8.9E-09	5.9E-11	5.7E-09	6.7E-08	4.0E-08	2.5E-07	4.6E-07	5.9E-07	4.4E-08	1.5E-08	1.6E-07
	R990	300162	6259047	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.4E-08	2.6E-09	1.8E-11	8.9E-10	9.7E-08	8.7E-09	5.8E-11	5.5E-09	6.5E-08	3.9E-08	2.4E-07	4.5E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R991	300212	6259047	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.7E-10	9.4E-08	8.5E-09	5.6E-11	5.4E-09	6.4E-08	3.8E-08	2.3E-07	4.4E-07	5.6E-07	4.2E-08	1.4E-08	1.5E-07
	R992	300262	6259047	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.7E-05	3.0E-04	5.7E-05	5.0E-06	1.0E-08	2.2E-08	2.5E-09	1.7E-11	8.5E-10	9.2E-08	8.3E-09	5.5E-11	5.3E-09	6.2E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R993	300312	6259047	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.7E-09	2.2E-08	2.4E-09	1.7E-11	8.3E-10	9.0E-08	8.1E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.2E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R994	300362	6259047	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.9E-04	5.5E-05	4.8E-06	9.5E-09	2.1E-08	2.4E-09	1.7E-11	8.1E-10	8.8E-08	7.9E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.9E-08	1.3E-08	1.4E-07
	R995	300412	6259047	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.8E-09	5.1E-11	4.9E-09	5.8E-08	3.5E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R996	300462	6259047	2.3E-06	2.3E-06	2.1E-05	1.1E-06	2.3E-06	6.2E-05	2.7E-04	5.2E-05	4.6E-06	9.1E-09	2.1E-08	2.3E-09	1.6E-11	7.7E-10	8.4E-08	7.6E-09	5.0E-11	4.8E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R997	300512	6259047	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.5E-06	8.9E-09	2.0E-08	2.2E-09	1.6E-11	7.6E-10	8.2E-08	7.4E-09	4.9E-11	4.7E-09	5.6E-08	3.3E-08	2.0E-07	3.8E-07	4.9E-07	3.6E-08	1.2E-08	1.3E-07
	R998	300562	6259047	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	5.9E-05	2.6E-04	5.0E-05	4.3E-06	8.7E-09	2.0E-08	2.2E-09	1.5E-11	7.4E-10	8.0E-08	7.2E-09	4.8E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.8E-07	3.5E-08	1.2E-08	1.3E-07
	R999	300612	6259047	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.5E-04	4.9E-05	4.2E-06	8.4E-09	1.9E-08	2.1E-09	1.5E-11	7.2E-10	7.8E-08	7.0E-09	4.6E-11	4.5E-09	5.3E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.3E-07
	R1000	300662	6259047	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.7E-05	4.1E-06	8.2E-09	1.9E-08	2.1E-09	1.4E-11	7.0E-10	7.6E-08	6.9E-09	4.5E-11	4.4E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.4E-08	1.2E-08	1.2E-07
	R1001	300712	6259047	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	8.1E-09	1.8E-08	2.0E-09	1.4E-11	6.9E-10	7.5E-08	6.7E-09	4.4E-11	4.3E-09	5.0E-08	3.0E-08	1.9E-07	3.5E-07	4.4E-07	3.3E-08	1.1E-08	1.2E-07
	R1002	300762	6259047	2.0E-06	2.0E-06	1.8E-05	9.8E-07	2.0E-06	5.3E-05	2.4E-04	4.5E-05	3.9E-06	7.9E-09	1.8E-08	2.0E-09	1.4E-11	6.7E-10	7.3E-08	6.6E-09	4.3E-11	4.2E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R1003	300812	6259047	1.9E-06	1.9E-06	1.7E-05	9.6E-07	1.9E-06	5.2E-05	2.3E-04	4.4E-05	3.9E-06	7.7E-09	1.7E-08	1.9E-09	1.3E-11	6.6E-10	7.1E-08	6.4E-09	4.2E-11	4.1E-09	4.8E-08	2.9E-08	1.8E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.2E-07
	R1004	298412	6259097	4.0E-06	4.0E-06	3.6E-05	2.0E-06	4.0E-06	1.1E-04	4.8E-04	9.2E-05	8.0E-06	1.6E-08	3.6E-08	4.0E-09	2.8E-11	1.4E-09	1.5E-07	1.3E-08	8.8E-11	8.5E-09	1.0E-07	5.9E-08	3.7E-07	6.9E-07	8.8E-07	6.5E-08	2.2E-08	2.4E-07
	R1005	298462	6259097	4.0E-06	4.0E-06	3.6E-05	2.0E-06	4.0E-06	1.1E-04	4.9E-04	9.3E-05	8.1E-06	1.6E-08	3.6E-08	4.0E-09	2.8E-11	1.4E-09	1.5E-07	1.3E-08	8.9E-11	8.6E-09	1.0E-07	6.0E-08	3.7E-07	7.0E-07	8.9E-07	6.6E-08	2.3E-08	2.4E-07
	R1006	298512	6259097	4.1E-06	4.1E-06	3.7E-05	2.0E-06	4.1E-06	1.1E-04	4.9E-04	9.4E-05	8.2E-06	1.6E-08	3.7E-08	4.1E-09	2.9E-11	1.4E-09	1.5E-07	1.4E-08	9.0E-11	8.7E-09	1.0E-07	6.1E-08	3.8E-07	7.0E-07	9.0E-07	6.7E-08	2.3E-08	2.5E-07
	R1007	298562	6259097	4.1E-06	4.1E-06	3.7E-05	2.1E-06	4.1E-06	1.1E-04	5.0E-04	9.5E-05	8.3E-06	1.7E-08	3.7E-08	4.1E-09	2.9E-11	1.4E-09	1.5E-07	1.4E-08	9.1E-11	8.8E-09	1.0E-07	6.1E-08	3.8E-07	7.1E-07	9.1E-07	6.8E-08	2.3E-08	2.5E-07
	R1008	298612	6259097	4.2E-06	4.2E-06	3.8E-05	2.1E-06	4.2E-06	1.1E-04	5.1E-04	9.7E-05	8.5E-06	1.7E-08	3.8E-08	4.2E-09	3.0E-11	1.4E-09	1.6E-07	1.4E-08	9.3E-11	9.0E-09	1.1E-07	6.3E-08	3.9E-07	7.3E-07	9.3E-07	6.9E-08	2.4E-08	2.5E-07
	R1009	298662	6259097	4.3E-06	4.3E-06	3.9E-05	2.1E-06	4.3E-06	1.2E-04	5.1E-04	9.9E-05	8.6E-06	1.7E-08	3.9E-08	4.3E-09	3.0E-11	1.5E-09	1.6E-07	1.4E-08	9.4E-11	9.1E-09	1.1E-07	6.3E-08	3.9E-07	7.4E-07	9.4E-07	7.0E-08	2.4E-08	2.6E-07
	R1010	298712	6259097	4.3E-06	4.3E-06	3.9E-05	2.2E-06	4.3E-06	1.2E-04	5.2E-04	9.9E-05	8.6E-06	1.7E-08	3.9E-08	4.3E-09	3.0E-11	1.5E-09	1.6E-07	1.4E-08	9.5E-11	9.2E-09	1.1E-07	6.4E-08	4.0E-07	7.4E-07	9.5E-07	7.0E-08	2.4E-08	2.6E-07
	R1011	298762	6259097	4.3E-06	4.3E-06	3.9E-05	2.2E-06	4.3E-06	1.2E-04	5.2E-04	1.0E-04	8.7E-06	1.7E-08	3.9E-08	4.3E-09	3.0E-11	1.5E-09	1.6E-07	1.4E-08	9.6E-11	9.2E-09	1.1E-07	6.4E-08	4.0E-07	7.5E-07	9.6E-07	7.1E-08	2.4E-08	2.6E-07
	R1012	298812	6259097	4.4E-06	4.4E-06	3.9E-05	2.2E-06	4.4E-06	1.2E-04	5.3E-04	1.0E-04	8.8E-06	1.8E-08	3.9E-08	4.4E-09	3.1E-11	1.5E-09	1.6E-07	1.5E-08	9.6E-11	9.3E-09	1.1E-07	6.5E-08	4.0E-07	7.5E-07	9.6E-07	7.1E-08	2.5E-08	2.6E-07
	R1013	298862	6259097	4.4E-06	4.4E-06	4.0E-05	2.2E-06	4.4E-06	1.2E-04	5.3E-04	1.0E-04	8.9E-06	1.8E-08	4.0E-08	4.4E-09	3.1E-11	1.5E-09	1.6E-07	1.5E-08	9.7E-11	9.4E-09	1.1E-07	6.6E-08	4.1E-07	7.6E-07	9.7E-07	7.2E-08	2.5E-08	2.7E-07
	R1014	298912	6259097	4.5E-06	4.5E-06	4.0E-05	2.2E-06	4.5E-06	1.2E-04	5.3E-04	1.0E-04	8.9E-06	1.8E-08	4.0E-08	4.5E-09	3.1E-11	1.5E-09	1.6E-07	1.5E-08	9.8E-11	9.4E-09	1.1E-07	6.6E-08	4.1E-07	7.7E-07	9.8E-07	7.3E-08	2.5E-08	2.7E-07
	R1015	298962	6259097	4.5E-06	4.5E-06	4.0E-05	2.2E-06	4.5E-06	1.2E-04	5.4E-04	1.0E-04	8.9E-06	1.8E-08	4.0E-08	4.5E-09	3.1E-11	1.5E-09	1.7E-07	1.5E-08	9.8E-11	9.5E-09	1.1E-07	6.6E-08	4.1E-07	7.7E-07	9.8E-07	7.3E-08	2.5E-08	2.7E-07
	R1016	299012	6259097	4.5E-06	4.5E-06	4.0E-05	2.2E-06	4.5E-06	1.2E-04	5.4E-04	1.0E-04	9.0E-06	1.8E-08	4.0E-08	4.5E-09	3.1E-11	1.5E-09	1.7E-07	1.5E-08	9.9E-11	9.5E-09	1.1E-07	6.6E-08	4.1E-07	7.7E-07	9.9E-07	7.3E-08	2.5E-08	2.7E-07
	R1017	299062	6259097	4.5E-06	4.5E-06	4.0E-05	2.2E-06	4.5E-06	1.2E-04	5.4E-04	1.0E-04	8.9E-06	1.8E-08	4.0E-08	4.5E-09	3.1E-11	1.5E-09	1.7E-07	1.5E-08	9.8E-11	9.5E-09	1.1E-07	6.6E-08	4.1E-07	7.7E-07	9.8E-07	7.3E-08	2.5E-08	2.7E-07
	R1018	299112	6259097	4.4E-06	4.4E-06	4.0E-05	2.2E-06	4.4E-06	1.2E-04	5.3E-04	1.0E-04	8.9E-06	1.8E-08	4.0E-08	4.4E-09	3.1E-11	1.5E-09	1.6E-07	1.5E-08	9.8E-11	9.4E-09	1.1E-07	6.6E-08	4.1E-07	7.6E-07	9.8E-07	7.2E-08	2.5E-08	2.7E-07
	R1019	299162	6259097	4.4E-06	4.4E-06	4.0E-05	2.2E-06	4.4E-06	1.2E-04	5.3E-04	1.0E-04	8.8E-06	1.8E-08	4.0E-08	4.4E-09	3.1E-11	1.5E-09	1.6E-07	1.5E-08	9.7E-11	9.3E-09	1.1E-07	6.5E-08	4.0E-07	7.6E-07	9.7E-07	7.2E-08	2.5E-08	2.6E-07
	R1020	299212	6259097	4.3E-06	4.3E-06	3.9E-05	2.2E-06	4.3E-06	1.2E-04	5.2E-04	9.9E-05	8.6E-06	1.7E-08	3.9E-08	4.3E-09	3.0E-11	1.5E-09	1.6E-07	1.4E-08	9.5E-11	9.2E-09	1.1E-07	6.4E-08	4.0E-07	7.4E-07	9.5E-07	7.0E-08	2.4E-08	2.6E-07
	R1021	299262	6259097	4.2E-06	4.2E-06	3.8E-05	2.1E-06	4.2E-06	1.1E-04	5.1E-04	9.7E-05	8.5E-06	1.7E-08	3.8E-08	4.2E-09	3.0E-11	1.4E-09	1.6E-07	1.4E-08	9.3E-11	9.0E-09	1.1E-07	6.3E-08	3.9E-07	7.3E-07	9.3E-07	6.9E-08	2.4E-08	2.5E-07
	R1022	299312	6259097	4.1E-06	4.1E-06	3.7E-05	2.1E-06	4.1E-06	1.1E-04	4.9E-04	9.5E-05	8.2E-06	1.6E-08	3.7E-08	4.1E-09	2.9E-11	1.4E-09	1.5E-07	1.4E-08	9.0E-11	8.7E-09	1.0E-07	6.1E-08	3.8E-07	7.1E-07	9.0E-07	6.7E-08	2.3E-08	2.5E-07
	R1023	299362	6259097	4.0E-06	4.0E-06	3.6E-05	2.0E-06	4.0E-06	1.1E-04	4.8E-04	9.3E-05	8.1E-06	1.6E-08	3.6E-08	4.0E-09	2.8E-11	1.4E-09	1.5E-07	1.3E-08	8.9E-11	8.5E-09	1.0E-07	6.0E-08	3.7E-07	6.9E-07	8.9E-07	6.6E-08	2.3E-08	2.4E-07
	R1024	299412	6259097	3.9E-06	3.9E-06	3.5E-05	2.0E-06	3.9E-06	1.1E-04	4.7E-04	9.0E-05	7.9E-06	1.6E-08	3.5E-08	3.9E-09	2.8E-11	1.3E-09	1.5E-07	1.3E-08	8.6E-11	8.3E-09	9.8E-08	5.8E-08	3.6E-07	6.8E-07	8.6E-07	6.4E-08	2.2E-08	2.4E-07
	R1025	299462	6259097	3.8E-06	3.8E-06	3.5E-05	1.9E-06	3.8E-06	1.0E-04	4.6E-04	8.8E-05	7.7E-06	1.5E-08	3.5E-08	3.8E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.4E-11	8.1E-09	9.6E-08	5.7E-08	3.5E-07	6.6E-07	8.4E-07	6.2E-08	2.1E-08	2.3E-07
	R1026	299512	6259097	3.7E-06	3.7E-06	3.3E-05	1.9E-06	3.7E-06	1.0E-04	4.5E-04	8.6E-05	7.4E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.2E-11	7.9E-09	9.3E-08	5.5E-08	3.4E-07	6.4E-07	8.2E-07	6.1E-08	2.1E-08	2.2E-07
	R1027	299562	6259097	3.6E-06	3.6E-06	3.3E-05	1.8E-06	3.6E-06	9.8E-05	4.4E-04	8.4E-05	7.3E-06	1.5E-08	3.3E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	8.0E-11	7.7E-09	9.1E-08	5.4E-08	3.3E-07	6.2E-07	8.0E-07	5.9E-08	2.0E-08	2.2E-07
	R1028	299612	6259097	3.5E-06	3.5E-06	3.2E-05	1.8E-06	3.5E-06	9.5E-05	4.2E-04	8.1E-05	7.1E-06	1.4E-08	3.2E-08	3.5E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.8E-11	7.5E-09	8.8E-08	5.2E-08	3.3E-07	6.1E-07	7.8E-07	5.8E-08	2.0E-08	2.1E-07
	R1029	299662	6259097	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.2E-05	4.1E-04	7.9E-05	6.8E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.5E-11	7.3E-09	8.6E-08	5.1E-08	3.2E-07	5.9E-07	7.5E-07	5.6E-08	1.9E-08	2.1E-07
	R1030	299712	6259097	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	9.0E-05	4.0E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.0E-09	8.3E-08	4.9E-08	3.1E-07	5.7E-07	7.3E-07	5.4E-08	1.9E-08	2.0E-07
	R1031	299762	6259097	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.7E-05	3.9E-04	7.4E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.8E-09	8.0E-08	4.8E-08	3.0E-07	5.5E-07	7.1E-07	5.2E-08	1.8E-08	1.9E-07
	R1032	299812	6259097	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.4E-05	3.8E-04	7.2E-05	6.3E-06	1.3E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.2E-07	1.0E-08	6.9E-11	6.6E-09	7.8E-08	4.6E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.8E-08	1.9E-07
	R1033	299862	6259097	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.2E-05	3.7E-04	7.0E-05	6.1E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.5E-09	7.6E-08	4.5E-08	2.8E-07	5.2E-07	6.7E-07	5.0E-08	1.7E-08	1.8E-07
	R1034	299912	6259097	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.0E-05	3.6E-04	6.8E-05	5.9E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	9.9E-09	6.5E-11	6.3E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.7E-08	1.8E-07
	R1035	299962	6259097	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.8E-05	3.5E-04	6.7E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.8E-10	1.1E-07	9.6E-09	6.4E-11	6.1E-09	7.2E-08	4.3E-08	2.7E-07	5.0E-07	6.4E-07	4.7E-08	1.6E-08	1.7E-07
	R1036	300012	6259097	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.6E-05	3.4E-04	6.5E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.6E-10	1.0E-07	9.4E-09	6.2E-11	6.0E-09	7.1E-08	4.2E-08	2.6E-07	4.9E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R1037	300062	6259097	2.7E-06	2.7E-06	2.5E-05	1.4E-06	2.7E-06	7.4E-05	3.3E-04	6.3E-05	5.5E-06	1.1E-08	2.5E-08	2.7E-09	1.9E-11	9.3E-10	1.0E-07	9.2E-09	6.0E-11	5.8E-09	6.9E-08	4.1E-08	2.5E-07	4.7E-07	6.0E-07	4.5E-08	1.5E-08	1.6E-07

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs									Metal										Heavy Metal							
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R1038	300112	6259097	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.2E-05	3.2E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.1E-10	9.9E-08	8.9E-09	5.9E-11	5.7E-09	6.7E-08	4.0E-08	2.5E-07	4.6E-07	5.9E-07	4.4E-08	1.5E-08	1.6E-07
	R1039	300162	6259097	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.4E-08	2.6E-09	1.8E-11	8.9E-10	9.7E-08	8.7E-09	5.7E-11	5.5E-09	6.5E-08	3.9E-08	2.4E-07	4.5E-07	5.7E-07	4.3E-08	1.5E-08	1.6E-07
	R1040	300212	6259097	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.7E-10	9.4E-08	8.5E-09	5.6E-11	5.4E-09	6.4E-08	3.8E-08	2.3E-07	4.4E-07	5.6E-07	4.2E-08	1.4E-08	1.5E-07
	R1041	300262	6259097	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.7E-05	3.0E-04	5.7E-05	5.0E-06	1.0E-08	2.2E-08	2.5E-09	1.7E-11	8.5E-10	9.2E-08	8.3E-09	5.5E-11	5.3E-09	6.2E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R1042	300312	6259097	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.7E-09	2.2E-08	2.4E-09	1.7E-11	8.3E-10	9.0E-08	8.1E-09	5.3E-11	5.2E-09	6.1E-08	3.6E-08	2.2E-07	4.2E-07	5.3E-07	4.0E-08	1.4E-08	1.5E-07
	R1043	300362	6259097	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.8E-04	5.5E-05	4.7E-06	9.5E-09	2.1E-08	2.4E-09	1.7E-11	8.1E-10	8.8E-08	7.9E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.9E-08	1.3E-08	1.4E-07
	R1044	300412	6259097	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.8E-09	5.1E-11	4.9E-09	5.8E-08	3.5E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R1045	300462	6259097	2.3E-06	2.3E-06	2.0E-05	1.1E-06	2.3E-06	6.1E-05	2.7E-04	5.2E-05	4.5E-06	9.1E-09	2.0E-08	2.3E-09	1.6E-11	7.7E-10	8.4E-08	7.5E-09	5.0E-11	4.8E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R1046	300512	6259097	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.4E-06	8.9E-09	2.0E-08	2.2E-09	1.5E-11	7.5E-10	8.2E-08	7.4E-09	4.9E-11	4.7E-09	5.5E-08	3.3E-08	2.0E-07	3.8E-07	4.9E-07	3.6E-08	1.2E-08	1.3E-07
	R1047	300562	6259097	2.2E-06	2.2E-06	1.9E-05	1.1E-06	2.2E-06	5.8E-05	2.6E-04	5.0E-05	4.3E-06	8.7E-09	1.9E-08	2.2E-09	1.5E-11	7.4E-10	8.0E-08	7.2E-09	4.8E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.8E-07	3.5E-08	1.2E-08	1.3E-07
	R1048	300612	6259097	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.5E-04	4.9E-05	4.2E-06	8.4E-09	1.9E-08	2.1E-09	1.5E-11	7.2E-10	7.8E-08	7.0E-09	4.6E-11	4.5E-09	5.3E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.3E-07
	R1049	300662	6259097	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.7E-05	4.1E-06	8.2E-09	1.9E-08	2.1E-09	1.4E-11	7.0E-10	7.6E-08	6.9E-09	4.5E-11	4.4E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.4E-08	1.2E-08	1.2E-07
	R1050	300712	6259097	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	8.1E-09	1.8E-08	2.0E-09	1.4E-11	6.8E-10	7.4E-08	6.7E-09	4.4E-11	4.3E-09	5.0E-08	3.0E-08	1.9E-07	3.5E-07	4.4E-07	3.3E-08	1.1E-08	1.2E-07
	R1051	300762	6259097	2.0E-06	2.0E-06	1.8E-05	9.8E-07	2.0E-06	5.3E-05	2.4E-04	4.5E-05	3.9E-06	7.9E-09	1.8E-08	2.0E-09	1.4E-11	6.7E-10	7.3E-08	6.6E-09	4.3E-11	4.2E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R1052	300812	6259097	1.9E-06	1.9E-06	1.7E-05	9.6E-07	1.9E-06	5.2E-05	2.3E-04	4.4E-05	3.9E-06	7.7E-09	1.7E-08	1.9E-09	1.4E-11	6.6E-10	7.1E-08	6.4E-09	4.2E-11	4.1E-09	4.8E-08	2.9E-08	1.8E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.2E-07
	R1053	298412	6259147	3.9E-06	3.9E-06	3.5E-05	1.9E-06	3.9E-06	1.1E-04	4.7E-04	8.9E-05	7.8E-06	1.6E-08	3.5E-08	3.9E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.6E-11	8.2E-09	9.7E-08	5.8E-08	3.6E-07	6.7E-07	8.6E-07	6.3E-08	2.2E-08	2.3E-07
	R1054	298462	6259147	3.9E-06	3.9E-06	3.6E-05	2.0E-06	3.9E-06	1.1E-04	4.7E-04	9.1E-05	7.9E-06	1.6E-08	3.6E-08	3.9E-09	2.8E-11	1.3E-09	1.5E-07	1.3E-08	8.7E-11	8.4E-09	9.9E-08	5.8E-08	3.6E-07	6.8E-07	8.7E-07	6.4E-08	2.2E-08	2.4E-07
	R1055	298512	6259147	4.0E-06	4.0E-06	3.6E-05	2.0E-06	4.0E-06	1.1E-04	4.8E-04	9.2E-05	8.0E-06	1.6E-08	3.6E-08	4.0E-09	2.8E-11	1.4E-09	1.5E-07	1.3E-08	8.8E-11	8.5E-09	1.0E-07	5.9E-08	3.7E-07	6.9E-07	8.8E-07	6.5E-08	2.2E-08	2.4E-07
	R1056	298562	6259147	4.0E-06	4.0E-06	3.6E-05	2.0E-06	4.0E-06	1.1E-04	4.9E-04	9.3E-05	8.1E-06	1.6E-08	3.6E-08	4.0E-09	2.8E-11	1.4E-09	1.5E-07	1.3E-08	8.9E-11	8.6E-09	1.0E-07	6.0E-08	3.7E-07	7.0E-07	8.9E-07	6.6E-08	2.3E-08	2.4E-07
	R1057	298612	6259147	4.1E-06	4.1E-06	3.7E-05	2.1E-06	4.1E-06	1.1E-04	4.9E-04	9.5E-05	8.2E-06	1.6E-08	3.7E-08	4.1E-09	2.9E-11	1.4E-09	1.5E-07	1.4E-08	9.0E-11	8.7E-09	1.0E-07	6.1E-08	3.8E-07	7.1E-07	9.0E-07	6.7E-08	2.3E-08	2.5E-07
	R1058	298662	6259147	4.2E-06	4.2E-06	3.8E-05	2.1E-06	4.2E-06	1.1E-04	5.0E-04	9.6E-05	8.3E-06	1.7E-08	3.8E-08	4.2E-09	2.9E-11	1.4E-09	1.5E-07	1.4E-08	9.2E-11	8.8E-09	1.0E-07	6.2E-08	3.8E-07	7.2E-07	9.2E-07	6.8E-08	2.3E-08	2.5E-07
	R1059	298712	6259147	4.2E-06	4.2E-06	3.8E-05	2.1E-06	4.2E-06	1.1E-04	5.0E-04	9.7E-05	8.4E-06	1.7E-08	3.8E-08	4.2E-09	2.9E-11	1.4E-09	1.6E-07	1.4E-08	9.3E-11	8.9E-09	1.1E-07	6.2E-08	3.9E-07	7.2E-07	9.3E-07	6.9E-08	2.4E-08	2.5E-07
	R1060	298762	6259147	4.3E-06	4.3E-06	3.8E-05	2.1E-06	4.3E-06	1.1E-04	5.1E-04	9.8E-05	8.5E-06	1.7E-08	3.8E-08	4.3E-09	3.0E-11	1.4E-09	1.6E-07	1.4E-08	9.4E-11	9.0E-09	1.1E-07	6.3E-08	3.9E-07	7.3E-07	9.4E-07	6.9E-08	2.4E-08	2.6E-07
	R1061	298812	6259147	4.3E-06	4.3E-06	3.9E-05	2.1E-06	4.3E-06	1.2E-04	5.1E-04	9.9E-05	8.6E-06	1.7E-08	3.9E-08	4.3E-09	3.0E-11	1.5E-09	1.6E-07	1.4E-08	9.4E-11	9.1E-09	1.1E-07	6.3E-08	3.9E-07	7.4E-07	9.4E-07	7.0E-08	2.4E-08	2.6E-07
	R1062	298862	6259147	4.3E-06	4.3E-06	3.9E-05	2.2E-06	4.3E-06	1.2E-04	5.2E-04	9.9E-05	8.7E-06	1.7E-08	3.9E-08	4.3E-09	3.0E-11	1.5E-09	1.6E-07	1.4E-08	9.5E-11	9.2E-09	1.1E-07	6.4E-08	4.0E-07	7.4E-07	9.5E-07	7.1E-08	2.4E-08	2.6E-07
	R1063	298912	6259147	4.4E-06	4.4E-06	3.9E-05	2.2E-06	4.4E-06	1.2E-04	5.2E-04	1.0E-04	8.7E-06	1.7E-08	3.9E-08	4.4E-09	3.1E-11	1.5E-09	1.6E-07	1.5E-08	9.6E-11	9.3E-09	1.1E-07	6.5E-08	4.0E-07	7.5E-07	9.6E-07	7.1E-08	2.4E-08	2.6E-07
	R1064	298962	6259147	4.4E-06	4.4E-06	3.9E-05	2.2E-06	4.4E-06	1.2E-04	5.2E-04	1.0E-04	8.7E-06	1.7E-08	3.9E-08	4.4E-09	3.1E-11	1.5E-09	1.6E-07	1.5E-08	9.6E-11	9.3E-09	1.1E-07	6.5E-08	4.0E-07	7.5E-07	9.6E-07	7.1E-08	2.4E-08	2.6E-07
	R1065	299012	6259147	4.4E-06	4.4E-06	3.9E-05	2.2E-06	4.4E-06	1.2E-04	5.2E-04	1.0E-04	8.7E-06	1.7E-08	3.9E-08	4.4E-09	3.1E-11	1.5E-09	1.6E-07	1.5E-08	9.6E-11	9.3E-09	1.1E-07	6.5E-08	4.0E-07	7.5E-07	9.6E-07	7.1E-08	2.4E-08	2.6E-07
	R1066	299062	6259147	4.4E-06	4.4E-06	3.9E-05	2.2E-06	4.4E-06	1.2E-04	5.2E-04	1.0E-04	8.7E-06	1.7E-08	3.9E-08	4.4E-09	3.1E-11	1.5E-09	1.6E-07	1.5E-08	9.6E-11	9.3E-09	1.1E-07	6.5E-08	4.0E-07	7.5E-07	9.6E-07	7.1E-08	2.4E-08	2.6E-07
	R1067	299112	6259147	4.4E-06	4.4E-06	3.9E-05	2.2E-06	4.4E-06	1.2E-04	5.2E-04	1.0E-04	8.7E-06	1.7E-08	3.9E-08	4.4E-09	3.0E-11	1.5E-09	1.6E-07	1.4E-08	9.6E-11	9.2E-09	1.1E-07	6.4E-08	4.0E-07	7.5E-07	9.6E-07	7.1E-08	2.4E-08	2.6E-07
	R1068	299162	6259147	4.3E-06	4.3E-06	3.9E-05	2.2E-06	4.3E-06	1.2E-04	5.2E-04	9.9E-05	8.6E-06	1.7E-08	3.9E-08	4.3E-09	3.0E-11	1.5E-09	1.6E-07	1.4E-08	9.5E-11	9.1E-09	1.1E-07	6.4E-08	4.0E-07	7.4E-07	9.5E-07	7.0E-08	2.4E-08	2.6E-07
	R1069	299212	6259147	4.2E-06	4.2E-06	3.8E-05	2.1E-06	4.2E-06	1.1E-04	5.1E-04	9.8E-05	8.5E-06	1.7E-08	3.8E-08	4.2E-09	3.0E-11	1.4E-09	1.6E-07	1.4E-08	9.3E-11	9.0E-09	1.1E-07	6.3E-08	3.9E-07	7.3E-07	9.3E-07	6.9E-08	2.4E-08	2.5E-07
	R1070	299262	6259147	4.1E-06	4.1E-06	3.7E-05	2.1E-06	4.1E-06	1.1E-04	5.0E-04	9.5E-05	8.3E-06	1.7E-08	3.7E-08	4.1E-09	2.9E-11	1.4E-09	1.5E-07	1.4E-08	9.1E-11	8.8E-09	1.0E-07	6.1E-08	3.8E-07	7.1E-07	9.1E-07	6.8E-08	2.3E-08	2.5E-07
	R1071	299312	6259147	4.0E-06	4.0E-06	3.6E-05	2.0E-06	4.0E-06	1.1E-04	4.8E-04	9.3E-05	8.1E-06	1.6E-08	3.6E-08	4.0E-09	2.8E-11	1.4E-09	1.5E-07	1.3E-08	8.9E-11	8.6E-09	1.0E-07	6.0E-08	3.7E-07	6.9E-07	8.9E-07	6.6E-08	2.3E-08	2.4E-07
	R1072	299362	6259147	4.0E-06	4.0E-06	3.6E-05	2.0E-06	4.0E-06	1.1E-04	4.8E-04	9.1E-05	7.9E-06	1.6E-08	3.6E-08	4.0E-09	2.8E-11	1.3E-09	1.5E-07	1.3E-08	8.7E-11	8.4E-09	9.9E-08	5.9E-08	3.7E-07	6.8E-07	8.7E-07	6.5E-08	2.2E-08	2.4E-07
	R1073	299412	6259147	3.9E-06	3.9E-06	3.5E-05	1.9E-06	3.9E-06	1.0E-04	4.6E-04	8.9E-05	7.7E-06	1.5E-08	3.5E-08	3.9E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.5E-11	8.2E-09	9.6E-08	5.7E-08	3.5E-07	6.6E-07	8.5E-07	6.3E-08	2.2E-08	2.3E-07
	R1074	299462	6259147	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.5E-04	8.7E-05	7.5E-06	1.5E-08	3.4E-08	3.8E-09	2.6E-11	1.3E-09	1.4E-07	1.3E-08	8.3E-11	8.0E-09	9.4E-08	5.6E-08	3.5E-07	6.5E-07	8.3E-07	6.1E-08	2.1E-08	2.3E-07
	R1075	299512	6259147	3.7E-06	3.7E-06	3.3E-05	1.8E-06	3.7E-06	9.9E-05	4.4E-04	8.5E-05	7.4E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.1E-11	7.8E-09	9.2E-08	5.5E-08	3.4E-07	6.3E-07	8.1E-07	6.0E-08	2.1E-08	2.2E-07
	R1076	299562	6259147	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.7E-05	4.3E-04	8.3E-05	7.2E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.9E-11	7.7E-09	9.0E-08	5.3E-08	3.3E-07	6.2E-07	7.9E-07	5.9E-08	2.0E-08	2.2E-07
	R1077	299612	6259147	3.5E-06	3.5E-06	3.2E-05	1.8E-06	3.5E-06	9.5E-05	4.2E-04	8.1E-05	7.0E-06	1.4E-08	3.2E-08	3.5E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.7E-11	7.5E-09	8.8E-08	5.2E-08	3.2E-07	6.0E-07	7.7E-07	5.7E-08	2.0E-08	2.1E-07
	R1078	299662	6259147	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.2E-05	4.1E-04	7.8E-05	6.8E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.5E-11	7.2E-09	8.5E-08	5.0E-08	3.1E-07	5.9E-07	7.5E-07	5.6E-08	1.9E-08	2.0E-07
	R1079	299712	6259147	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	8.9E-05	4.0E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.0E-09	8.3E-08	4.9E-08	3.0E-07	5.7E-07	7.3E-07	5.4E-08	1.9E-08	2.0E-07
	R1080	299762	6259147	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.7E-05	3.8E-04	7.4E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.8E-09	8.0E-08	4.7E-08	2.9E-07	5.5E-07	7.1E-07	5.2E-08	1.8E-08	1.9E-07
	R1081	299812	6259147	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.4E-05	3.7E-04	7.2E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.2E-07	1.0E-08	6.8E-11	6.6E-09	7.8E-08	4.6E-08	2.9E-07	5.4E-07	6.8E-07	5.1E-08	1.7E-08	1.9E-07
	R1082	299862	6259147	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.2E-05	3.6E-04	7.0E-05	6.1E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.4E-09	7.6E-08	4.5E-08	2.8E-07	5.2E-07	6.7E-07	5.0E-08	1.7E-08	1.8E-07
	R1083	299912	6259147	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.0E-05	3.6E-04	6.8E-05	5.9E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	9.9E-09	6.5E-11	6.3E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.7E-08	1.8E-07
	R1084	299962	6259147	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.8E-05	3.5E-04	6.6E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.8E-10	1.1E-07	9.6E-09	6.4E-11	6.1E-09	7.2E-08	4.3E-08	2.7E-07	5.0E-07	6.4E-07	4.7E-08	1.6E-08	1.7E-07
	R1085	300012	6259147	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.6E-05	3.4E-04	6.5E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.6E-10	1.0E-07	9.4E-09	6.2E-11	6.0E-09	7.0E-08	4.2E-08	2.6E-07	4.8E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R1086	300062	6259147	2.7E-06	2.7E-06	2.5E-05	1.4E-06	2.7E-06	7.4E-05	3.3E-04	6.3E-05	5.5E-06	1.1E-08	2.5E-08	2.7E-09	1.9E-11	9.3E-10	1.0E-07	9.1E-09	6.0E-11	5.8E-09	6.9E-08	4.1E-08	2.5E-07	4.7E-07	6.0E-07	4.5E-08	1.5E-08	1.6E-07
	R1087	300112	6259147	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.2E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.1E-10	9.9E-08	8.9E-09	5.9E-11	5.7E-09	6.7E-08	4.0E-08	2.5E-07	4.6E-07	5.9E-07	4.4E-08	1.5E-08	1.6E-07
	R1088	300162	6259147	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	7.0E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.9E-10	9.6E-08	8.7E-09	5.7E-11	5.5E-09	6.5E-08	3.9E-08	2.4E-07	4.5E-07	5.7E-07	4.2E-08	1.5E-08	1.6E-07
	R1089	300212	6259147	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.7E-10	9.4E-08	8.5E-09	5.6E-11	5.4E-09	6.4E-08	3.8E-08	2.3E-07	4.4E-07	5.6E-07	4.2E-08	1.4E-08	1.5E-07
	R1090	300262	6259147	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.7E-05	3.0E-04	5.7E-05	5.0E-06	9.9E-09	2.2E-08	2.5E-09	1.7E-11	8.5E-10	9.2E-08	8.3E-09	5.5E-11	5.3E-09	6.2E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R1091	300312	6259147	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.6E-05	4.9E-06	9.7E-09	2.2E-08	2.4E-09	1.7E-11	8.2E-10	9.0E-08	8.1E-09	5.3E-11	5.1E-09	6.1E-08	3.6E-08	2.2E-07	4.2E-07	5.3E-07	4.0E-08	1.4E-08	1.5E-07
	R1092	300362	6259147	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.8E-04	5.4E-05	4.7E-06	9.5E-09	2.1E-08	2.4E-09	1.7E-11	8.1E-10	8.8E-08	7.9E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.9E-08	1.3E-08	1.4E-07
	R1093	300412	6259147	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.3E-05	4.6E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.7E-09	5.1E-11	4.9E-09	5.8E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R1094	300462	6259147	2.3E-06	2.3E-06	2.0E-05	1.1E-06	2.3E-06	6.1E-05	2.7E-04	5.2E-05	4.5E-06	9.1E-09	2.0E-08	2.3E-09	1.6E-11	7.7E-10	8.4E-08	7.5E-09	5.0E-11	4.8E-09	5.7E-08	3.3E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R1095	300512	6259147	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.4E-06	8.8E-09	2.0E-08	2.2E-09	1.5E-11	7.5E-10	8.2E-08	7.4E-09	4.9E-11	4.7E-09	5.5E-08	3.3E-08	2.0E-07	3.8E-07	4.9E-07	3.6E-08	1.2E-08	1.3E-07
	R1096	300562	6259147	2.2E-06	2.2E-06	1.9E-05	1.1E-06	2.2E-06	5.8E-05	2.6E-04	5.0E-05	4.3E-06	8.6E-09	1.9E-08	2.2E-09	1.5E-11	7.3E-10	8.0E-08	7.2E-09	4.8E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.8E-07	3.5E-08	1.2E-08	1.3E-07
	R1097	300612	6259147	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.5E-04	4.8E-05	4.2E-06	8.4E-09	1.9E-08	2.1E-09	1.5E-11	7.2E-10	7.8E-08	7.0E-09	4.6E-11	4.5E-09	5.3E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.3E-07
	R1098	300662	6259147	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.7E-05	4.1E-06	8.2E-09	1.9E-08	2.1E-09	1.4E-11	7.0E-10	7.6E-08	6.8E-09	4.5E-11	4.4E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.4E-08	1.2E-08	1.2E-07

Scenario 1 and Scenario 3 Weighted Average
Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

				Annual GLCs																										
													Metal									Heavy Metal								
Sensitive Receptor	ID	X	Y	PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R1099	300712	6259147	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	8.1E-09	1.8E-08	2.0E-09	1.4E-11	6.9E-10	7.5E-08	6.7E-09	4.4E-11	4.3E-09	5.0E-08	3.0E-08	1.9E-07	3.5E-07	4.4E-07	3.3E-08	1.1E-08	1.2E-07
	R1100	300762	6259147	2.0E-06	2.0E-06	1.8E-05	9.8E-07	2.0E-06	5.3E-05	2.4E-04	4.5E-05	3.9E-06	7.9E-09	1.8E-08	2.0E-09	1.4E-11	6.7E-10	7.3E-08	6.6E-09	4.3E-11	4.2E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R1101	300812	6259147	1.9E-06	1.9E-06	1.7E-05	9.6E-07	1.9E-06	5.2E-05	2.3E-04	4.4E-05	3.9E-06	7.7E-09	1.7E-08	1.9E-09	1.3E-11	6.6E-10	7.1E-08	6.4E-09	4.2E-11	4.1E-09	4.8E-08	2.9E-08	1.8E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.2E-07
	R1102	298412	6259197	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.6E-04	8.7E-05	7.6E-06	1.5E-08	3.4E-08	3.8E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.3E-11	8.0E-09	9.5E-08	5.6E-08	3.5E-07	6.5E-07	8.3E-07	6.2E-08	2.1E-08	2.3E-07
	R1103	298462	6259197	3.8E-06	3.8E-06	3.5E-05	1.9E-06	3.8E-06	1.0E-04	4.6E-04	8.8E-05	7.7E-06	1.5E-08	3.5E-08	3.8E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.5E-11	8.1E-09	9.6E-08	5.7E-08	3.5E-07	6.6E-07	8.5E-07	6.3E-08	2.2E-08	2.3E-07
	R1104	298512	6259197	3.9E-06	3.9E-06	3.5E-05	2.0E-06	3.9E-06	1.1E-04	4.7E-04	9.0E-05	7.8E-06	1.6E-08	3.5E-08	3.9E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.6E-11	8.3E-09	9.8E-08	5.8E-08	3.6E-07	6.7E-07	8.6E-07	6.4E-08	2.2E-08	2.3E-07
	R1105	298562	6259197	4.0E-06	4.0E-06	3.6E-05	2.0E-06	4.0E-06	1.1E-04	4.7E-04	9.1E-05	7.9E-06	1.6E-08	3.6E-08	4.0E-09	2.8E-11	1.3E-09	1.5E-07	1.3E-08	8.7E-11	8.4E-09	9.9E-08	5.9E-08	3.6E-07	6.8E-07	8.7E-07	6.4E-08	2.2E-08	2.4E-07
	R1106	298612	6259197	4.0E-06	4.0E-06	3.6E-05	2.0E-06	4.0E-06	1.1E-04	4.8E-04	9.2E-05	8.0E-06	1.6E-08	3.6E-08	4.0E-09	2.8E-11	1.4E-09	1.5E-07	1.3E-08	8.8E-11	8.5E-09	1.0E-07	5.9E-08	3.7E-07	6.9E-07	8.8E-07	6.5E-08	2.2E-08	2.4E-07
	R1107	298662	6259197	4.1E-06	4.1E-06	3.7E-05	2.0E-06	4.1E-06	1.1E-04	4.9E-04	9.3E-05	8.1E-06	1.6E-08	3.7E-08	4.1E-09	2.8E-11	1.4E-09	1.5E-07	1.4E-08	8.9E-11	8.6E-09	1.0E-07	6.0E-08	3.7E-07	7.0E-07	8.9E-07	6.6E-08	2.3E-08	2.4E-07
	R1108	298712	6259197	4.1E-06	4.1E-06	3.7E-05	2.1E-06	4.1E-06	1.1E-04	4.9E-04	9.4E-05	8.2E-06	1.6E-08	3.7E-08	4.1E-09	2.9E-11	1.4E-09	1.5E-07	1.4E-08	9.0E-11	8.7E-09	1.0E-07	6.1E-08	3.8E-07	7.1E-07	9.0E-07	6.7E-08	2.3E-08	2.5E-07
	R1109	298762	6259197	4.2E-06	4.2E-06	3.7E-05	2.1E-06	4.2E-06	1.1E-04	5.0E-04	9.5E-05	8.3E-06	1.7E-08	3.7E-08	4.2E-09	2.9E-11	1.4E-09	1.5E-07	1.4E-08	9.1E-11	8.8E-09	1.0E-07	6.1E-08	3.8E-07	7.1E-07	9.1E-07	6.8E-08	2.3E-08	2.5E-07
	R1110	298812	6259197	4.2E-06	4.2E-06	3.8E-05	2.1E-06	4.2E-06	1.1E-04	5.0E-04	9.6E-05	8.4E-06	1.7E-08	3.8E-08	4.2E-09	2.9E-11	1.4E-09	1.5E-07	1.4E-08	9.2E-11	8.9E-09	1.0E-07	6.2E-08	3.8E-07	7.2E-07	9.2E-07	6.8E-08	2.3E-08	2.5E-07
	R1111	298862	6259197	4.2E-06	4.2E-06	3.8E-05	2.1E-06	4.2E-06	1.1E-04	5.1E-04	9.7E-05	8.5E-06	1.7E-08	3.8E-08	4.2E-09	3.0E-11	1.4E-09	1.6E-07	1.4E-08	9.3E-11	9.0E-09	1.1E-07	6.3E-08	3.9E-07	7.3E-07	9.3E-07	6.9E-08	2.4E-08	2.5E-07
	R1112	298912	6259197	4.3E-06	4.3E-06	3.8E-05	2.1E-06	4.3E-06	1.1E-04	5.1E-04	9.8E-05	8.5E-06	1.7E-08	3.8E-08	4.3E-09	3.0E-11	1.4E-09	1.6E-07	1.4E-08	9.4E-11	9.0E-09	1.1E-07	6.3E-08	3.9E-07	7.3E-07	9.4E-07	6.9E-08	2.4E-08	2.6E-07
	R1113	298962	6259197	4.3E-06	4.3E-06	3.8E-05	2.1E-06	4.3E-06	1.2E-04	5.1E-04	9.8E-05	8.5E-06	1.7E-08	3.8E-08	4.3E-09	3.0E-11	1.4E-09	1.6E-07	1.4E-08	9.4E-11	9.0E-09	1.1E-07	6.3E-08	3.9E-07	7.3E-07	9.4E-07	6.9E-08	2.4E-08	2.6E-07
	R1114	299012	6259197	4.3E-06	4.3E-06	3.8E-05	2.1E-06	4.3E-06	1.2E-04	5.1E-04	9.8E-05	8.5E-06	1.7E-08	3.8E-08	4.3E-09	3.0E-11	1.5E-09	1.6E-07	1.4E-08	9.4E-11	9.1E-09	1.1E-07	6.3E-08	3.9E-07	7.3E-07	9.4E-07	7.0E-08	2.4E-08	2.6E-07
	R1115	299062	6259197	4.3E-06	4.3E-06	3.9E-05	2.1E-06	4.3E-06	1.2E-04	5.1E-04	9.8E-05	8.6E-06	1.7E-08	3.9E-08	4.3E-09	3.0E-11	1.5E-09	1.6E-07	1.4E-08	9.4E-11	9.1E-09	1.1E-07	6.3E-08	3.9E-07	7.4E-07	9.4E-07	7.0E-08	2.4E-08	2.6E-07
	R1116	299112	6259197	4.3E-06	4.3E-06	3.8E-05	2.1E-06	4.3E-06	1.1E-04	5.1E-04	9.8E-05	8.5E-06	1.7E-08	3.8E-08	4.3E-09	3.0E-11	1.4E-09	1.6E-07	1.4E-08	9.4E-11	9.0E-09	1.1E-07	6.3E-08	3.9E-07	7.3E-07	9.4E-07	6.9E-08	2.4E-08	2.6E-07
	R1117	299162	6259197	4.2E-06	4.2E-06	3.8E-05	2.1E-06	4.2E-06	1.1E-04	5.1E-04	9.7E-05	8.4E-06	1.7E-08	3.8E-08	4.2E-09	3.0E-11	1.4E-09	1.6E-07	1.4E-08	9.3E-11	8.9E-09	1.1E-07	6.2E-08	3.9E-07	7.3E-07	9.3E-07	6.9E-08	2.4E-08	2.5E-07
	R1118	299212	6259197	4.2E-06	4.2E-06	3.8E-05	2.1E-06	4.2E-06	1.1E-04	5.0E-04	9.6E-05	8.3E-06	1.7E-08	3.8E-08	4.2E-09	2.9E-11	1.4E-09	1.5E-07	1.4E-08	9.2E-11	8.8E-09	1.0E-07	6.2E-08	3.8E-07	7.2E-07	9.2E-07	6.8E-08	2.3E-08	2.5E-07
	R1119	299262	6259197	4.0E-06	4.0E-06	3.6E-05	2.0E-06	4.0E-06	1.1E-04	4.9E-04	9.3E-05	8.1E-06	1.6E-08	3.6E-08	4.0E-09	2.8E-11	1.4E-09	1.5E-07	1.3E-08	8.9E-11	8.6E-09	1.0E-07	6.0E-08	3.7E-07	7.0E-07	8.9E-07	6.6E-08	2.3E-08	2.4E-07
	R1120	299312	6259197	4.0E-06	4.0E-06	3.6E-05	2.0E-06	4.0E-06	1.1E-04	4.8E-04	9.1E-05	8.0E-06	1.6E-08	3.6E-08	4.0E-09	2.8E-11	1.4E-09	1.5E-07	1.3E-08	8.7E-11	8.4E-09	9.9E-08	5.9E-08	3.7E-07	6.8E-07	8.7E-07	6.5E-08	2.2E-08	2.4E-07
	R1121	299362	6259197	3.9E-06	3.9E-06	3.5E-05	2.0E-06	3.9E-06	1.1E-04	4.7E-04	9.0E-05	7.8E-06	1.6E-08	3.5E-08	3.9E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.6E-11	8.3E-09	9.8E-08	5.8E-08	3.6E-07	6.7E-07	8.6E-07	6.4E-08	2.2E-08	2.3E-07
	R1122	299412	6259197	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.6E-04	8.8E-05	7.6E-06	1.5E-08	3.4E-08	3.8E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.4E-11	8.1E-09	9.5E-08	5.6E-08	3.5E-07	6.6E-07	8.4E-07	6.2E-08	2.1E-08	2.3E-07
	R1123	299462	6259197	3.7E-06	3.7E-06	3.3E-05	1.9E-06	3.7E-06	1.0E-04	4.5E-04	8.5E-05	7.4E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.2E-11	7.9E-09	9.3E-08	5.5E-08	3.4E-07	6.4E-07	8.2E-07	6.1E-08	2.1E-08	2.2E-07
	R1124	299512	6259197	3.6E-06	3.6E-06	3.3E-05	1.8E-06	3.6E-06	9.8E-05	4.4E-04	8.4E-05	7.3E-06	1.5E-08	3.3E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	8.0E-11	7.7E-09	9.1E-08	5.4E-08	3.3E-07	6.3E-07	8.0E-07	5.9E-08	2.0E-08	2.2E-07
	R1125	299562	6259197	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.7E-05	4.3E-04	8.3E-05	7.2E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.9E-11	7.6E-09	9.0E-08	5.3E-08	3.3E-07	6.2E-07	7.9E-07	5.9E-08	2.0E-08	2.2E-07
	R1126	299612	6259197	3.5E-06	3.5E-06	3.1E-05	1.7E-06	3.5E-06	9.4E-05	4.2E-04	8.0E-05	7.0E-06	1.4E-08	3.1E-08	3.5E-09	2.4E-11	1.2E-09	1.3E-07	1.2E-08	7.7E-11	7.4E-09	8.7E-08	5.2E-08	3.2E-07	6.0E-07	7.7E-07	5.7E-08	2.0E-08	2.1E-07
	R1127	299662	6259197	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.2E-05	4.1E-04	7.8E-05	6.8E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.5E-11	7.2E-09	8.5E-08	5.0E-08	3.1E-07	5.8E-07	7.5E-07	5.5E-08	1.9E-08	2.0E-07
	R1128	299712	6259197	3.3E-06	3.3E-06	3.0E-05	1.6E-06	3.3E-06	8.9E-05	3.9E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.2E-11	7.0E-09	8.2E-08	4.9E-08	3.0E-07	5.7E-07	7.2E-07	5.4E-08	1.8E-08	2.0E-07
	R1129	299762	6259197	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.6E-05	3.8E-04	7.3E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.8E-09	8.0E-08	4.7E-08	2.9E-07	5.5E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R1130	299812	6259197	3.1E-06	3.1E-06	2.8E-05	1.5E-06	3.1E-06	8.4E-05	3.7E-04	7.1E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.1E-07	1.0E-08	6.8E-11	6.6E-09	7.7E-08	4.6E-08	2.9E-07	5.3E-07	6.8E-07	5.1E-08	1.7E-08	1.9E-07
	R1131	299862	6259197	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.2E-05	3.6E-04	7.0E-05	6.0E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.6E-11	6.4E-09	7.6E-08	4.5E-08	2.8E-07	5.2E-07	6.6E-07	4.9E-08	1.7E-08	1.8E-07
	R1132	299912	6259197	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.0E-05	3.5E-04	6.8E-05	5.9E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	9.8E-09	6.5E-11	6.3E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.7E-08	1.8E-07
	R1133	299962	6259197	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.8E-05	3.5E-04	6.6E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.8E-10	1.1E-07	9.6E-09	6.3E-11	6.1E-09	7.2E-08	4.3E-08	2.7E-07	5.0E-07	6.3E-07	4.7E-08	1.6E-08	1.7E-07
	R1134	300012	6259197	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.6E-05	3.4E-04	6.5E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.6E-10	1.0E-07	9.4E-09	6.2E-11	6.0E-09	7.0E-08	4.2E-08	2.6E-07	4.8E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R1135	300062	6259197	2.7E-06	2.7E-06	2.5E-05	1.4E-06	2.7E-06	7.4E-05	3.3E-04	6.3E-05	5.5E-06	1.1E-08	2.5E-08	2.7E-09	1.9E-11	9.3E-10	1.0E-07	9.1E-09	6.0E-11	5.8E-09	6.8E-08	4.0E-08	2.5E-07	4.7E-07	6.0E-07	4.5E-08	1.5E-08	1.6E-07
	R1136	300112	6259197	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.2E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.1E-10	9.9E-08	8.9E-09	5.9E-11	5.7E-09	6.7E-08	3.9E-08	2.5E-07	4.6E-07	5.9E-07	4.3E-08	1.5E-08	1.6E-07
	R1137	300162	6259197	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	7.0E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.9E-10	9.7E-08	8.7E-09	5.7E-11	5.5E-09	6.5E-08	3.9E-08	2.4E-07	4.5E-07	5.7E-07	4.3E-08	1.5E-08	1.6E-07
	R1138	300212	6259197	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.7E-10	9.4E-08	8.5E-09	5.6E-11	5.4E-09	6.4E-08	3.8E-08	2.3E-07	4.4E-07	5.6E-07	4.2E-08	1.4E-08	1.5E-07
	R1139	300262	6259197	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.7E-05	3.0E-04	5.7E-05	5.0E-06	9.9E-09	2.2E-08	2.5E-09	1.7E-11	8.4E-10	9.2E-08	8.3E-09	5.5E-11	5.3E-09	6.2E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.0E-08	1.4E-08	1.5E-07
	R1140	300312	6259197	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.6E-05	4.8E-06	9.7E-09	2.2E-08	2.4E-09	1.7E-11	8.2E-10	8.9E-08	8.0E-09	5.3E-11	5.1E-09	6.0E-08	3.6E-08	2.2E-07	4.2E-07	5.3E-07	3.9E-08	1.4E-08	1.5E-07
	R1141	300362	6259197	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.8E-04	5.4E-05	4.7E-06	9.4E-09	2.1E-08	2.4E-09	1.7E-11	8.0E-10	8.7E-08	7.9E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.8E-08	1.3E-08	1.4E-07
	R1142	300412	6259197	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.2E-05	2.8E-04	5.3E-05	4.6E-06	9.2E-09	2.1E-08	2.3E-09	1.6E-11	7.8E-10	8.5E-08	7.7E-09	5.1E-11	4.9E-09	5.8E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R1143	300462	6259197	2.3E-06	2.3E-06	2.0E-05	1.1E-06	2.3E-06	6.1E-05	2.7E-04	5.2E-05	4.5E-06	9.1E-09	2.0E-08	2.3E-09	1.6E-11	7.7E-10	8.4E-08	7.5E-09	5.0E-11	4.8E-09	5.7E-08	3.3E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R1144	300512	6259197	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.4E-06	8.9E-09	2.0E-08	2.2E-09	1.6E-11	7.5E-10	8.2E-08	7.4E-09	4.9E-11	4.7E-09	5.5E-08	3.3E-08	2.0E-07	3.8E-07	4.9E-07	3.6E-08	1.2E-08	1.3E-07
	R1145	300562	6259197	2.2E-06	2.2E-06	1.9E-05	1.1E-06	2.2E-06	5.8E-05	2.6E-04	5.0E-05	4.3E-06	8.6E-09	1.9E-08	2.2E-09	1.5E-11	7.3E-10	8.0E-08	7.2E-09	4.8E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.8E-07	3.5E-08	1.2E-08	1.3E-07
	R1146	300612	6259197	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.5E-04	4.8E-05	4.2E-06	8.4E-09	1.9E-08	2.1E-09	1.5E-11	7.2E-10	7.8E-08	7.0E-09	4.6E-11	4.5E-09	5.3E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.3E-07
	R1147	300662	6259197	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.7E-05	4.1E-06	8.2E-09	1.9E-08	2.1E-09	1.4E-11	7.0E-10	7.6E-08	6.8E-09	4.5E-11	4.4E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.4E-08	1.2E-08	1.2E-07
	R1148	300712	6259197	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	8.1E-09	1.8E-08	2.0E-09	1.4E-11	6.9E-10	7.5E-08	6.7E-09	4.4E-11	4.3E-09	5.0E-08	3.0E-08	1.9E-07	3.5E-07	4.4E-07	3.3E-08	1.1E-08	1.2E-07
	R1149	300762	6259197	2.0E-06	2.0E-06	1.8E-05	9.8E-07	2.0E-06	5.3E-05	2.4E-04	4.5E-05	3.9E-06	7.9E-09	1.8E-08	2.0E-09	1.4E-11	6.7E-10	7.3E-08	6.6E-09	4.3E-11	4.2E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R1150	300812	6259197	1.9E-06	1.9E-06	1.7E-05	9.6E-07	1.9E-06	5.2E-05	2.3E-04	4.4E-05	3.9E-06	7.7E-09	1.7E-08	1.9E-09	1.3E-11	6.5E-10	7.1E-08	6.4E-09	4.2E-11	4.1E-09	4.8E-08	2.8E-08	1.8E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.2E-07
	R1151	298412	6259247	3.7E-06	3.7E-06	3.3E-05	1.8E-06	3.7E-06	1.0E-04	4.4E-04	8.5E-05	7.4E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.1E-11	7.8E-09	9.2E-08	5.5E-08	3.4E-07	6.4E-07	8.1E-07	6.0E-08	2.1E-08	2.2E-07
	R1152	298462	6259247	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.5E-04	8.6E-05	7.5E-06	1.5E-08	3.4E-08	3.8E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.3E-11	8.0E-09	9.4E-08	5.6E-08	3.5E-07	6.5E-07	8.3E-07	6.1E-08	2.1E-08	2.3E-07
	R1153	298512	6259247	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.6E-04	8.8E-05	7.6E-06	1.5E-08	3.4E-08	3.8E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.4E-11	8.1E-09	9.5E-08	5.6E-08	3.5E-07	6.6E-07	8.4E-07	6.2E-08	2.1E-08	2.3E-07
	R1154	298562	6259247	3.9E-06	3.9E-06	3.5E-05	1.9E-06	3.9E-06	1.0E-04	4.6E-04	8.9E-05	7.7E-06	1.5E-08	3.5E-08	3.9E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.5E-11	8.2E-09	9.7E-08	5.7E-08	3.6E-07	6.6E-07	8.5E-07	6.3E-08	2.2E-08	2.3E-07
	R1155	298612	6259247	3.9E-06	3.9E-06	3.5E-05	2.0E-06	3.9E-06	1.1E-04	4.7E-04	9.0E-05	7.8E-06	1.6E-08	3.5E-08	3.9E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.6E-11	8.3E-09	9.8E-08	5.8E-08	3.6E-07	6.7E-07	8.6E-07	6.4E-08	2.2E-08	2.3E-07
	R1156	298662	6259247	4.0E-06	4.0E-06	3.6E-05	2.0E-06	4.0E-06	1.1E-04	4.8E-04	9.1E-05	7.9E-06	1.6E-08	3.6E-08	4.0E-09	2.8E-11	1.3E-09	1.5E-07	1.3E-08	8.7E-11	8.4E-09	9.9E-08	5.9E-08	3.6E-07	6.8E-07	8.7E-07	6.5E-08	2.2E-08	2.4E-07
	R1157	298712	6259247	4.0E-06	4.0E-06	3.6E-05	2.0E-06	4.0E-06	1.1E-04	4.8E-04	9.2E-05	8.0E-06	1.6E-08	3.6E-08	4.0E-09	2.8E-11	1.4E-09	1.5E-07	1.3E-08	8.8E-11	8.5E-09	1.0E-07	5.9E-08	3.7E-07	6.9E-07	8.8E-07	6.5E-08	2.2E-08	2.4E-07
	R1158	298762	6259247	4.1E-06	4.1E-06	3.6E-05	2.0E-06	4.1E-06	1.1E-04	4.9E-04	9.3E-05	8.1E-06	1.6E-08	3.6E-08	4.1E-09	2.8E-11	1.4E-09	1.5E-07	1.4E-08	8.9E-11	8.6E-09	1.0E-07	6.0E-08	3.7E-07	7.0E-07	8.9E-07	6.6E-08	2.3E-08	2.4E-07
	R1159	298812	6259247	4.1E-06	4.1E-06	3.7E-05	2.0E-06	4.1E-06	1.1E-04	4.9E-04	9.4E-05	8.2E-06	1.6E-08	3.7E-08	4.1E-09	2.9E-11	1.4E-09	1.5E-07	1.4E-08	9.0E-11	8.7E-09	1.0E-07	6.1E-08	3.8E-07	7.0E-07	9.0E-07	6.7E-08	2.3E-08	2.5E-07

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																								
													Metal									Heavy Metal							
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm ³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R1160	298862	6259247	4.1E-06	4.1E-06	3.7E-05	2.1E-06	4.1E-06	1.1E-04	5.0E-04	9.5E-05	8.3E-06	1.7E-08	3.7E-08	4.1E-09	2.9E-11	1.4E-09	1.5E-07	1.4E-08	9.1E-11	8.8E-09	1.0E-07	6.1E-08	3.8E-07	7.1E-07	9.1E-07	6.7E-08	2.3E-08	2.5E-07
	R1161	298912	6259247	4.2E-06	4.2E-06	3.7E-05	2.1E-06	4.2E-06	1.1E-04	5.0E-04	9.6E-05	8.3E-06	1.7E-08	3.7E-08	4.2E-09	2.9E-11	1.4E-09	1.5E-07	1.4E-08	9.1E-11	8.8E-09	1.0E-07	6.1E-08	3.8E-07	7.1E-07	9.1E-07	6.8E-08	2.3E-08	2.5E-07
	R1162	298962	6259247	4.2E-06	4.2E-06	3.7E-05	2.1E-06	4.2E-06	1.1E-04	5.0E-04	9.6E-05	8.3E-06	1.7E-08	3.7E-08	4.2E-09	2.9E-11	1.4E-09	1.5E-07	1.4E-08	9.2E-11	8.8E-09	1.0E-07	6.2E-08	3.8E-07	7.2E-07	9.2E-07	6.8E-08	2.3E-08	2.5E-07
	R1163	299012	6259247	4.2E-06	4.2E-06	3.8E-05	2.1E-06	4.2E-06	1.1E-04	5.0E-04	9.6E-05	8.3E-06	1.7E-08	3.8E-08	4.2E-09	2.9E-11	1.4E-09	1.5E-07	1.4E-08	9.2E-11	8.8E-09	1.0E-07	6.2E-08	3.8E-07	7.2E-07	9.2E-07	6.8E-08	2.3E-08	2.5E-07
	R1164	299062	6259247	4.2E-06	4.2E-06	3.8E-05	2.1E-06	4.2E-06	1.1E-04	5.0E-04	9.6E-05	8.4E-06	1.7E-08	3.8E-08	4.2E-09	2.9E-11	1.4E-09	1.5E-07	1.4E-08	9.2E-11	8.9E-09	1.0E-07	6.2E-08	3.8E-07	7.2E-07	9.2E-07	6.8E-08	2.3E-08	2.5E-07
	R1165	299112	6259247	4.2E-06	4.2E-06	3.7E-05	2.1E-06	4.2E-06	1.1E-04	5.0E-04	9.6E-05	8.3E-06	1.7E-08	3.7E-08	4.2E-09	2.9E-11	1.4E-09	1.5E-07	1.4E-08	9.2E-11	8.8E-09	1.0E-07	6.2E-08	3.8E-07	7.2E-07	9.2E-07	6.8E-08	2.3E-08	2.5E-07
	R1166	299162	6259247	4.1E-06	4.1E-06	3.7E-05	2.1E-06	4.1E-06	1.1E-04	5.0E-04	9.5E-05	8.3E-06	1.7E-08	3.7E-08	4.1E-09	2.9E-11	1.4E-09	1.5E-07	1.4E-08	9.1E-11	8.8E-09	1.0E-07	6.1E-08	3.8E-07	7.1E-07	9.1E-07	6.7E-08	2.3E-08	2.5E-07
	R1167	299212	6259247	4.1E-06	4.1E-06	3.7E-05	2.0E-06	4.1E-06	1.1E-04	4.9E-04	9.4E-05	8.2E-06	1.6E-08	3.7E-08	4.1E-09	2.9E-11	1.4E-09	1.5E-07	1.4E-08	9.0E-11	8.7E-09	1.0E-07	6.1E-08	3.8E-07	7.0E-07	9.0E-07	6.7E-08	2.3E-08	2.5E-07
	R1168	299262	6259247	4.0E-06	4.0E-06	3.6E-05	2.0E-06	4.0E-06	1.1E-04	4.8E-04	9.2E-05	8.0E-06	1.6E-08	3.6E-08	4.0E-09	2.8E-11	1.4E-09	1.5E-07	1.3E-08	8.8E-11	8.5E-09	1.0E-07	5.9E-08	3.7E-07	6.9E-07	8.8E-07	6.5E-08	2.2E-08	2.4E-07
	R1169	299312	6259247	3.9E-06	3.9E-06	3.5E-05	2.0E-06	3.9E-06	1.1E-04	4.7E-04	9.0E-05	7.8E-06	1.6E-08	3.5E-08	3.9E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.6E-11	8.3E-09	9.8E-08	5.8E-08	3.6E-07	6.7E-07	8.6E-07	6.4E-08	2.2E-08	2.3E-07
	R1170	299362	6259247	3.8E-06	3.8E-06	3.5E-05	1.9E-06	3.8E-06	1.0E-04	4.6E-04	8.8E-05	7.7E-06	1.5E-08	3.5E-08	3.8E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.4E-11	8.1E-09	9.6E-08	5.7E-08	3.5E-07	6.6E-07	8.4E-07	6.3E-08	2.1E-08	2.3E-07
	R1171	299412	6259247	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.5E-04	8.7E-05	7.5E-06	1.5E-08	3.4E-08	3.8E-09	2.6E-11	1.3E-09	1.4E-07	1.3E-08	8.3E-11	8.0E-09	9.4E-08	5.6E-08	3.5E-07	6.5E-07	8.3E-07	6.1E-08	2.1E-08	2.3E-07
	R1172	299462	6259247	3.7E-06	3.7E-06	3.3E-05	1.8E-06	3.7E-06	1.0E-04	4.4E-04	8.5E-05	7.4E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.1E-11	7.8E-09	9.2E-08	5.5E-08	3.4E-07	6.3E-07	8.1E-07	6.0E-08	2.1E-08	2.2E-07
	R1173	299512	6259247	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.7E-05	4.3E-04	8.3E-05	7.2E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.9E-11	7.7E-09	9.0E-08	5.3E-08	3.3E-07	6.2E-07	7.9E-07	5.9E-08	2.0E-08	2.2E-07
	R1174	299562	6259247	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.6E-05	4.3E-04	8.2E-05	7.1E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.8E-11	7.5E-09	8.9E-08	5.3E-08	3.3E-07	6.1E-07	7.8E-07	5.8E-08	2.0E-08	2.1E-07
	R1175	299612	6259247	3.5E-06	3.5E-06	3.1E-05	1.7E-06	3.5E-06	9.3E-05	4.2E-04	8.0E-05	6.9E-06	1.4E-08	3.1E-08	3.5E-09	2.4E-11	1.2E-09	1.3E-07	1.2E-08	7.6E-11	7.3E-09	8.7E-08	5.1E-08	3.2E-07	6.0E-07	7.6E-07	5.6E-08	1.9E-08	2.1E-07
	R1176	299662	6259247	3.4E-06	3.4E-06	3.0E-05	1.7E-06	3.4E-06	9.1E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.4E-09	2.4E-11	1.1E-09	1.2E-07	1.1E-08	7.4E-11	7.1E-09	8.4E-08	5.0E-08	3.1E-07	5.8E-07	7.4E-07	5.5E-08	1.9E-08	2.0E-07
	R1177	299712	6259247	3.3E-06	3.3E-06	2.9E-05	1.6E-06	3.3E-06	8.8E-05	3.9E-04	7.5E-05	6.5E-06	1.3E-08	2.9E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.2E-11	6.9E-09	8.2E-08	4.8E-08	3.0E-07	5.6E-07	7.2E-07	5.3E-08	1.8E-08	2.0E-07
	R1178	299762	6259247	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.6E-05	3.8E-04	7.3E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.7E-09	7.9E-08	4.7E-08	2.9E-07	5.5E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R1179	299812	6259247	3.1E-06	3.1E-06	2.8E-05	1.5E-06	3.1E-06	8.3E-05	3.7E-04	7.1E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.0E-09	1.1E-07	1.0E-08	6.8E-11	6.5E-09	7.7E-08	4.6E-08	2.8E-07	5.3E-07	6.8E-07	5.0E-08	1.7E-08	1.9E-07
	R1180	299862	6259247	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.1E-05	3.6E-04	6.9E-05	6.0E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.6E-11	6.4E-09	7.5E-08	4.4E-08	2.8E-07	5.2E-07	6.6E-07	4.9E-08	1.7E-08	1.8E-07
	R1181	299912	6259247	2.9E-06	2.9E-06	2.6E-05	1.5E-06	2.9E-06	7.9E-05	3.5E-04	6.8E-05	5.9E-06	1.2E-08	2.6E-08	2.9E-09	2.1E-11	1.0E-09	1.1E-07	9.8E-09	6.5E-11	6.2E-09	7.3E-08	4.3E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.6E-08	1.8E-07
	R1182	299962	6259247	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.7E-05	3.4E-04	6.6E-05	5.7E-06	1.1E-08	2.6E-08	2.9E-09	2.0E-11	9.7E-10	1.1E-07	9.5E-09	6.3E-11	6.1E-09	7.2E-08	4.2E-08	2.6E-07	4.9E-07	6.3E-07	4.7E-08	1.6E-08	1.7E-07
	R1183	300012	6259247	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.5E-05	3.3E-04	6.4E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.5E-10	1.0E-07	9.3E-09	6.1E-11	5.9E-09	7.0E-08	4.1E-08	2.6E-07	4.8E-07	6.1E-07	4.5E-08	1.6E-08	1.7E-07
	R1184	300062	6259247	2.7E-06	2.7E-06	2.5E-05	1.4E-06	2.7E-06	7.4E-05	3.3E-04	6.3E-05	5.5E-06	1.1E-08	2.5E-08	2.7E-09	1.9E-11	9.3E-10	1.0E-07	9.1E-09	6.0E-11	5.8E-09	6.8E-08	4.0E-08	2.5E-07	4.7E-07	6.0E-07	4.4E-08	1.5E-08	1.6E-07
	R1185	300112	6259247	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.2E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.1E-10	9.9E-08	8.9E-09	5.9E-11	5.6E-09	6.7E-08	3.9E-08	2.5E-07	4.6E-07	5.9E-07	4.3E-08	1.5E-08	1.6E-07
	R1186	300162	6259247	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	7.0E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.8E-10	9.6E-08	8.7E-09	5.7E-11	5.5E-09	6.5E-08	3.8E-08	2.4E-07	4.5E-07	5.7E-07	4.2E-08	1.5E-08	1.6E-07
	R1187	300212	6259247	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.9E-05	3.0E-04	5.8E-05	5.1E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.6E-10	9.4E-08	8.5E-09	5.6E-11	5.4E-09	6.3E-08	3.8E-08	2.3E-07	4.4E-07	5.6E-07	4.1E-08	1.4E-08	1.5E-07
	R1188	300262	6259247	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.7E-05	3.0E-04	5.7E-05	4.9E-06	9.9E-09	2.2E-08	2.5E-09	1.7E-11	8.4E-10	9.1E-08	8.2E-09	5.4E-11	5.2E-09	6.2E-08	3.7E-08	2.3E-07	4.3E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R1189	300312	6259247	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.5E-05	4.8E-06	9.6E-09	2.2E-08	2.4E-09	1.7E-11	8.2E-10	8.9E-08	8.0E-09	5.3E-11	5.1E-09	6.0E-08	3.6E-08	2.2E-07	4.1E-07	5.3E-07	3.9E-08	1.3E-08	1.4E-07
	R1190	300362	6259247	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.4E-09	2.1E-08	2.4E-09	1.6E-11	8.0E-10	8.7E-08	7.8E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.0E-07	5.2E-07	3.8E-08	1.3E-08	1.4E-07
	R1191	300412	6259247	2.3E-06	2.3E-06	2.1E-05	1.1E-06	2.3E-06	6.2E-05	2.8E-04	5.3E-05	4.6E-06	9.2E-09	2.1E-08	2.3E-09	1.6E-11	7.8E-10	8.5E-08	7.7E-09	5.1E-11	4.9E-09	5.7E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.7E-08	1.3E-08	1.4E-07
	R1192	300462	6259247	2.3E-06	2.3E-06	2.0E-05	1.1E-06	2.3E-06	6.1E-05	2.7E-04	5.2E-05	4.5E-06	9.0E-09	2.0E-08	2.3E-09	1.6E-11	7.7E-10	8.4E-08	7.5E-09	5.0E-11	4.8E-09	5.6E-08	3.3E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R1193	300512	6259247	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.4E-06	8.8E-09	2.0E-08	2.2E-09	1.5E-11	7.5E-10	8.2E-08	7.4E-09	4.9E-11	4.7E-09	5.5E-08	3.3E-08	2.0E-07	3.8E-07	4.9E-07	3.6E-08	1.2E-08	1.3E-07
	R1194	300562	6259247	2.2E-06	2.2E-06	1.9E-05	1.1E-06	2.2E-06	5.8E-05	2.6E-04	4.9E-05	4.3E-06	8.6E-09	1.9E-08	2.2E-09	1.5E-11	7.3E-10	8.0E-08	7.2E-09	4.7E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
	R1195	300612	6259247	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.7E-05	2.5E-04	4.8E-05	4.2E-06	8.4E-09	1.9E-08	2.1E-09	1.5E-11	7.1E-10	7.8E-08	7.0E-09	4.6E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.3E-07
	R1196	300662	6259247	2.1E-06	2.1E-06	1.8E-05	1.0E-06	2.1E-06	5.5E-05	2.5E-04	4.7E-05	4.1E-06	8.2E-09	1.8E-08	2.1E-09	1.4E-11	7.0E-10	7.6E-08	6.8E-09	4.5E-11	4.4E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.3E-08	1.1E-08	1.2E-07
	R1197	300712	6259247	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	8.1E-09	1.8E-08	2.0E-09	1.4E-11	6.8E-10	7.5E-08	6.7E-09	4.4E-11	4.3E-09	5.0E-08	3.0E-08	1.9E-07	3.5E-07	4.4E-07	3.3E-08	1.1E-08	1.2E-07
	R1198	300762	6259247	2.0E-06	2.0E-06	1.8E-05	9.8E-07	2.0E-06	5.3E-05	2.4E-04	4.5E-05	3.9E-06	7.9E-09	1.8E-08	2.0E-09	1.4E-11	6.7E-10	7.3E-08	6.6E-09	4.3E-11	4.2E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R1199	300812	6259247	1.9E-06	1.9E-06	1.7E-05	9.6E-07	1.9E-06	5.2E-05	2.3E-04	4.4E-05	3.8E-06	7.7E-09	1.7E-08	1.9E-09	1.3E-11	6.5E-10	7.1E-08	6.4E-09	4.2E-11	4.1E-09	4.8E-08	2.8E-08	1.8E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.2E-07
	R1200	298412	6259297	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.7E-05	4.3E-04	8.3E-05	7.2E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.9E-11	7.7E-09	9.0E-08	5.3E-08	3.3E-07	6.2E-07	7.9E-07	5.9E-08	2.0E-08	2.2E-07
	R1201	298462	6259297	3.7E-06	3.7E-06	3.3E-05	1.8E-06	3.7E-06	9.9E-05	4.4E-04	8.4E-05	7.3E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.2E-09	1.4E-07	1.2E-08	8.1E-11	7.8E-09	9.2E-08	5.4E-08	3.4E-07	6.3E-07	8.1E-07	6.0E-08	2.1E-08	2.2E-07
	R1202	298512	6259297	3.7E-06	3.7E-06	3.4E-05	1.9E-06	3.7E-06	1.0E-04	4.5E-04	8.6E-05	7.5E-06	1.5E-08	3.4E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.2E-11	7.9E-09	9.3E-08	5.5E-08	3.4E-07	6.4E-07	8.2E-07	6.1E-08	2.1E-08	2.2E-07
	R1203	298562	6259297	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.5E-04	8.7E-05	7.6E-06	1.5E-08	3.4E-08	3.8E-09	2.6E-11	1.3E-09	1.4E-07	1.3E-08	8.3E-11	8.0E-09	9.4E-08	5.6E-08	3.5E-07	6.5E-07	8.3E-07	6.2E-08	2.1E-08	2.3E-07
	R1204	298612	6259297	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.6E-04	8.8E-05	7.7E-06	1.5E-08	3.4E-08	3.8E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.4E-11	8.1E-09	9.6E-08	5.7E-08	3.5E-07	6.6E-07	8.4E-07	6.2E-08	2.1E-08	2.3E-07
	R1205	298662	6259297	3.9E-06	3.9E-06	3.5E-05	1.9E-06	3.9E-06	1.0E-04	4.6E-04	8.9E-05	7.7E-06	1.5E-08	3.5E-08	3.9E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.5E-11	8.2E-09	9.7E-08	5.7E-08	3.6E-07	6.7E-07	8.5E-07	6.3E-08	2.2E-08	2.3E-07
	R1206	298712	6259297	3.9E-06	3.9E-06	3.5E-05	2.0E-06	3.9E-06	1.1E-04	4.7E-04	9.0E-05	7.8E-06	1.6E-08	3.5E-08	3.9E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.6E-11	8.3E-09	9.8E-08	5.8E-08	3.6E-07	6.7E-07	8.6E-07	6.4E-08	2.2E-08	2.3E-07
	R1207	298762	6259297	4.0E-06	4.0E-06	3.6E-05	2.0E-06	4.0E-06	1.1E-04	4.8E-04	9.1E-05	7.9E-06	1.6E-08	3.6E-08	4.0E-09	2.8E-11	1.3E-09	1.5E-07	1.3E-08	8.7E-11	8.4E-09	9.9E-08	5.9E-08	3.6E-07	6.8E-07	8.7E-07	6.5E-08	2.2E-08	2.4E-07
	R1208	298812	6259297	4.0E-06	4.0E-06	3.6E-05	2.0E-06	4.0E-06	1.1E-04	4.8E-04	9.2E-05	8.0E-06	1.6E-08	3.6E-08	4.0E-09	2.8E-11	1.4E-09	1.5E-07	1.3E-08	8.8E-11	8.5E-09	1.0E-07	5.9E-08	3.7E-07	6.9E-07	8.8E-07	6.5E-08	2.2E-08	2.4E-07
	R1209	298862	6259297	4.0E-06	4.0E-06	3.6E-05	2.0E-06	4.0E-06	1.1E-04	4.9E-04	9.3E-05	8.1E-06	1.6E-08	3.6E-08	4.0E-09	2.8E-11	1.4E-09	1.5E-07	1.3E-08	8.9E-11	8.6E-09	1.0E-07	6.0E-08	3.7E-07	7.0E-07	8.9E-07	6.6E-08	2.3E-08	2.4E-07
	R1210	298912	6259297	4.1E-06	4.1E-06	3.7E-05	2.0E-06	4.1E-06	1.1E-04	4.9E-04	9.3E-05	8.1E-06	1.6E-08	3.7E-08	4.1E-09	2.8E-11	1.4E-09	1.5E-07	1.4E-08	8.9E-11	8.6E-09	1.0E-07	6.0E-08	3.7E-07	7.0E-07	8.9E-07	6.6E-08	2.3E-08	2.4E-07
	R1211	298962	6259297	4.1E-06	4.1E-06	3.7E-05	2.0E-06	4.1E-06	1.1E-04	4.9E-04	9.3E-05	8.1E-06	1.6E-08	3.7E-08	4.1E-09	2.8E-11	1.4E-09	1.5E-07	1.4E-08	8.9E-11	8.6E-09	1.0E-07	6.0E-08	3.7E-07	7.0E-07	8.9E-07	6.6E-08	2.3E-08	2.4E-07
	R1212	299012	6259297	4.1E-06	4.1E-06	3.7E-05	2.0E-06	4.1E-06	1.1E-04	4.9E-04	9.4E-05	8.1E-06	1.6E-08	3.7E-08	4.1E-09	2.9E-11	1.4E-09	1.5E-07	1.4E-08	9.0E-11	8.6E-09	1.0E-07	6.0E-08	3.7E-07	7.0E-07	9.0E-07	6.6E-08	2.3E-08	2.4E-07
	R1213	299062	6259297	4.1E-06	4.1E-06	3.7E-05	2.0E-06	4.1E-06	1.1E-04	4.9E-04	9.4E-05	8.2E-06	1.6E-08	3.7E-08	4.1E-09	2.9E-11	1.4E-09	1.5E-07	1.4E-08	9.0E-11	8.6E-09	1.0E-07	6.0E-08	3.8E-07	7.0E-07	9.0E-07	6.6E-08	2.3E-08	2.4E-07
	R1214	299112	6259297	4.1E-06	4.1E-06	3.7E-05	2.0E-06	4.1E-06	1.1E-04	4.9E-04	9.4E-05	8.1E-06	1.6E-08	3.7E-08	4.1E-09	2.8E-11	1.4E-09	1.5E-07	1.4E-08	9.0E-11	8.6E-09	1.0E-07	6.0E-08	3.7E-07	7.0E-07	9.0E-07	6.6E-08	2.3E-08	2.4E-07
	R1215	299162	6259297	4.1E-06	4.1E-06	3.6E-05	2.0E-06	4.1E-06	1.1E-04	4.9E-04	9.3E-05	8.1E-06	1.6E-08	3.6E-08	4.1E-09	2.8E-11	1.4E-09	1.5E-07	1.4E-08	8.9E-11	8.6E-09	1.0E-07	6.0E-08	3.7E-07	7.0E-07	8.9E-07	6.6E-08	2.3E-08	2.4E-07
	R1216	299212	6259297	4.0E-06	4.0E-06	3.6E-05	2.0E-06	4.0E-06	1.1E-04	4.8E-04	9.3E-05	8.0E-06	1.6E-08	3.6E-08	4.0E-09	2.8E-11	1.4E-09	1.5E-07	1.3E-08	8.8E-11	8.5E-09	1.0E-07	6.0E-08	3.7E-07	6.9E-07	8.8E-07	6.6E-08	2.3E-08	2.4E-07
	R1217	299262	6259297	3.9E-06	3.9E-06	3.5E-05	2.0E-06	3.9E-06	1.1E-04	4.7E-04	9.0E-05	7.9E-06	1.6E-08	3.5E-08	3.9E-09	2.8E-11	1.3E-09	1.5E-07	1.3E-08	8.6E-11	8.3E-09	9.8E-08	5.8E-08	3.6E-07	6.8E-07	8.6E-07	6.4E-08	2.2E-08	2.4E-07
	R1218	299312	6259297	3.8E-06	3.8E-06	3.5E-05	1.9E-06	3.8E-06	1.0E-04	4.6E-04	8.8E-05	7.7E-06	1.5E-08	3.5E-08	3.8E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.4E-11	8.1E-09	9.6E-08	5.7E-08	3.5E-07	6.6E-07	8.4E-07	6.3E-08	2.1E-08	2.3E-07
	R1219	299362	6259297	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.5E-04	8.7E-05	7.5E-06	1.5E-08	3.4E-08	3.8E-09	2.6E-11	1.3E-09	1.4E-07	1.3E-08	8.3E-11	8.0E-09	9.4E-08	5.6E-08	3.5E-07	6.5E-07	8.3E-07	6.1E-08	2.1E-08	2.3E-07
	R1220	299412	6259297	3.7E-06	3.7E-06	3.3E-05	1.9E-06	3.7E-06	1.0E-04	4.4E-04	8.5E-05	7.4E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.2E-11	7.9E-09	9.3E-08	5.5E-08	3.4E-07	6.4E-07	8.2E-07	6.0E-08	2.1E-08	2.2E-07

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																									
													Metal									Heavy Metal							
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3
In-stack Concentration (mg/Nm^3)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R1221	299462	6259297	3.7E-06	3.7E-06	3.3E-05	1.8E-06	3.7E-06	9.9E-05	4.4E-04	8.4E-05	7.3E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.2E-09	1.4E-07	1.2E-08	8.0E-11	7.7E-09	9.1E-08	5.4E-08	3.4E-07	6.3E-07	8.0E-07	6.0E-08	2.0E-08	2.2E-07
	R1222	299512	6259297	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.7E-05	4.3E-04	8.2E-05	7.2E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.9E-11	7.6E-09	8.9E-08	5.3E-08	3.3E-07	6.2E-07	7.9E-07	5.8E-08	2.0E-08	2.1E-07
	R1223	299562	6259297	3.5E-06	3.5E-06	3.2E-05	1.8E-06	3.5E-06	9.5E-05	4.2E-04	8.1E-05	7.0E-06	1.4E-08	3.2E-08	3.5E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.7E-11	7.5E-09	8.8E-08	5.2E-08	3.2E-07	6.1E-07	7.7E-07	5.7E-08	2.0E-08	2.1E-07
	R1224	299612	6259297	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.3E-05	4.1E-04	7.9E-05	6.9E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.5E-11	7.3E-09	8.6E-08	5.1E-08	3.2E-07	5.9E-07	7.5E-07	5.6E-08	1.9E-08	2.1E-07
	R1225	299662	6259297	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	9.0E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.4E-11	7.1E-09	8.4E-08	4.9E-08	3.1E-07	5.7E-07	7.4E-07	5.4E-08	1.9E-08	2.0E-07
	R1226	299712	6259297	3.3E-06	3.3E-06	2.9E-05	1.6E-06	3.3E-06	8.8E-05	3.9E-04	7.5E-05	6.5E-06	1.3E-08	2.9E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.2E-11	6.9E-09	8.1E-08	4.8E-08	3.0E-07	5.6E-07	7.2E-07	5.3E-08	1.8E-08	2.0E-07
	R1227	299762	6259297	3.2E-06	3.2E-06	2.8E-05	1.6E-06	3.2E-06	8.5E-05	3.8E-04	7.3E-05	6.3E-06	1.3E-08	2.8E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.7E-09	7.9E-08	4.7E-08	2.9E-07	5.4E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R1228	299812	6259297	3.1E-06	3.1E-06	2.8E-05	1.5E-06	3.1E-06	8.3E-05	3.7E-04	7.1E-05	6.1E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.0E-09	1.1E-07	1.0E-08	6.8E-11	6.5E-09	7.7E-08	4.5E-08	2.8E-07	5.3E-07	6.8E-07	5.0E-08	1.7E-08	1.8E-07
	R1229	299862	6259297	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.1E-05	3.6E-04	6.9E-05	6.0E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.6E-11	6.3E-09	7.5E-08	4.4E-08	2.8E-07	5.1E-07	6.6E-07	4.9E-08	1.7E-08	1.8E-07
	R1230	299912	6259297	2.9E-06	2.9E-06	2.6E-05	1.5E-06	2.9E-06	7.9E-05	3.5E-04	6.7E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.9E-10	1.1E-07	9.7E-09	6.4E-11	6.2E-09	7.3E-08	4.3E-08	2.7E-07	5.0E-07	6.4E-07	4.8E-08	1.6E-08	1.8E-07
	R1231	299962	6259297	2.8E-06	2.8E-06	2.6E-05	1.4E-06	2.8E-06	7.7E-05	3.4E-04	6.5E-05	5.7E-06	1.1E-08	2.6E-08	2.8E-09	2.0E-11	9.7E-10	1.1E-07	9.5E-09	6.2E-11	6.0E-09	7.1E-08	4.2E-08	2.6E-07	4.9E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R1232	300012	6259297	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.5E-05	3.3E-04	6.4E-05	5.5E-06	1.1E-08	2.5E-08	2.8E-09	1.9E-11	9.4E-10	1.0E-07	9.2E-09	6.1E-11	5.9E-09	6.9E-08	4.1E-08	2.5E-07	4.8E-07	6.1E-07	4.5E-08	1.6E-08	1.7E-07
	R1233	300062	6259297	2.7E-06	2.7E-06	2.4E-05	1.4E-06	2.7E-06	7.3E-05	3.2E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.2E-10	1.0E-07	9.0E-09	6.0E-11	5.7E-09	6.8E-08	4.0E-08	2.5E-07	4.7E-07	6.0E-07	4.4E-08	1.5E-08	1.6E-07
	R1234	300112	6259297	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.6E-09	1.9E-11	9.0E-10	9.8E-08	8.8E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.5E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R1235	300162	6259297	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	7.0E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.8E-10	9.6E-08	8.6E-09	5.7E-11	5.5E-09	6.5E-08	3.8E-08	2.4E-07	4.4E-07	5.7E-07	4.2E-08	1.4E-08	1.6E-07
	R1236	300212	6259297	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.1E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.6E-10	9.4E-08	8.4E-09	5.6E-11	5.4E-09	6.3E-08	3.7E-08	2.3E-07	4.4E-07	5.6E-07	4.1E-08	1.4E-08	1.5E-07
	R1237	300262	6259297	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.7E-05	3.0E-04	5.7E-05	4.9E-06	9.9E-09	2.2E-08	2.5E-09	1.7E-11	8.4E-10	9.1E-08	8.2E-09	5.4E-11	5.2E-09	6.2E-08	3.7E-08	2.3E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R1238	300312	6259297	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.5E-05	4.8E-06	9.6E-09	2.2E-08	2.4E-09	1.7E-11	8.2E-10	8.9E-08	8.0E-09	5.3E-11	5.1E-09	6.0E-08	3.6E-08	2.2E-07	4.1E-07	5.3E-07	3.9E-08	1.3E-08	1.4E-07
	R1239	300362	6259297	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.4E-09	2.1E-08	2.3E-09	1.6E-11	8.0E-10	8.7E-08	7.8E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.0E-07	5.2E-07	3.8E-08	1.3E-08	1.4E-07
	R1240	300412	6259297	2.3E-06	2.3E-06	2.1E-05	1.1E-06	2.3E-06	6.2E-05	2.8E-04	5.3E-05	4.6E-06	9.2E-09	2.1E-08	2.3E-09	1.6E-11	7.8E-10	8.5E-08	7.6E-09	5.1E-11	4.9E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.1E-07	3.7E-08	1.3E-08	1.4E-07
	R1241	300462	6259297	2.3E-06	2.3E-06	2.0E-05	1.1E-06	2.3E-06	6.1E-05	2.7E-04	5.2E-05	4.5E-06	9.0E-09	2.0E-08	2.3E-09	1.6E-11	7.7E-10	8.3E-08	7.5E-09	5.0E-11	4.8E-09	5.6E-08	3.3E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R1242	300512	6259297	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.6E-04	5.1E-05	4.4E-06	8.8E-09	2.0E-08	2.2E-09	1.5E-11	7.5E-10	8.2E-08	7.3E-09	4.9E-11	4.7E-09	5.5E-08	3.3E-08	2.0E-07	3.8E-07	4.9E-07	3.6E-08	1.2E-08	1.3E-07
	R1243	300562	6259297	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.8E-05	2.6E-04	4.9E-05	4.3E-06	8.6E-09	1.9E-08	2.1E-09	1.5E-11	7.3E-10	7.9E-08	7.1E-09	4.7E-11	4.5E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
	R1244	300612	6259297	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.7E-05	2.5E-04	4.8E-05	4.2E-06	8.4E-09	1.9E-08	2.1E-09	1.5E-11	7.1E-10	7.8E-08	7.0E-09	4.6E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.3E-07
	R1245	300662	6259297	2.1E-06	2.1E-06	1.8E-05	1.0E-06	2.1E-06	5.5E-05	2.5E-04	4.7E-05	4.1E-06	8.2E-09	1.8E-08	2.1E-09	1.4E-11	7.0E-10	7.6E-08	6.8E-09	4.5E-11	4.3E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.3E-08	1.1E-08	1.2E-07
	R1246	300712	6259297	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	8.1E-09	1.8E-08	2.0E-09	1.4E-11	6.8E-10	7.4E-08	6.7E-09	4.4E-11	4.3E-09	5.0E-08	3.0E-08	1.9E-07	3.5E-07	4.4E-07	3.3E-08	1.1E-08	1.2E-07
	R1247	300762	6259297	2.0E-06	2.0E-06	1.8E-05	9.9E-07	2.0E-06	5.3E-05	2.4E-04	4.5E-05	3.9E-06	7.9E-09	1.8E-08	2.0E-09	1.4E-11	6.7E-10	7.3E-08	6.6E-09	4.3E-11	4.2E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R1248	300812	6259297	1.9E-06	1.9E-06	1.7E-05	9.6E-07	1.9E-06	5.2E-05	2.3E-04	4.4E-05	3.8E-06	7.7E-09	1.7E-08	1.9E-09	1.3E-11	6.5E-10	7.1E-08	6.4E-09	4.2E-11	4.1E-09	4.8E-08	2.8E-08	1.8E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.2E-07
	R1249	301062	6258297	1.8E-06	1.8E-06	1.6E-05	8.9E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.6E-06	7.1E-09	1.6E-08	1.8E-09	1.2E-11	6.1E-10	6.6E-08	5.9E-09	3.9E-11	3.8E-09	4.5E-08	2.6E-08	1.6E-07	3.1E-07	3.9E-07	2.9E-08	1.0E-08	1.1E-07
	R1250	301112	6258297	1.8E-06	1.8E-06	1.6E-05	8.8E-07	1.8E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	7.0E-09	1.6E-08	1.8E-09	1.2E-11	6.0E-10	6.5E-08	5.8E-09	3.9E-11	3.7E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.9E-07	2.9E-08	9.8E-09	1.1E-07
	R1251	301162	6258297	1.7E-06	1.7E-06	1.5E-05	8.6E-07	1.7E-06	4.6E-05	2.1E-04	3.9E-05	3.4E-06	6.9E-09	1.5E-08	1.7E-09	1.2E-11	5.8E-10	6.4E-08	5.7E-09	3.8E-11	3.6E-09	4.3E-08	2.5E-08	1.6E-07	3.0E-07	3.8E-07	2.8E-08	9.6E-09	1.0E-07
	R1252	301212	6258297	1.7E-06	1.7E-06	1.5E-05	8.4E-07	1.7E-06	4.6E-05	2.0E-04	3.9E-05	3.4E-06	6.7E-09	1.5E-08	1.7E-09	1.2E-11	5.7E-10	6.2E-08	5.6E-09	3.7E-11	3.6E-09	4.2E-08	2.5E-08	1.6E-07	2.9E-07	3.7E-07	2.7E-08	9.4E-09	1.0E-07
	R1253	301262	6258297	1.7E-06	1.7E-06	1.5E-05	8.3E-07	1.7E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.7E-09	1.2E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.5E-08	1.5E-07	2.9E-07	3.6E-07	2.7E-08	9.3E-09	9.9E-08
	R1254	301312	6258297	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	2.0E-04	3.7E-05	3.3E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.4E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.6E-08	9.1E-09	9.8E-08
	R1255	300912	6258347	1.9E-06	1.9E-06	1.7E-05	9.4E-07	1.9E-06	5.1E-05	2.3E-04	4.3E-05	3.8E-06	7.6E-09	1.7E-08	1.9E-09	1.3E-11	6.4E-10	7.0E-08	6.3E-09	4.2E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.2E-07	4.2E-07	3.1E-08	1.1E-08	1.1E-07
	R1256	300962	6258347	1.8E-06	1.8E-06	1.7E-05	9.2E-07	1.8E-06	5.0E-05	2.2E-04	4.3E-05	3.7E-06	7.4E-09	1.7E-08	1.8E-09	1.3E-11	6.3E-10	6.8E-08	6.2E-09	4.1E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.2E-07	4.1E-07	3.0E-08	1.0E-08	1.1E-07
	R1257	301012	6258347	1.8E-06	1.8E-06	1.6E-05	9.1E-07	1.8E-06	4.9E-05	2.2E-04	4.2E-05	3.6E-06	7.3E-09	1.6E-08	1.8E-09	1.3E-11	6.2E-10	6.7E-08	6.0E-09	4.0E-11	3.8E-09	4.5E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	3.0E-08	1.0E-08	1.1E-07
	R1258	301062	6258347	1.8E-06	1.8E-06	1.6E-05	8.9E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.6E-06	7.1E-09	1.6E-08	1.8E-09	1.2E-11	6.1E-10	6.6E-08	5.9E-09	3.9E-11	3.8E-09	4.5E-08	2.6E-08	1.6E-07	3.1E-07	3.9E-07	2.9E-08	1.0E-08	1.1E-07
	R1259	301112	6258347	1.8E-06	1.8E-06	1.6E-05	8.8E-07	1.8E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	7.0E-09	1.6E-08	1.8E-09	1.2E-11	6.0E-10	6.5E-08	5.9E-09	3.9E-11	3.7E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.9E-07	2.9E-08	9.8E-09	1.1E-07
	R1260	301162	6258347	1.7E-06	1.7E-06	1.5E-05	8.6E-07	1.7E-06	4.6E-05	2.1E-04	4.0E-05	3.4E-06	6.9E-09	1.5E-08	1.7E-09	1.2E-11	5.9E-10	6.4E-08	5.7E-09	3.8E-11	3.6E-09	4.3E-08	2.5E-08	1.6E-07	3.0E-07	3.8E-07	2.8E-08	9.6E-09	1.0E-07
	R1261	301212	6258347	1.7E-06	1.7E-06	1.5E-05	8.4E-07	1.7E-06	4.6E-05	2.0E-04	3.9E-05	3.4E-06	6.7E-09	1.5E-08	1.7E-09	1.2E-11	5.7E-10	6.2E-08	5.6E-09	3.7E-11	3.6E-09	4.2E-08	2.5E-08	1.6E-07	2.9E-07	3.7E-07	2.7E-08	9.4E-09	1.0E-07
	R1262	301262	6258347	1.7E-06	1.7E-06	1.5E-05	8.3E-07	1.7E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.7E-09	1.2E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.3E-09	9.9E-08
	R1263	301312	6258347	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	1.9E-04	3.7E-05	3.2E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.4E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.6E-08	9.1E-09	9.7E-08
	R1264	300712	6258397	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.5E-05	2.5E-04	4.7E-05	4.1E-06	8.2E-09	1.8E-08	2.0E-09	1.4E-11	6.9E-10	7.6E-08	6.8E-09	4.5E-11	4.3E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.3E-08	1.1E-08	1.2E-07
	R1265	300762	6258397	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	8.0E-09	1.8E-08	2.0E-09	1.4E-11	6.8E-10	7.4E-08	6.7E-09	4.4E-11	4.3E-09	5.0E-08	3.0E-08	1.8E-07	3.5E-07	4.4E-07	3.3E-08	1.1E-08	1.2E-07
	R1266	300812	6258397	2.0E-06	2.0E-06	1.8E-05	9.9E-07	2.0E-06	5.3E-05	2.4E-04	4.5E-05	3.9E-06	7.9E-09	1.8E-08	2.0E-09	1.4E-11	6.7E-10	7.3E-08	6.6E-09	4.3E-11	4.2E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R1267	300862	6258397	1.9E-06	1.9E-06	1.7E-05	9.7E-07	1.9E-06	5.2E-05	2.3E-04	4.4E-05	3.9E-06	7.7E-09	1.7E-08	1.9E-09	1.4E-11	6.6E-10	7.1E-08	6.4E-09	4.2E-11	4.1E-09	4.8E-08	2.9E-08	1.8E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.2E-07
	R1268	300912	6258397	1.9E-06	1.9E-06	1.7E-05	9.4E-07	1.9E-06	5.1E-05	2.3E-04	4.3E-05	3.8E-06	7.5E-09	1.7E-08	1.9E-09	1.3E-11	6.4E-10	7.0E-08	6.3E-09	4.1E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.2E-07	4.1E-07	3.1E-08	1.1E-08	1.1E-07
	R1269	300962	6258397	1.8E-06	1.8E-06	1.7E-05	9.2E-07	1.8E-06	5.0E-05	2.2E-04	4.2E-05	3.7E-06	7.4E-09	1.7E-08	1.8E-09	1.3E-11	6.3E-10	6.8E-08	6.1E-09	4.1E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.2E-07	4.1E-07	3.0E-08	1.0E-08	1.1E-07
	R1270	301012	6258397	1.8E-06	1.8E-06	1.6E-05	9.1E-07	1.8E-06	4.9E-05	2.2E-04	4.2E-05	3.6E-06	7.3E-09	1.6E-08	1.8E-09	1.3E-11	6.2E-10	6.7E-08	6.0E-09	4.0E-11	3.8E-09	4.5E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	3.0E-08	1.0E-08	1.1E-07
	R1271	301062	6258397	1.8E-06	1.8E-06	1.6E-05	8.9E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.6E-06	7.1E-09	1.6E-08	1.8E-09	1.2E-11	6.1E-10	6.6E-08	5.9E-09	3.9E-11	3.8E-09	4.5E-08	2.6E-08	1.6E-07	3.1E-07	3.9E-07	2.9E-08	1.0E-08	1.1E-07
	R1272	301112	6258397	1.8E-06	1.8E-06	1.6E-05	8.8E-07	1.8E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	7.0E-09	1.6E-08	1.8E-09	1.2E-11	6.0E-10	6.5E-08	5.8E-09	3.9E-11	3.7E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.9E-07	2.9E-08	9.8E-09	1.1E-07
	R1273	301162	6258397	1.7E-06	1.7E-06	1.5E-05	8.6E-07	1.7E-06	4.6E-05	2.1E-04	4.0E-05	3.4E-06	6.9E-09	1.5E-08	1.7E-09	1.2E-11	5.8E-10	6.4E-08	5.7E-09	3.8E-11	3.6E-09	4.3E-08	2.5E-08	1.6E-07	3.0E-07	3.8E-07	2.8E-08	9.6E-09	1.0E-07
	R1274	301212	6258397	1.7E-06	1.7E-06	1.5E-05	8.4E-07	1.7E-06	4.6E-05	2.0E-04	3.9E-05	3.4E-06	6.7E-09	1.5E-08	1.7E-09	1.2E-11	5.7E-10	6.2E-08	5.6E-09	3.7E-11	3.6E-09	4.2E-08	2.5E-08	1.6E-07	2.9E-07	3.7E-07	2.7E-08	9.4E-09	1.0E-07
	R1275	301262	6258397	1.7E-06	1.7E-06	1.5E-05	8.3E-07	1.7E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.7E-09	1.2E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.3E-09	9.9E-08
	R1276	301312	6258397	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	1.9E-04	3.7E-05	3.2E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.4E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.6E-08	9.1E-09	9.7E-08
	R1277	300562	6258447	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	5.9E-05	2.6E-04	5.0E-05	4.4E-06	8.7E-09	2.0E-08	2.2E-09	1.5E-11	7.4E-10	8.1E-08	7.3E-09	4.8E-11	4.6E-09	5.5E-08	3.2E-08	2.0E-07	3.8E-07	4.8E-07	3.6E-08	1.2E-08	1.3E-07
	R1278	300612	6258447	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.6E-04	4.9E-05	4.3E-06	8.5E-09	1.9E-08	2.1E-09	1.5E-11	7.2E-10	7.9E-08	7.1E-09	4.7E-11	4.5E-09	5.3E-08	3.1E-08	2.0E-07	3.7E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
	R1279	300662	6258447	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.8E-05	4.2E-06	8.3E-09	1.9E-08	2.1E-09	1.5E-11	7.1E-10	7.7E-08	6.9E-09	4.6E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.2E-07
	R1280	300712	6258447	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.5E-05	2.4E-04	4.7E-05	4.1E-06	8.1E-09	1.8E-08	2.0E-09	1.4E-11	6.9E-10	7.5E-08	6.8E-09	4.5E-11	4.3E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.3E-08	1.1E-08	1.2E-07
	R1281	300762	6258447	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	8.0E-09	1.8E-08	2.0E-09	1.4E-11	6.8E-10	7.4E-08	6.6E-09	4.4E-11	4.2E-09	5.0E-08	3.0E-08	1.8E-07	3.4E-07	4.4E-07	3.3E-08	1.1E-08	1.2E-07

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																									
													Metal									Heavy Metal							
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R1282	300812	6258447	2.0E-06	2.0E-06	1.8E-05	9.8E-07	2.0E-06	5.3E-05	2.4E-04	4.5E-05	3.9E-06	7.9E-09	1.8E-08	2.0E-09	1.4E-11	6.7E-10	7.3E-08	6.5E-09	4.3E-11	4.2E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R1283	300862	6258447	1.9E-06	1.9E-06	1.7E-05	9.6E-07	1.9E-06	5.2E-05	2.3E-04	4.4E-05	3.9E-06	7.7E-09	1.7E-08	1.9E-09	1.3E-11	6.5E-10	7.1E-08	6.4E-09	4.2E-11	4.1E-09	4.8E-08	2.8E-08	1.8E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.2E-07
	R1284	300912	6258447	1.9E-06	1.9E-06	1.7E-05	9.4E-07	1.9E-06	5.1E-05	2.3E-04	4.3E-05	3.8E-06	7.5E-09	1.7E-08	1.9E-09	1.3E-11	6.4E-10	7.0E-08	6.3E-09	4.1E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.2E-07	4.1E-07	3.1E-08	1.1E-08	1.1E-07
	R1285	300962	6258447	1.8E-06	1.8E-06	1.7E-05	9.2E-07	1.8E-06	5.0E-05	2.2E-04	4.2E-05	3.7E-06	7.4E-09	1.7E-08	1.8E-09	1.3E-11	6.3E-10	6.8E-08	6.1E-09	4.1E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.2E-07	4.1E-07	3.0E-08	1.0E-08	1.1E-07
	R1286	301012	6258447	1.8E-06	1.8E-06	1.6E-05	9.0E-07	1.8E-06	4.9E-05	2.2E-04	4.2E-05	3.6E-06	7.2E-09	1.6E-08	1.8E-09	1.3E-11	6.1E-10	6.7E-08	6.0E-09	4.0E-11	3.8E-09	4.5E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	2.9E-08	1.0E-08	1.1E-07
	R1287	301062	6258447	1.8E-06	1.8E-06	1.6E-05	8.9E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.5E-06	7.1E-09	1.6E-08	1.8E-09	1.2E-11	6.0E-10	6.6E-08	5.9E-09	3.9E-11	3.8E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.9E-07	2.9E-08	9.9E-09	1.1E-07
	R1288	301112	6258447	1.7E-06	1.7E-06	1.6E-05	8.7E-07	1.7E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	6.9E-09	1.6E-08	1.7E-09	1.2E-11	5.9E-10	6.4E-08	5.8E-09	3.8E-11	3.7E-09	4.3E-08	2.6E-08	1.6E-07	3.0E-07	3.8E-07	2.8E-08	9.7E-09	1.0E-07
	R1289	301162	6258447	1.7E-06	1.7E-06	1.5E-05	8.5E-07	1.7E-06	4.6E-05	2.0E-04	3.9E-05	3.4E-06	6.8E-09	1.5E-08	1.7E-09	1.2E-11	5.8E-10	6.3E-08	5.7E-09	3.7E-11	3.6E-09	4.3E-08	2.5E-08	1.6E-07	2.9E-07	3.7E-07	2.8E-08	9.5E-09	1.0E-07
	R1290	301212	6258447	1.7E-06	1.7E-06	1.5E-05	8.4E-07	1.7E-06	4.5E-05	2.0E-04	3.9E-05	3.4E-06	6.7E-09	1.5E-08	1.7E-09	1.2E-11	5.7E-10	6.2E-08	5.6E-09	3.7E-11	3.6E-09	4.2E-08	2.5E-08	1.5E-07	2.9E-07	3.7E-07	2.7E-08	9.4E-09	1.0E-07
	R1291	301262	6258447	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.6E-09	1.2E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.2E-09	9.9E-08
	R1292	301312	6258447	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	1.9E-04	3.7E-05	3.2E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.6E-08	9.1E-09	9.7E-08
	R1293	300412	6258497	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.8E-09	5.1E-11	5.0E-09	5.8E-08	3.5E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R1294	300462	6258497	2.3E-06	2.3E-06	2.0E-05	1.1E-06	2.3E-06	6.1E-05	2.7E-04	5.2E-05	4.5E-06	9.1E-09	2.0E-08	2.3E-09	1.6E-11	7.7E-10	8.4E-08	7.6E-09	5.0E-11	4.8E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R1295	300512	6258497	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.5E-06	8.9E-09	2.0E-08	2.2E-09	1.6E-11	7.6E-10	8.2E-08	7.4E-09	4.9E-11	4.7E-09	5.6E-08	3.3E-08	2.0E-07	3.8E-07	4.9E-07	3.6E-08	1.2E-08	1.3E-07
	R1296	300562	6258497	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	5.9E-05	2.6E-04	5.0E-05	4.4E-06	8.7E-09	2.0E-08	2.2E-09	1.5E-11	7.4E-10	8.1E-08	7.3E-09	4.8E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.8E-07	3.6E-08	1.2E-08	1.3E-07
	R1297	300612	6258497	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.5E-04	4.9E-05	4.2E-06	8.5E-09	1.9E-08	2.1E-09	1.5E-11	7.2E-10	7.9E-08	7.1E-09	4.7E-11	4.5E-09	5.3E-08	3.1E-08	2.0E-07	3.7E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
	R1298	300662	6258497	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.8E-05	4.2E-06	8.3E-09	1.9E-08	2.1E-09	1.5E-11	7.1E-10	7.7E-08	6.9E-09	4.6E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.2E-07
	R1299	300712	6258497	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.5E-05	2.4E-04	4.7E-05	4.1E-06	8.1E-09	1.8E-08	2.0E-09	1.4E-11	6.9E-10	7.5E-08	6.8E-09	4.5E-11	4.3E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.3E-08	1.1E-08	1.2E-07
	R1300	300762	6258497	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	8.0E-09	1.8E-08	2.0E-09	1.4E-11	6.8E-10	7.4E-08	6.6E-09	4.4E-11	4.2E-09	5.0E-08	2.9E-08	1.8E-07	3.4E-07	4.4E-07	3.2E-08	1.1E-08	1.2E-07
	R1301	300812	6258497	2.0E-06	2.0E-06	1.8E-05	9.8E-07	2.0E-06	5.3E-05	2.3E-04	4.5E-05	3.9E-06	7.8E-09	1.8E-08	2.0E-09	1.4E-11	6.6E-10	7.2E-08	6.5E-09	4.3E-11	4.1E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R1302	300862	6258497	1.9E-06	1.9E-06	1.7E-05	9.6E-07	1.9E-06	5.2E-05	2.3E-04	4.4E-05	3.8E-06	7.7E-09	1.7E-08	1.9E-09	1.3E-11	6.5E-10	7.1E-08	6.4E-09	4.2E-11	4.1E-09	4.8E-08	2.8E-08	1.8E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.1E-07
	R1303	300912	6258497	1.9E-06	1.9E-06	1.7E-05	9.4E-07	1.9E-06	5.1E-05	2.3E-04	4.3E-05	3.8E-06	7.5E-09	1.7E-08	1.9E-09	1.3E-11	6.4E-10	6.9E-08	6.3E-09	4.1E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.2E-07	4.1E-07	3.1E-08	1.1E-08	1.1E-07
	R1304	300962	6258497	1.8E-06	1.8E-06	1.7E-05	9.2E-07	1.8E-06	5.0E-05	2.2E-04	4.2E-05	3.7E-06	7.4E-09	1.7E-08	1.8E-09	1.3E-11	6.3E-10	6.8E-08	6.1E-09	4.1E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.2E-07	4.1E-07	3.0E-08	1.0E-08	1.1E-07
	R1305	301012	6258497	1.8E-06	1.8E-06	1.6E-05	9.0E-07	1.8E-06	4.9E-05	2.2E-04	4.2E-05	3.6E-06	7.2E-09	1.6E-08	1.8E-09	1.3E-11	6.1E-10	6.7E-08	6.0E-09	4.0E-11	3.8E-09	4.5E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	2.9E-08	1.0E-08	1.1E-07
	R1306	301062	6258497	1.8E-06	1.8E-06	1.6E-05	8.8E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.5E-06	7.1E-09	1.6E-08	1.8E-09	1.2E-11	6.0E-10	6.5E-08	5.9E-09	3.9E-11	3.7E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.9E-07	2.9E-08	9.9E-09	1.1E-07
	R1307	301112	6258497	1.7E-06	1.7E-06	1.6E-05	8.6E-07	1.7E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	6.9E-09	1.6E-08	1.7E-09	1.2E-11	5.9E-10	6.4E-08	5.8E-09	3.8E-11	3.7E-09	4.3E-08	2.6E-08	1.6E-07	3.0E-07	3.8E-07	2.8E-08	9.7E-09	1.0E-07
	R1308	301162	6258497	1.7E-06	1.7E-06	1.5E-05	8.5E-07	1.7E-06	4.6E-05	2.0E-04	3.9E-05	3.4E-06	6.8E-09	1.5E-08	1.7E-09	1.2E-11	5.8E-10	6.3E-08	5.6E-09	3.7E-11	3.6E-09	4.2E-08	2.5E-08	1.6E-07	2.9E-07	3.7E-07	2.8E-08	9.5E-09	1.0E-07
	R1309	301212	6258497	1.7E-06	1.7E-06	1.5E-05	8.3E-07	1.7E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.7E-09	1.5E-08	1.7E-09	1.2E-11	5.7E-10	6.2E-08	5.6E-09	3.7E-11	3.5E-09	4.2E-08	2.5E-08	1.5E-07	2.9E-07	3.7E-07	2.7E-08	9.3E-09	1.0E-07
	R1310	301262	6258497	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.4E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.6E-09	1.1E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.2E-09	9.9E-08
	R1311	301312	6258497	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	1.9E-04	3.7E-05	3.2E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.6E-08	9.0E-09	9.7E-08
	R1312	300262	6258547	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.0E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.5E-10	9.3E-08	8.4E-09	5.5E-11	5.3E-09	6.3E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R1313	300312	6258547	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.8E-09	2.2E-08	2.5E-09	1.7E-11	8.3E-10	9.1E-08	8.2E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.3E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R1314	300362	6258547	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.9E-04	5.5E-05	4.8E-06	9.5E-09	2.1E-08	2.4E-09	1.7E-11	8.1E-10	8.8E-08	7.9E-09	5.2E-11	5.1E-09	6.0E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.9E-08	1.3E-08	1.4E-07
	R1315	300412	6258547	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.8E-09	5.1E-11	4.9E-09	5.8E-08	3.5E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R1316	300462	6258547	2.3E-06	2.3E-06	2.1E-05	1.1E-06	2.3E-06	6.2E-05	2.7E-04	5.3E-05	4.6E-06	9.1E-09	2.1E-08	2.3E-09	1.6E-11	7.8E-10	8.5E-08	7.6E-09	5.0E-11	4.8E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R1317	300512	6258547	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.5E-06	8.9E-09	2.0E-08	2.2E-09	1.6E-11	7.6E-10	8.2E-08	7.4E-09	4.9E-11	4.7E-09	5.6E-08	3.3E-08	2.0E-07	3.8E-07	4.9E-07	3.6E-08	1.2E-08	1.3E-07
	R1318	300562	6258547	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	5.9E-05	2.6E-04	5.0E-05	4.3E-06	8.7E-09	2.0E-08	2.2E-09	1.5E-11	7.4E-10	8.0E-08	7.2E-09	4.8E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.8E-07	3.5E-08	1.2E-08	1.3E-07
	R1319	300612	6258547	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.5E-04	4.9E-05	4.2E-06	8.5E-09	1.9E-08	2.1E-09	1.5E-11	7.2E-10	7.9E-08	7.1E-09	4.7E-11	4.5E-09	5.3E-08	3.1E-08	2.0E-07	3.7E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
	R1320	300662	6258547	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.8E-05	4.2E-06	8.3E-09	1.9E-08	2.1E-09	1.5E-11	7.1E-10	7.7E-08	6.9E-09	4.6E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.2E-07
	R1321	300712	6258547	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.5E-05	2.4E-04	4.7E-05	4.1E-06	8.1E-09	1.8E-08	2.0E-09	1.4E-11	6.9E-10	7.5E-08	6.8E-09	4.5E-11	4.3E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.3E-08	1.1E-08	1.2E-07
	R1322	300762	6258547	2.0E-06	2.0E-06	1.8E-05	9.9E-07	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	7.9E-09	1.8E-08	2.0E-09	1.4E-11	6.7E-10	7.3E-08	6.6E-09	4.4E-11	4.2E-09	5.0E-08	2.9E-08	1.8E-07	3.4E-07	4.4E-07	3.2E-08	1.1E-08	1.2E-07
	R1323	300812	6258547	1.9E-06	1.9E-06	1.7E-05	9.7E-07	1.9E-06	5.2E-05	2.3E-04	4.5E-05	3.9E-06	7.8E-09	1.7E-08	1.9E-09	1.4E-11	6.6E-10	7.2E-08	6.5E-09	4.3E-11	4.1E-09	4.9E-08	2.9E-08	1.8E-07	3.3E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R1324	300862	6258547	1.9E-06	1.9E-06	1.7E-05	9.6E-07	1.9E-06	5.2E-05	2.3E-04	4.4E-05	3.8E-06	7.6E-09	1.7E-08	1.9E-09	1.3E-11	6.5E-10	7.1E-08	6.4E-09	4.2E-11	4.0E-09	4.8E-08	2.8E-08	1.8E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.1E-07
	R1325	300912	6258547	1.9E-06	1.9E-06	1.7E-05	9.4E-07	1.9E-06	5.1E-05	2.2E-04	4.3E-05	3.7E-06	7.5E-09	1.7E-08	1.9E-09	1.3E-11	6.4E-10	6.9E-08	6.2E-09	4.1E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.2E-07	4.1E-07	3.1E-08	1.0E-08	1.1E-07
	R1326	300962	6258547	1.8E-06	1.8E-06	1.7E-05	9.2E-07	1.8E-06	5.0E-05	2.2E-04	4.2E-05	3.7E-06	7.3E-09	1.7E-08	1.8E-09	1.3E-11	6.2E-10	6.8E-08	6.1E-09	4.0E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.2E-07	4.0E-07	3.0E-08	1.0E-08	1.1E-07
	R1327	301012	6258547	1.8E-06	1.8E-06	1.6E-05	9.0E-07	1.8E-06	4.9E-05	2.2E-04	4.1E-05	3.6E-06	7.2E-09	1.6E-08	1.8E-09	1.3E-11	6.1E-10	6.7E-08	6.0E-09	4.0E-11	3.8E-09	4.5E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	2.9E-08	1.0E-08	1.1E-07
	R1328	301062	6258547	1.8E-06	1.8E-06	1.6E-05	8.8E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.5E-06	7.1E-09	1.6E-08	1.8E-09	1.2E-11	6.0E-10	6.5E-08	5.9E-09	3.9E-11	3.7E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.9E-07	2.9E-08	9.9E-09	1.1E-07
	R1329	301112	6258547	1.7E-06	1.7E-06	1.6E-05	8.7E-07	1.7E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	6.9E-09	1.6E-08	1.7E-09	1.2E-11	5.9E-10	6.4E-08	5.8E-09	3.8E-11	3.7E-09	4.3E-08	2.6E-08	1.6E-07	3.0E-07	3.8E-07	2.8E-08	9.7E-09	1.0E-07
	R1330	301162	6258547	1.7E-06	1.7E-06	1.5E-05	8.5E-07	1.7E-06	4.6E-05	2.0E-04	3.9E-05	3.4E-06	6.8E-09	1.5E-08	1.7E-09	1.2E-11	5.8E-10	6.3E-08	5.7E-09	3.7E-11	3.6E-09	4.2E-08	2.5E-08	1.6E-07	2.9E-07	3.7E-07	2.8E-08	9.5E-09	1.0E-07
	R1331	301212	6258547	1.7E-06	1.7E-06	1.5E-05	8.3E-07	1.7E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.7E-09	1.5E-08	1.7E-09	1.2E-11	5.7E-10	6.2E-08	5.5E-09	3.7E-11	3.5E-09	4.2E-08	2.5E-08	1.5E-07	2.9E-07	3.7E-07	2.7E-08	9.3E-09	1.0E-07
	R1332	301262	6258547	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.4E-05	2.0E-04	3.8E-05	3.3E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.2E-09	9.8E-08
	R1333	301312	6258547	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	1.9E-04	3.7E-05	3.2E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.7E-08
	R1334	300112	6258597	2.7E-06	2.7E-06	2.4E-05	1.4E-06	2.7E-06	7.3E-05	3.3E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.2E-10	1.0E-07	9.0E-09	6.0E-11	5.7E-09	6.8E-08	4.0E-08	2.5E-07	4.7E-07	6.0E-07	4.4E-08	1.5E-08	1.6E-07
	R1335	300162	6258597	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.6E-09	1.8E-11	9.0E-10	9.8E-08	8.8E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.5E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R1336	300212	6258597	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.7E-10	9.5E-08	8.6E-09	5.7E-11	5.4E-09	6.4E-08	3.8E-08	2.4E-07	4.4E-07	5.7E-07	4.2E-08	1.4E-08	1.5E-07
	R1337	300262	6258597	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.0E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.5E-10	9.3E-08	8.3E-09	5.5E-11	5.3E-09	6.3E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R1338	300312	6258597	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.8E-09	2.2E-08	2.4E-09	1.7E-11	8.3E-10	9.0E-08	8.1E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.2E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R1339	300362	6258597	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.9E-04	5.5E-05	4.8E-06	9.5E-09	2.1E-08	2.4E-09	1.7E-11	8.1E-10	8.8E-08	7.9E-09	5.2E-11	5.0E-09	6.0E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.9E-08	1.3E-08	1.4E-07
	R1340	300412	6258597	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.7E-09	5.1E-11	4.9E-09	5.8E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R1341	300462	6258597	2.3E-06	2.3E-06	2.1E-05	1.1E-06	2.3E-06	6.2E-05	2.7E-04	5.2E-05	4.6E-06	9.1E-09	2.1E-08	2.3E-09	1.6E-11	7.8E-10	8.4E-08	7.6E-09	5.0E-11	4.8E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R1342	300512	6258597	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.4E-06	8.9E-09	2.0E-08	2.2E-09	1.6E-11	7.6E-10	8.2E-08	7.4E-09	4.9E-11	4.7E-09	5.6E-08	3.3E-08	2.0E-07	3.8E-07	4.9E-07	3.6E-08	1.2E-08	1.3E-07

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

				Annual GLCs																									
													Metal									Heavy Metal							
Sensitive Receptor	ID	X	Y	PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R1343	300562	6258597	2.2E-06	2.2E-06	1.9E-05	1.1E-06	2.2E-06	5.8E-05	2.6E-04	5.0E-05	4.3E-06	8.7E-09	1.9E-08	2.2E-09	1.5E-11	7.4E-10	8.0E-08	7.2E-09	4.8E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.8E-07	3.5E-08	1.2E-08	1.3E-07
	R1344	300612	6258597	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.5E-04	4.9E-05	4.2E-06	8.5E-09	1.9E-08	2.1E-09	1.5E-11	7.2E-10	7.8E-08	7.0E-09	4.7E-11	4.5E-09	5.3E-08	3.1E-08	1.9E-07	3.6E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
	R1345	300662	6258597	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.7E-05	4.1E-06	8.3E-09	1.9E-08	2.1E-09	1.4E-11	7.0E-10	7.6E-08	6.9E-09	4.5E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.6E-07	4.5E-07	3.4E-08	1.2E-08	1.2E-07
	R1346	300712	6258597	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	8.1E-09	1.8E-08	2.0E-09	1.4E-11	6.9E-10	7.5E-08	6.7E-09	4.4E-11	4.3E-09	5.0E-08	3.0E-08	1.9E-07	3.5E-07	4.4E-07	3.3E-08	1.1E-08	1.2E-07
	R1347	300762	6258597	2.0E-06	2.0E-06	1.8E-05	9.9E-07	2.0E-06	5.3E-05	2.4E-04	4.5E-05	4.0E-06	7.9E-09	1.8E-08	2.0E-09	1.4E-11	6.7E-10	7.3E-08	6.6E-09	4.3E-11	4.2E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R1348	300812	6258597	1.9E-06	1.9E-06	1.7E-05	9.7E-07	1.9E-06	5.2E-05	2.3E-04	4.5E-05	3.9E-06	7.8E-09	1.7E-08	1.9E-09	1.4E-11	6.6E-10	7.2E-08	6.5E-09	4.3E-11	4.1E-09	4.8E-08	2.9E-08	1.8E-07	3.3E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R1349	300862	6258597	1.9E-06	1.9E-06	1.7E-05	9.5E-07	1.9E-06	5.1E-05	2.3E-04	4.4E-05	3.8E-06	7.6E-09	1.7E-08	1.9E-09	1.3E-11	6.5E-10	7.0E-08	6.3E-09	4.2E-11	4.0E-09	4.8E-08	2.8E-08	1.7E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.1E-07
	R1350	300912	6258597	1.9E-06	1.9E-06	1.7E-05	9.3E-07	1.9E-06	5.0E-05	2.2E-04	4.3E-05	3.7E-06	7.5E-09	1.7E-08	1.9E-09	1.3E-11	6.3E-10	6.9E-08	6.2E-09	4.1E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.2E-07	4.1E-07	3.0E-08	1.0E-08	1.1E-07
	R1351	300962	6258597	1.8E-06	1.8E-06	1.6E-05	9.2E-07	1.8E-06	4.9E-05	2.2E-04	4.2E-05	3.7E-06	7.3E-09	1.6E-08	1.8E-09	1.3E-11	6.2E-10	6.8E-08	6.1E-09	4.0E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	3.0E-08	1.0E-08	1.1E-07
	R1352	301012	6258597	1.8E-06	1.8E-06	1.6E-05	9.0E-07	1.8E-06	4.8E-05	2.2E-04	4.1E-05	3.6E-06	7.2E-09	1.6E-08	1.8E-09	1.3E-11	6.1E-10	6.6E-08	6.0E-09	4.0E-11	3.8E-09	4.5E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	2.9E-08	1.0E-08	1.1E-07
	R1353	301062	6258597	1.8E-06	1.8E-06	1.6E-05	8.8E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.5E-06	7.1E-09	1.6E-08	1.8E-09	1.2E-11	6.0E-10	6.5E-08	5.9E-09	3.9E-11	3.8E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.9E-07	2.9E-08	9.9E-09	1.1E-07
	R1354	301112	6258597	1.7E-06	1.7E-06	1.6E-05	8.7E-07	1.7E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	7.0E-09	1.6E-08	1.7E-09	1.2E-11	5.9E-10	6.4E-08	5.8E-09	3.8E-11	3.7E-09	4.3E-08	2.6E-08	1.6E-07	3.0E-07	3.8E-07	2.8E-08	9.7E-09	1.0E-07
	R1355	301162	6258597	1.7E-06	1.7E-06	1.5E-05	8.5E-07	1.7E-06	4.6E-05	2.0E-04	3.9E-05	3.4E-06	6.8E-09	1.5E-08	1.7E-09	1.2E-11	5.8E-10	6.3E-08	5.7E-09	3.7E-11	3.6E-09	4.3E-08	2.5E-08	1.6E-07	2.9E-07	3.7E-07	2.8E-08	9.5E-09	1.0E-07
	R1356	301212	6258597	1.7E-06	1.7E-06	1.5E-05	8.3E-07	1.7E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.7E-09	1.5E-08	1.7E-09	1.2E-11	5.7E-10	6.2E-08	5.5E-09	3.7E-11	3.5E-09	4.2E-08	2.5E-08	1.5E-07	2.9E-07	3.7E-07	2.7E-08	9.3E-09	1.0E-07
	R1357	301262	6258597	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.4E-05	2.0E-04	3.8E-05	3.3E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.2E-09	9.8E-08
	R1358	301312	6258597	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.7E-08
	R1359	299962	6258647	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.0E-05	3.5E-04	6.8E-05	5.9E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	9.8E-09	6.5E-11	6.3E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.7E-08	1.8E-07
	R1360	300012	6258647	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.7E-05	3.4E-04	6.6E-05	5.7E-06	1.1E-08	2.6E-08	2.9E-09	2.0E-11	9.8E-10	1.1E-07	9.6E-09	6.3E-11	6.1E-09	7.2E-08	4.2E-08	2.6E-07	4.9E-07	6.3E-07	4.7E-08	1.6E-08	1.7E-07
	R1361	300062	6258647	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.5E-05	3.3E-04	6.4E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.5E-10	1.0E-07	9.3E-09	6.1E-11	5.9E-09	7.0E-08	4.1E-08	2.6E-07	4.8E-07	6.1E-07	4.5E-08	1.6E-08	1.7E-07
	R1362	300112	6258647	2.7E-06	2.7E-06	2.4E-05	1.4E-06	2.7E-06	7.3E-05	3.2E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.2E-10	1.0E-07	9.0E-09	6.0E-11	5.7E-09	6.8E-08	4.0E-08	2.5E-07	4.7E-07	6.0E-07	4.4E-08	1.5E-08	1.6E-07
	R1363	300162	6258647	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.6E-09	1.8E-11	9.0E-10	9.8E-08	8.8E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.5E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R1364	300212	6258647	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.7E-10	9.5E-08	8.6E-09	5.7E-11	5.4E-09	6.4E-08	3.8E-08	2.4E-07	4.4E-07	5.7E-07	4.2E-08	1.4E-08	1.5E-07
	R1365	300262	6258647	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.0E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.5E-10	9.3E-08	8.3E-09	5.5E-11	5.3E-09	6.3E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R1366	300312	6258647	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.8E-09	2.2E-08	2.4E-09	1.7E-11	8.3E-10	9.1E-08	8.1E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.3E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R1367	300362	6258647	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.5E-05	4.8E-06	9.6E-09	2.2E-08	2.4E-09	1.7E-11	8.1E-10	8.8E-08	8.0E-09	5.3E-11	5.1E-09	6.0E-08	3.5E-08	2.2E-07	4.1E-07	5.3E-07	3.9E-08	1.3E-08	1.4E-07
	R1368	300412	6258647	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.8E-09	5.1E-11	4.9E-09	5.8E-08	3.5E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R1369	300462	6258647	2.3E-06	2.3E-06	2.0E-05	1.1E-06	2.3E-06	6.1E-05	2.7E-04	5.2E-05	4.5E-06	9.1E-09	2.0E-08	2.3E-09	1.6E-11	7.7E-10	8.4E-08	7.6E-09	5.0E-11	4.8E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R1370	300512	6258647	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.4E-06	8.9E-09	2.0E-08	2.2E-09	1.6E-11	7.6E-10	8.2E-08	7.4E-09	4.9E-11	4.7E-09	5.6E-08	3.3E-08	2.0E-07	3.8E-07	4.9E-07	3.6E-08	1.2E-08	1.3E-07
	R1371	300562	6258647	2.2E-06	2.2E-06	1.9E-05	1.1E-06	2.2E-06	5.8E-05	2.6E-04	5.0E-05	4.3E-06	8.7E-09	1.9E-08	2.2E-09	1.5E-11	7.4E-10	8.0E-08	7.2E-09	4.8E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.8E-07	3.5E-08	1.2E-08	1.3E-07
	R1372	300612	6258647	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.5E-04	4.9E-05	4.2E-06	8.5E-09	1.9E-08	2.1E-09	1.5E-11	7.2E-10	7.8E-08	7.0E-09	4.7E-11	4.5E-09	5.3E-08	3.1E-08	1.9E-07	3.6E-07	4.7E-07	3.4E-08	1.2E-08	1.3E-07
	R1373	300662	6258647	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.8E-05	4.1E-06	8.3E-09	1.9E-08	2.1E-09	1.4E-11	7.0E-10	7.6E-08	6.9E-09	4.5E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.6E-07	4.5E-07	3.4E-08	1.2E-08	1.2E-07
	R1374	300712	6258647	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	8.1E-09	1.8E-08	2.0E-09	1.4E-11	6.9E-10	7.5E-08	6.7E-09	4.4E-11	4.3E-09	5.0E-08	3.0E-08	1.9E-07	3.5E-07	4.4E-07	3.3E-08	1.1E-08	1.2E-07
	R1375	300762	6258647	2.0E-06	2.0E-06	1.8E-05	9.9E-07	2.0E-06	5.3E-05	2.4E-04	4.5E-05	4.0E-06	7.9E-09	1.8E-08	2.0E-09	1.4E-11	6.7E-10	7.3E-08	6.6E-09	4.3E-11	4.2E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R1376	300812	6258647	1.9E-06	1.9E-06	1.7E-05	9.7E-07	1.9E-06	5.2E-05	2.3E-04	4.5E-05	3.9E-06	7.8E-09	1.7E-08	1.9E-09	1.4E-11	6.6E-10	7.2E-08	6.5E-09	4.3E-11	4.1E-09	4.8E-08	2.9E-08	1.8E-07	3.3E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R1377	300862	6258647	1.9E-06	1.9E-06	1.7E-05	9.5E-07	1.9E-06	5.1E-05	2.3E-04	4.4E-05	3.8E-06	7.6E-09	1.7E-08	1.9E-09	1.3E-11	6.5E-10	7.0E-08	6.3E-09	4.2E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.1E-07
	R1378	300912	6258647	1.9E-06	1.9E-06	1.7E-05	9.3E-07	1.9E-06	5.0E-05	2.2E-04	4.3E-05	3.7E-06	7.5E-09	1.7E-08	1.9E-09	1.3E-11	6.3E-10	6.9E-08	6.2E-09	4.1E-11	3.9E-09	4.7E-08	2.8E-08	1.7E-07	3.2E-07	4.1E-07	3.0E-08	1.0E-08	1.1E-07
	R1379	300962	6258647	1.8E-06	1.8E-06	1.6E-05	9.1E-07	1.8E-06	4.9E-05	2.2E-04	4.2E-05	3.7E-06	7.3E-09	1.6E-08	1.8E-09	1.3E-11	6.2E-10	6.8E-08	6.1E-09	4.0E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	3.0E-08	1.0E-08	1.1E-07
	R1380	301012	6258647	1.8E-06	1.8E-06	1.6E-05	9.0E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.6E-06	7.2E-09	1.6E-08	1.8E-09	1.3E-11	6.1E-10	6.6E-08	6.0E-09	3.9E-11	3.8E-09	4.5E-08	2.7E-08	1.6E-07	3.1E-07	3.9E-07	2.9E-08	1.0E-08	1.1E-07
	R1381	301062	6258647	1.8E-06	1.8E-06	1.6E-05	8.8E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.5E-06	7.1E-09	1.6E-08	1.8E-09	1.2E-11	6.0E-10	6.5E-08	5.9E-09	3.9E-11	3.7E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.9E-07	2.9E-08	9.9E-09	1.1E-07
	R1382	301112	6258647	1.7E-06	1.7E-06	1.6E-05	8.7E-07	1.7E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	7.0E-09	1.6E-08	1.7E-09	1.2E-11	5.9E-10	6.4E-08	5.8E-09	3.8E-11	3.7E-09	4.3E-08	2.6E-08	1.6E-07	3.0E-07	3.8E-07	2.8E-08	9.7E-09	1.0E-07
	R1383	301162	6258647	1.7E-06	1.7E-06	1.5E-05	8.5E-07	1.7E-06	4.6E-05	2.0E-04	3.9E-05	3.4E-06	6.8E-09	1.5E-08	1.7E-09	1.2E-11	5.8E-10	6.3E-08	5.7E-09	3.8E-11	3.6E-09	4.3E-08	2.5E-08	1.6E-07	2.9E-07	3.8E-07	2.8E-08	9.6E-09	1.0E-07
	R1384	301212	6258647	1.7E-06	1.7E-06	1.5E-05	8.3E-07	1.7E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.7E-09	1.5E-08	1.7E-09	1.2E-11	5.7E-10	6.2E-08	5.5E-09	3.7E-11	3.5E-09	4.2E-08	2.5E-08	1.5E-07	2.9E-07	3.7E-07	2.7E-08	9.3E-09	1.0E-07
	R1385	301262	6258647	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.4E-05	2.0E-04	3.8E-05	3.3E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.6E-10	6.0E-08	5.4E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.2E-09	9.8E-08
	R1386	301312	6258647	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.5E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.6E-08
	R1387	299812	6258697	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.7E-05	3.9E-04	7.4E-05	6.5E-06	1.3E-08	2.9E-08	3.2E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.8E-09	8.1E-08	4.8E-08	3.0E-07	5.6E-07	7.1E-07	5.3E-08	1.8E-08	1.9E-07
	R1388	299862	6258697	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.5E-05	3.8E-04	7.2E-05	6.3E-06	1.3E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.2E-07	1.0E-08	6.9E-11	6.6E-09	7.8E-08	4.6E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.8E-08	1.9E-07
	R1389	299912	6258697	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.2E-05	3.6E-04	7.0E-05	6.1E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.4E-09	7.6E-08	4.5E-08	2.8E-07	5.2E-07	6.7E-07	5.0E-08	1.7E-08	1.8E-07
	R1390	299962	6258697	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.0E-05	3.5E-04	6.8E-05	5.9E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	9.8E-09	6.5E-11	6.3E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.7E-08	1.8E-07
	R1391	300012	6258697	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.7E-05	3.4E-04	6.6E-05	5.7E-06	1.1E-08	2.6E-08	2.9E-09	2.0E-11	9.7E-10	1.1E-07	9.5E-09	6.3E-11	6.1E-09	7.2E-08	4.2E-08	2.6E-07	4.9E-07	6.3E-07	4.7E-08	1.6E-08	1.7E-07
	R1392	300062	6258697	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.5E-05	3.3E-04	6.4E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	1.9E-11	9.5E-10	1.0E-07	9.3E-09	6.1E-11	5.9E-09	7.0E-08	4.1E-08	2.6E-07	4.8E-07	6.1E-07	4.5E-08	1.6E-08	1.7E-07
	R1393	300112	6258697	2.7E-06	2.7E-06	2.4E-05	1.4E-06	2.7E-06	7.3E-05	3.3E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.2E-10	1.0E-07	9.0E-09	6.0E-11	5.7E-09	6.8E-08	4.0E-08	2.5E-07	4.7E-07	6.0E-07	4.4E-08	1.5E-08	1.6E-07
	R1394	300162	6258697	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.6E-09	1.8E-11	9.0E-10	9.8E-08	8.8E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.5E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R1395	300212	6258697	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.7E-10	9.5E-08	8.5E-09	5.6E-11	5.4E-09	6.4E-08	3.8E-08	2.4E-07	4.4E-07	5.6E-07	4.2E-08	1.4E-08	1.5E-07
	R1396	300262	6258697	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.0E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.5E-10	9.3E-08	8.3E-09	5.5E-11	5.3E-09	6.3E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R1397	300312	6258697	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.8E-09	2.2E-08	2.4E-09	1.7E-11	8.3E-10	9.1E-08	8.2E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.3E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R1398	300362	6258697	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.9E-04	5.5E-05	4.8E-06	9.6E-09	2.1E-08	2.4E-09	1.7E-11	8.1E-10	8.8E-08	8.0E-09	5.3E-11	5.1E-09	6.0E-08	3.5E-08	2.2E-07	4.1E-07	5.3E-07	3.9E-08	1.3E-08	1.4E-07
	R1399	300412	6258697	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.8E-09	5.1E-11	5.0E-09	5.8E-08	3.5E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R1400	300462	6258697	2.3E-06	2.3E-06	2.0E-05	1.1E-06	2.3E-06	6.1E-05	2.7E-04	5.2E-05	4.6E-06	9.1E-09	2.0E-08	2.3E-09	1.6E-11	7.7E-10	8.4E-08	7.6E-09	5.0E-11	4.8E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R1401	300512	6258697	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.5E-06	8.9E-09	2.0E-08	2.2E-09	1.6E-11	7.6E-10	8.2E-08	7.4E-09	4.9E-11	4.7E-09	5.6E-08	3.3E-08	2.0E-07	3.8E-07	4.9E-07	3.6E-08	1.2E-08	1.3E-07
	R1402	300562	6258697	2.2E-06	2.2E-06	1.9E-05	1.1E-06	2.2E-06	5.8E-05	2.6E-04	5.0E-05	4.3E-06	8.7E-09	1.9E-08	2.2E-09	1.5E-11	7.4E-10	8.0E-08	7.2E-09	4.8E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.8E-07	3.5E-08	1.2E-08	1.3E-07
	R1403	300612	6258697	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.5E-04	4.9E-05	4.2E-06	8.5E-09	1.9E-08	2.1E-09	1.5E-11	7.2E-10	7.8E-08	7.0E-09	4.7E-11	4.5E-09	5.3E-08	3.1E-08	1.9E-07	3.6E-07	4.7E-07	3.4E-08	1.2E-08	1.3E-07

Scenario 1 and Scenario 3 Weighted Average
Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																										
													Metal									Heavy Metal								
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm ³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R1404	300662	6258697	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.8E-05	4.1E-06	8.3E-09	1.9E-08	2.1E-09	1.4E-11	7.0E-10	7.6E-08	6.9E-09	4.5E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.6E-07	4.5E-07	3.4E-08	1.2E-08	1.2E-07
	R1405	300712	6258697	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.5E-05	2.4E-04	4.6E-05	4.0E-06	8.1E-09	1.8E-08	2.0E-09	1.4E-11	6.9E-10	7.5E-08	6.7E-09	4.4E-11	4.3E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.4E-07	3.3E-08	1.1E-08	1.2E-07
	R1406	300762	6258697	2.0E-06	2.0E-06	1.8E-05	9.9E-07	2.0E-06	5.3E-05	2.4E-04	4.6E-05	4.0E-06	7.9E-09	1.8E-08	2.0E-09	1.4E-11	6.7E-10	7.3E-08	6.6E-09	4.4E-11	4.2E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.4E-07	3.2E-08	1.1E-08	1.2E-07
	R1407	300812	6258697	1.9E-06	1.9E-06	1.7E-05	9.7E-07	1.9E-06	5.2E-05	2.3E-04	4.5E-05	3.9E-06	7.8E-09	1.7E-08	1.9E-09	1.4E-11	6.6E-10	7.2E-08	6.5E-09	4.3E-11	4.1E-09	4.9E-08	2.9E-08	1.8E-07	3.3E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R1408	300862	6258697	1.9E-06	1.9E-06	1.7E-05	9.5E-07	1.9E-06	5.1E-05	2.3E-04	4.4E-05	3.8E-06	7.6E-09	1.7E-08	1.9E-09	1.3E-11	6.5E-10	7.0E-08	6.3E-09	4.2E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.1E-07
	R1409	300912	6258697	1.9E-06	1.9E-06	1.7E-05	9.3E-07	1.9E-06	5.0E-05	2.2E-04	4.3E-05	3.7E-06	7.4E-09	1.7E-08	1.9E-09	1.3E-11	6.3E-10	6.9E-08	6.2E-09	4.1E-11	3.9E-09	4.7E-08	2.8E-08	1.7E-07	3.2E-07	4.1E-07	3.0E-08	1.0E-08	1.1E-07
	R1410	300962	6258697	1.8E-06	1.8E-06	1.6E-05	9.1E-07	1.8E-06	4.9E-05	2.2E-04	4.2E-05	3.6E-06	7.3E-09	1.6E-08	1.8E-09	1.3E-11	6.2E-10	6.7E-08	6.1E-09	4.0E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	3.0E-08	1.0E-08	1.1E-07
	R1411	301012	6258697	1.8E-06	1.8E-06	1.6E-05	8.9E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.6E-06	7.1E-09	1.6E-08	1.8E-09	1.3E-11	6.1E-10	6.6E-08	6.0E-09	3.9E-11	3.8E-09	4.5E-08	2.6E-08	1.6E-07	3.1E-07	3.9E-07	2.9E-08	1.0E-08	1.1E-07
	R1412	301062	6258697	1.8E-06	1.8E-06	1.6E-05	8.8E-07	1.8E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	7.0E-09	1.6E-08	1.8E-09	1.2E-11	6.0E-10	6.5E-08	5.8E-09	3.9E-11	3.7E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.9E-07	2.9E-08	9.8E-09	1.1E-07
	R1413	301112	6258697	1.7E-06	1.7E-06	1.6E-05	8.6E-07	1.7E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	6.9E-09	1.6E-08	1.7E-09	1.2E-11	5.9E-10	6.4E-08	5.8E-09	3.8E-11	3.7E-09	4.3E-08	2.6E-08	1.6E-07	3.0E-07	3.8E-07	2.8E-08	9.7E-09	1.0E-07
	R1414	301162	6258697	1.7E-06	1.7E-06	1.5E-05	8.5E-07	1.7E-06	4.6E-05	2.0E-04	3.9E-05	3.4E-06	6.8E-09	1.5E-08	1.7E-09	1.2E-11	5.8E-10	6.3E-08	5.7E-09	3.7E-11	3.6E-09	4.2E-08	2.5E-08	1.6E-07	2.9E-07	3.7E-07	2.8E-08	9.5E-09	1.0E-07
	R1415	301212	6258697	1.7E-06	1.7E-06	1.5E-05	8.3E-07	1.7E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.7E-09	1.2E-11	5.7E-10	6.2E-08	5.5E-09	3.7E-11	3.5E-09	4.2E-08	2.5E-08	1.5E-07	2.9E-07	3.7E-07	2.7E-08	9.3E-09	1.0E-07
	R1416	301262	6258697	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.4E-05	2.0E-04	3.8E-05	3.3E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.1E-09	9.8E-08
	R1417	301312	6258697	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.5E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.6E-08
	R1418	299662	6258747	3.5E-06	3.5E-06	3.2E-05	1.8E-06	3.5E-06	9.5E-05	4.2E-04	8.1E-05	7.1E-06	1.4E-08	3.2E-08	3.5E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.8E-11	7.5E-09	8.8E-08	5.2E-08	3.3E-07	6.1E-07	7.8E-07	5.8E-08	2.0E-08	2.1E-07
	R1419	299712	6258747	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.2E-05	4.1E-04	7.9E-05	6.8E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.5E-11	7.3E-09	8.6E-08	5.1E-08	3.1E-07	5.9E-07	7.5E-07	5.6E-08	1.9E-08	2.1E-07
	R1420	299762	6258747	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	9.0E-05	4.0E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.0E-09	8.3E-08	4.9E-08	3.1E-07	5.7E-07	7.3E-07	5.4E-08	1.9E-08	2.0E-07
	R1421	299812	6258747	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.7E-05	3.9E-04	7.4E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.8E-09	8.0E-08	4.8E-08	3.0E-07	5.5E-07	7.1E-07	5.2E-08	1.8E-08	1.9E-07
	R1422	299862	6258747	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.4E-05	3.8E-04	7.2E-05	6.3E-06	1.3E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.2E-07	1.0E-08	6.9E-11	6.6E-09	7.8E-08	4.6E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.8E-08	1.9E-07
	R1423	299912	6258747	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.2E-05	3.6E-04	7.0E-05	6.1E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.4E-09	7.6E-08	4.5E-08	2.8E-07	5.2E-07	6.7E-07	4.9E-08	1.7E-08	1.8E-07
	R1424	299962	6258747	2.9E-06	2.9E-06	2.7E-05	1.5E-06	2.9E-06	8.0E-05	3.5E-04	6.8E-05	5.9E-06	1.2E-08	2.7E-08	2.9E-09	2.1E-11	1.0E-09	1.1E-07	9.8E-09	6.5E-11	6.2E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.7E-08	1.8E-07
	R1425	300012	6258747	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.7E-05	3.4E-04	6.6E-05	5.7E-06	1.1E-08	2.6E-08	2.9E-09	2.0E-11	9.7E-10	1.1E-07	9.5E-09	6.3E-11	6.1E-09	7.2E-08	4.2E-08	2.6E-07	4.9E-07	6.3E-07	4.7E-08	1.6E-08	1.7E-07
	R1426	300062	6258747	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.5E-05	3.3E-04	6.4E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	1.9E-11	9.5E-10	1.0E-07	9.3E-09	6.1E-11	5.9E-09	7.0E-08	4.1E-08	2.6E-07	4.8E-07	6.1E-07	4.5E-08	1.6E-08	1.7E-07
	R1427	300112	6258747	2.7E-06	2.7E-06	2.4E-05	1.4E-06	2.7E-06	7.3E-05	3.3E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.2E-10	1.0E-07	9.0E-09	6.0E-11	5.7E-09	6.8E-08	4.0E-08	2.5E-07	4.7E-07	6.0E-07	4.4E-08	1.5E-08	1.6E-07
	R1428	300162	6258747	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.6E-09	1.8E-11	9.0E-10	9.8E-08	8.8E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.5E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R1429	300212	6258747	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.7E-10	9.5E-08	8.6E-09	5.6E-11	5.4E-09	6.4E-08	3.8E-08	2.4E-07	4.4E-07	5.6E-07	4.2E-08	1.4E-08	1.5E-07
	R1430	300262	6258747	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.0E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.5E-10	9.3E-08	8.3E-09	5.5E-11	5.3E-09	6.3E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R1431	300312	6258747	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.8E-09	2.2E-08	2.5E-09	1.7E-11	8.3E-10	9.1E-08	8.2E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.3E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R1432	300362	6258747	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.5E-05	4.8E-06	9.6E-09	2.2E-08	2.4E-09	1.7E-11	8.1E-10	8.9E-08	8.0E-09	5.3E-11	5.1E-09	6.0E-08	3.5E-08	2.2E-07	4.1E-07	5.3E-07	3.9E-08	1.3E-08	1.4E-07
	R1433	300412	6258747	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.8E-09	5.1E-11	4.9E-09	5.8E-08	3.5E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R1434	300462	6258747	2.3E-06	2.3E-06	2.1E-05	1.1E-06	2.3E-06	6.2E-05	2.7E-04	5.2E-05	4.6E-06	9.1E-09	2.1E-08	2.3E-09	1.6E-11	7.8E-10	8.4E-08	7.6E-09	5.0E-11	4.8E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R1435	300512	6258747	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.4E-06	8.9E-09	2.0E-08	2.2E-09	1.6E-11	7.6E-10	8.2E-08	7.4E-09	4.9E-11	4.7E-09	5.6E-08	3.3E-08	2.0E-07	3.8E-07	4.9E-07	3.6E-08	1.2E-08	1.3E-07
	R1436	300562	6258747	2.2E-06	2.2E-06	1.9E-05	1.1E-06	2.2E-06	5.8E-05	2.6E-04	5.0E-05	4.3E-06	8.7E-09	1.9E-08	2.2E-09	1.5E-11	7.4E-10	8.0E-08	7.2E-09	4.8E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.8E-07	3.5E-08	1.2E-08	1.3E-07
	R1437	300612	6258747	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.5E-04	4.9E-05	4.2E-06	8.5E-09	1.9E-08	2.1E-09	1.5E-11	7.2E-10	7.8E-08	7.0E-09	4.7E-11	4.5E-09	5.3E-08	3.1E-08	1.9E-07	3.6E-07	4.7E-07	3.4E-08	1.2E-08	1.3E-07
	R1438	300662	6258747	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.8E-05	4.1E-06	8.3E-09	1.9E-08	2.1E-09	1.4E-11	7.0E-10	7.6E-08	6.9E-09	4.5E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.6E-07	4.5E-07	3.4E-08	1.2E-08	1.2E-07
	R1439	300712	6258747	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.5E-05	2.4E-04	4.7E-05	4.1E-06	8.1E-09	1.8E-08	2.0E-09	1.4E-11	6.9E-10	7.5E-08	6.7E-09	4.5E-11	4.3E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.3E-08	1.1E-08	1.2E-07
	R1440	300762	6258747	2.0E-06	2.0E-06	1.8E-05	9.9E-07	2.0E-06	5.3E-05	2.4E-04	4.6E-05	4.0E-06	7.9E-09	1.8E-08	2.0E-09	1.4E-11	6.7E-10	7.3E-08	6.6E-09	4.4E-11	4.2E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.4E-07	3.2E-08	1.1E-08	1.2E-07
	R1441	300812	6258747	1.9E-06	1.9E-06	1.7E-05	9.7E-07	1.9E-06	5.2E-05	2.3E-04	4.5E-05	3.9E-06	7.8E-09	1.7E-08	1.9E-09	1.4E-11	6.6E-10	7.2E-08	6.5E-09	4.3E-11	4.1E-09	4.8E-08	2.9E-08	1.8E-07	3.3E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R1442	300862	6258747	1.9E-06	1.9E-06	1.7E-05	9.5E-07	1.9E-06	5.1E-05	2.3E-04	4.4E-05	3.8E-06	7.6E-09	1.7E-08	1.9E-09	1.3E-11	6.5E-10	7.0E-08	6.3E-09	4.2E-11	4.0E-09	4.8E-08	2.8E-08	1.7E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.1E-07
	R1443	300912	6258747	1.9E-06	1.9E-06	1.7E-05	9.3E-07	1.9E-06	5.0E-05	2.2E-04	4.3E-05	3.7E-06	7.5E-09	1.7E-08	1.9E-09	1.3E-11	6.3E-10	6.9E-08	6.2E-09	4.1E-11	3.9E-09	4.7E-08	2.8E-08	1.7E-07	3.2E-07	4.1E-07	3.0E-08	1.0E-08	1.1E-07
	R1444	300962	6258747	1.8E-06	1.8E-06	1.6E-05	9.1E-07	1.8E-06	4.9E-05	2.2E-04	4.2E-05	3.6E-06	7.3E-09	1.6E-08	1.8E-09	1.3E-11	6.2E-10	6.7E-08	6.1E-09	4.0E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	3.0E-08	1.0E-08	1.1E-07
	R1445	301012	6258747	1.8E-06	1.8E-06	1.6E-05	8.9E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.6E-06	7.1E-09	1.6E-08	1.8E-09	1.2E-11	6.1E-10	6.6E-08	5.9E-09	3.9E-11	3.8E-09	4.5E-08	2.6E-08	1.6E-07	3.1E-07	3.9E-07	2.9E-08	1.0E-08	1.1E-07
	R1446	301062	6258747	1.8E-06	1.8E-06	1.6E-05	8.8E-07	1.8E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	7.0E-09	1.6E-08	1.8E-09	1.2E-11	6.0E-10	6.5E-08	5.8E-09	3.9E-11	3.7E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.9E-07	2.9E-08	9.8E-09	1.1E-07
	R1447	301112	6258747	1.7E-06	1.7E-06	1.6E-05	8.6E-07	1.7E-06	4.7E-05	2.1E-04	4.0E-05	3.4E-06	6.9E-09	1.6E-08	1.7E-09	1.2E-11	5.9E-10	6.4E-08	5.7E-09	3.8E-11	3.7E-09	4.3E-08	2.6E-08	1.6E-07	3.0E-07	3.8E-07	2.8E-08	9.7E-09	1.0E-07
	R1448	301162	6258747	1.7E-06	1.7E-06	1.5E-05	8.5E-07	1.7E-06	4.6E-05	2.0E-04	3.9E-05	3.4E-06	6.8E-09	1.5E-08	1.7E-09	1.2E-11	5.8E-10	6.3E-08	5.6E-09	3.7E-11	3.6E-09	4.2E-08	2.5E-08	1.6E-07	2.9E-07	3.7E-07	2.8E-08	9.5E-09	1.0E-07
	R1449	301212	6258747	1.7E-06	1.7E-06	1.5E-05	8.3E-07	1.7E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.7E-09	1.2E-11	5.6E-10	6.1E-08	5.5E-09	3.7E-11	3.5E-09	4.2E-08	2.5E-08	1.5E-07	2.9E-07	3.7E-07	2.7E-08	9.3E-09	1.0E-07
	R1450	301262	6258747	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.4E-05	2.0E-04	3.8E-05	3.3E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.6E-10	6.0E-08	5.4E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.1E-09	9.8E-08
	R1451	301312	6258747	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.5E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.6E-08
	R1452	300862	6258797	1.9E-06	1.9E-06	1.7E-05	9.5E-07	1.9E-06	5.1E-05	2.3E-04	4.4E-05	3.8E-06	7.6E-09	1.7E-08	1.9E-09	1.3E-11	6.4E-10	7.0E-08	6.3E-09	4.2E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.1E-07
	R1453	300912	6258797	1.9E-06	1.9E-06	1.7E-05	9.3E-07	1.9E-06	5.0E-05	2.2E-04	4.3E-05	3.7E-06	7.4E-09	1.7E-08	1.9E-09	1.3E-11	6.3E-10	6.9E-08	6.2E-09	4.1E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.2E-07	4.1E-07	3.0E-08	1.0E-08	1.1E-07
	R1454	300962	6258797	1.8E-06	1.8E-06	1.6E-05	9.1E-07	1.8E-06	4.9E-05	2.2E-04	4.2E-05	3.6E-06	7.3E-09	1.6E-08	1.8E-09	1.3E-11	6.2E-10	6.7E-08	6.1E-09	4.0E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	3.0E-08	1.0E-08	1.1E-07
	R1455	301012	6258797	1.8E-06	1.8E-06	1.6E-05	8.9E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.6E-06	7.1E-09	1.6E-08	1.8E-09	1.2E-11	6.1E-10	6.6E-08	5.9E-09	3.9E-11	3.8E-09	4.5E-08	2.6E-08	1.6E-07	3.1E-07	3.9E-07	2.9E-08	1.0E-08	1.1E-07
	R1456	301062	6258797	1.8E-06	1.8E-06	1.6E-05	8.8E-07	1.8E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	7.0E-09	1.6E-08	1.8E-09	1.2E-11	6.0E-10	6.5E-08	5.8E-09	3.9E-11	3.7E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.9E-07	2.9E-08	9.8E-09	1.1E-07
	R1457	301112	6258797	1.7E-06	1.7E-06	1.6E-05	8.6E-07	1.7E-06	4.7E-05	2.1E-04	4.0E-05	3.4E-06	6.9E-09	1.6E-08	1.7E-09	1.2E-11	5.9E-10	6.4E-08	5.7E-09	3.8E-11	3.7E-09	4.3E-08	2.6E-08	1.6E-07	3.0E-07	3.8E-07	2.8E-08	9.7E-09	1.0E-07
	R1458	301162	6258797	1.7E-06	1.7E-06	1.5E-05	8.5E-07	1.7E-06	4.6E-05	2.0E-04	3.9E-05	3.4E-06	6.8E-09	1.5E-08	1.7E-09	1.2E-11	5.8E-10	6.3E-08	5.6E-09	3.7E-11	3.6E-09	4.2E-08	2.5E-08	1.6E-07	2.9E-07	3.7E-07	2.8E-08	9.5E-09	1.0E-07
	R1459	301212	6258797	1.7E-06	1.7E-06	1.5E-05	8.3E-07	1.7E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.7E-09	1.2E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.5E-08	1.5E-07	2.9E-07	3.6E-07	2.7E-08	9.3E-09	1.0E-07
	R1460	301262	6258797	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	2.0E-04	3.7E-05	3.3E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.4E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.1E-09	9.8E-08
	R1461	301312	6258797	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.6E-08
	R1462	300862	6258847	1.9E-06	1.9E-06	1.7E-05	9.4E-07	1.9E-06	5.1E-05	2.3E-04	4.3E-05	3.8E-06	7.5E-09	1.7E-08	1.9E-09	1.3E-11	6.4E-10	7.0E-08	6.3E-09	4.2E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.2E-07	4.2E-07	3.1E-08	1.1E-08	1.1E-07
	R1463	300912	6258847	1.8E-06	1.8E-06	1.7E-05	9.2E-07	1.8E-06	5.0E-05	2.2E-04	4.2E-05	3.7E-06	7.4E-09	1.7E-08	1.8E-09	1.3E-11	6.3E-10	6.8E-08	6.1E-09	4.1E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.2E-07	4.1E-07	3.0E-08	1.0E-08	1.1E-07
	R1464	300962	6258847	1.8E-06	1.8E-06	1.6E-05	9.1E-07	1.8E-06	4.9E-05	2.2E-04	4.2E-05	3.6E-06	7.3E-09	1.6E-08	1.8E-09	1.3E-11	6.2E-10	6.7E-08	6.0E-09	4.0E-11	3.8E-09	4.5E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	3.0E-08	1.0E-08	1.1E-07

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																											
													Metal										Heavy Metal								
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm ³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R1465	301012	6258847	1.8E-06	1.8E-06	1.6E-05	8.9E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.6E-06	7.1E-09	1.6E-08	1.8E-09	1.2E-11	6.1E-10	6.6E-08	5.9E-09	3.9E-11	3.8E-09	4.5E-08	2.6E-08	1.6E-07	3.1E-07	3.9E-07	2.9E-08	1.0E-08	1.1E-07
	R1466	301062	6258847	1.7E-06	1.7E-06	1.6E-05	8.7E-07	1.7E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	7.0E-09	1.6E-08	1.7E-09	1.2E-11	5.9E-10	6.5E-08	5.8E-09	3.8E-11	3.7E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.8E-07	2.8E-08	9.8E-09	1.0E-07
	R1467	301112	6258847	1.7E-06	1.7E-06	1.5E-05	8.6E-07	1.7E-06	4.6E-05	2.1E-04	3.9E-05	3.4E-06	6.9E-09	1.5E-08	1.7E-09	1.2E-11	5.8E-10	6.3E-08	5.7E-09	3.8E-11	3.6E-09	4.3E-08	2.5E-08	1.6E-07	2.9E-07	3.8E-07	2.8E-08	9.6E-09	1.0E-07
	R1468	301162	6258847	1.7E-06	1.7E-06	1.5E-05	8.4E-07	1.7E-06	4.6E-05	2.0E-04	3.9E-05	3.4E-06	6.7E-09	1.5E-08	1.7E-09	1.2E-11	5.7E-10	6.2E-08	5.6E-09	3.7E-11	3.6E-09	4.2E-08	2.5E-08	1.6E-07	2.9E-07	3.7E-07	2.7E-08	9.4E-09	1.0E-07
	R1469	301212	6258847	1.7E-06	1.7E-06	1.5E-05	8.3E-07	1.7E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.7E-09	1.2E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.3E-09	9.9E-08
	R1470	301262	6258847	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	2.0E-04	3.7E-05	3.3E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.4E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.6E-08	9.1E-09	9.8E-08
	R1471	301312	6258847	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.6E-08
	R1472	297912	6258897	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.5E-04	8.6E-05	7.5E-06	1.5E-08	3.4E-08	3.8E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.3E-11	8.0E-09	9.4E-08	5.6E-08	3.5E-07	6.5E-07	8.3E-07	6.1E-08	2.1E-08	2.3E-07
	R1473	297962	6258897	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.6E-04	8.8E-05	7.6E-06	1.5E-08	3.4E-08	3.8E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.4E-11	8.1E-09	9.6E-08	5.7E-08	3.5E-07	6.6E-07	8.4E-07	6.2E-08	2.1E-08	2.3E-07
	R1474	298012	6258897	3.9E-06	3.9E-06	3.5E-05	1.9E-06	3.9E-06	1.0E-04	4.6E-04	8.9E-05	7.7E-06	1.5E-08	3.5E-08	3.9E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.5E-11	8.2E-09	9.7E-08	5.7E-08	3.6E-07	6.7E-07	8.5E-07	6.3E-08	2.2E-08	2.3E-07
	R1475	298062	6258897	3.9E-06	3.9E-06	3.5E-05	1.9E-06	3.9E-06	1.1E-04	4.7E-04	9.0E-05	7.8E-06	1.6E-08	3.5E-08	3.9E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.6E-11	8.3E-09	9.7E-08	5.8E-08	3.6E-07	6.7E-07	8.6E-07	6.4E-08	2.2E-08	2.3E-07
	R1476	300862	6258897	1.9E-06	1.9E-06	1.7E-05	9.4E-07	1.9E-06	5.1E-05	2.3E-04	4.3E-05	3.8E-06	7.6E-09	1.7E-08	1.9E-09	1.3E-11	6.4E-10	7.0E-08	6.3E-09	4.2E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.1E-07
	R1477	300912	6258897	1.8E-06	1.8E-06	1.7E-05	9.2E-07	1.8E-06	5.0E-05	2.2E-04	4.3E-05	3.7E-06	7.4E-09	1.7E-08	1.8E-09	1.3E-11	6.3E-10	6.8E-08	6.2E-09	4.1E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.2E-07	4.1E-07	3.0E-08	1.0E-08	1.1E-07
	R1478	300962	6258897	1.8E-06	1.8E-06	1.6E-05	9.0E-07	1.8E-06	4.9E-05	2.2E-04	4.2E-05	3.6E-06	7.2E-09	1.6E-08	1.8E-09	1.3E-11	6.1E-10	6.7E-08	6.0E-09	4.0E-11	3.8E-09	4.5E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	2.9E-08	1.0E-08	1.1E-07
	R1479	301012	6258897	1.8E-06	1.8E-06	1.6E-05	8.9E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.5E-06	7.1E-09	1.6E-08	1.8E-09	1.2E-11	6.0E-10	6.6E-08	5.9E-09	3.9E-11	3.8E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.9E-07	2.9E-08	9.9E-09	1.1E-07
	R1480	301062	6258897	1.7E-06	1.7E-06	1.6E-05	8.7E-07	1.7E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	7.0E-09	1.6E-08	1.7E-09	1.2E-11	5.9E-10	6.5E-08	5.8E-09	3.8E-11	3.7E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.8E-07	2.8E-08	9.8E-09	1.0E-07
	R1481	301112	6258897	1.7E-06	1.7E-06	1.5E-05	8.6E-07	1.7E-06	4.6E-05	2.1E-04	3.9E-05	3.4E-06	6.8E-09	1.5E-08	1.7E-09	1.2E-11	5.8E-10	6.3E-08	5.7E-09	3.8E-11	3.6E-09	4.3E-08	2.5E-08	1.6E-07	2.9E-07	3.8E-07	2.8E-08	9.6E-09	1.0E-07
	R1482	301162	6258897	1.7E-06	1.7E-06	1.5E-05	8.4E-07	1.7E-06	4.5E-05	2.0E-04	3.9E-05	3.4E-06	6.7E-09	1.5E-08	1.7E-09	1.2E-11	5.7E-10	6.2E-08	5.6E-09	3.7E-11	3.6E-09	4.2E-08	2.5E-08	1.5E-07	2.9E-07	3.7E-07	2.7E-08	9.4E-09	1.0E-07
	R1483	301212	6258897	1.7E-06	1.7E-06	1.5E-05	8.3E-07	1.7E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.7E-09	1.2E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.3E-09	9.9E-08
	R1484	301262	6258897	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	2.0E-04	3.7E-05	3.3E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.1E-09	9.8E-08
	R1485	301312	6258897	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.6E-08
	R1486	297912	6258947	3.7E-06	3.7E-06	3.3E-05	1.8E-06	3.7E-06	9.9E-05	4.4E-04	8.4E-05	7.3E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.2E-09	1.4E-07	1.2E-08	8.0E-11	7.7E-09	9.1E-08	5.4E-08	3.4E-07	6.3E-07	8.0E-07	6.0E-08	2.0E-08	2.2E-07
	R1487	297962	6258947	3.7E-06	3.7E-06	3.3E-05	1.9E-06	3.7E-06	1.0E-04	4.5E-04	8.6E-05	7.4E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.2E-11	7.9E-09	9.3E-08	5.5E-08	3.4E-07	6.4E-07	8.2E-07	6.1E-08	2.1E-08	2.2E-07
	R1488	298012	6258947	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.5E-04	8.6E-05	7.5E-06	1.5E-08	3.4E-08	3.8E-09	2.6E-11	1.3E-09	1.4E-07	1.3E-08	8.3E-11	8.0E-09	9.4E-08	5.6E-08	3.5E-07	6.5E-07	8.3E-07	6.1E-08	2.1E-08	2.3E-07
	R1489	298062	6258947	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.6E-04	8.7E-05	7.6E-06	1.5E-08	3.4E-08	3.8E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.4E-11	8.1E-09	9.5E-08	5.6E-08	3.5E-07	6.5E-07	8.4E-07	6.2E-08	2.1E-08	2.3E-07
	R1490	298112	6258947	3.9E-06	3.9E-06	3.5E-05	1.9E-06	3.9E-06	1.0E-04	4.6E-04	8.9E-05	7.7E-06	1.5E-08	3.5E-08	3.9E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.5E-11	8.2E-09	9.7E-08	5.7E-08	3.6E-07	6.7E-07	8.5E-07	6.3E-08	2.2E-08	2.3E-07
	R1491	298162	6258947	3.9E-06	3.9E-06	3.5E-05	2.0E-06	3.9E-06	1.1E-04	4.7E-04	9.1E-05	7.9E-06	1.6E-08	3.5E-08	3.9E-09	2.8E-11	1.3E-09	1.5E-07	1.3E-08	8.7E-11	8.4E-09	9.8E-08	5.8E-08	3.6E-07	6.8E-07	8.7E-07	6.4E-08	2.2E-08	2.4E-07
	R1492	298212	6258947	4.0E-06	4.0E-06	3.6E-05	2.0E-06	4.0E-06	1.1E-04	4.8E-04	9.2E-05	8.0E-06	1.6E-08	3.6E-08	4.0E-09	2.8E-11	1.4E-09	1.5E-07	1.3E-08	8.8E-11	8.5E-09	1.0E-07	5.9E-08	3.7E-07	6.9E-07	8.8E-07	6.5E-08	2.2E-08	2.4E-07
	R1493	298262	6258947	4.1E-06	4.1E-06	3.7E-05	2.0E-06	4.1E-06	1.1E-04	4.9E-04	9.4E-05	8.2E-06	1.6E-08	3.7E-08	4.1E-09	2.9E-11	1.4E-09	1.5E-07	1.4E-08	9.0E-11	8.7E-09	1.0E-07	6.1E-08	3.8E-07	7.0E-07	9.0E-07	6.7E-08	2.3E-08	2.5E-07
	R1494	298312	6258947	4.2E-06	4.2E-06	3.7E-05	2.1E-06	4.2E-06	1.1E-04	5.0E-04	9.6E-05	8.3E-06	1.7E-08	3.7E-08	4.2E-09	2.9E-11	1.4E-09	1.5E-07	1.4E-08	9.2E-11	8.8E-09	1.0E-07	6.2E-08	3.8E-07	7.2E-07	9.2E-07	6.8E-08	2.3E-08	2.5E-07
	R1495	298362	6258947	4.3E-06	4.3E-06	3.8E-05	2.1E-06	4.3E-06	1.1E-04	5.1E-04	9.8E-05	8.5E-06	1.7E-08	3.8E-08	4.3E-09	3.0E-11	1.4E-09	1.6E-07	1.4E-08	9.4E-11	9.0E-09	1.1E-07	6.3E-08	3.9E-07	7.3E-07	9.4E-07	6.9E-08	2.4E-08	2.6E-07
	R1496	300862	6258947	1.9E-06	1.9E-06	1.7E-05	9.5E-07	1.9E-06	5.1E-05	2.3E-04	4.3E-05	3.8E-06	7.6E-09	1.7E-08	1.9E-09	1.3E-11	6.4E-10	7.0E-08	6.3E-09	4.2E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.1E-07
	R1497	300912	6258947	1.9E-06	1.9E-06	1.7E-05	9.3E-07	1.9E-06	5.0E-05	2.2E-04	4.3E-05	3.7E-06	7.4E-09	1.7E-08	1.9E-09	1.3E-11	6.3E-10	6.8E-08	6.2E-09	4.1E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.2E-07	4.1E-07	3.0E-08	1.0E-08	1.1E-07
	R1498	300962	6258947	1.8E-06	1.8E-06	1.6E-05	9.1E-07	1.8E-06	4.9E-05	2.2E-04	4.2E-05	3.6E-06	7.2E-09	1.6E-08	1.8E-09	1.3E-11	6.2E-10	6.7E-08	6.0E-09	4.0E-11	3.8E-09	4.5E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	3.0E-08	1.0E-08	1.1E-07
	R1499	301012	6258947	1.8E-06	1.8E-06	1.6E-05	8.9E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.5E-06	7.1E-09	1.6E-08	1.8E-09	1.2E-11	6.0E-10	6.6E-08	5.9E-09	3.9E-11	3.8E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.9E-07	2.9E-08	9.9E-09	1.1E-07
	R1500	301062	6258947	1.7E-06	1.7E-06	1.6E-05	8.7E-07	1.7E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	7.0E-09	1.6E-08	1.7E-09	1.2E-11	5.9E-10	6.4E-08	5.8E-09	3.8E-11	3.7E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.8E-07	2.8E-08	9.8E-09	1.0E-07
	R1501	301112	6258947	1.7E-06	1.7E-06	1.5E-05	8.6E-07	1.7E-06	4.6E-05	2.1E-04	3.9E-05	3.4E-06	6.9E-09	1.5E-08	1.7E-09	1.2E-11	5.8E-10	6.3E-08	5.7E-09	3.8E-11	3.6E-09	4.3E-08	2.5E-08	1.6E-07	2.9E-07	3.8E-07	2.8E-08	9.6E-09	1.0E-07
	R1502	301162	6258947	1.7E-06	1.7E-06	1.5E-05	8.4E-07	1.7E-06	4.5E-05	2.0E-04	3.9E-05	3.4E-06	6.7E-09	1.5E-08	1.7E-09	1.2E-11	5.7E-10	6.2E-08	5.6E-09	3.7E-11	3.6E-09	4.2E-08	2.5E-08	1.5E-07	2.9E-07	3.7E-07	2.7E-08	9.4E-09	1.0E-07
	R1503	301212	6258947	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.6E-09	1.2E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.2E-09	9.9E-08
	R1504	301262	6258947	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	1.9E-04	3.7E-05	3.2E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.4E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.6E-08	9.1E-09	9.7E-08
	R1505	301312	6258947	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.6E-08
	R1506	297912	6258997	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.6E-05	4.3E-04	8.2E-05	7.1E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.8E-11	7.5E-09	8.9E-08	5.3E-08	3.3E-07	6.1E-07	7.8E-07	5.8E-08	2.0E-08	2.1E-07
	R1507	297962	6258997	3.6E-06	3.6E-06	3.3E-05	1.8E-06	3.6E-06	9.8E-05	4.3E-04	8.3E-05	7.2E-06	1.4E-08	3.3E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	8.0E-11	7.7E-09	9.0E-08	5.4E-08	3.3E-07	6.2E-07	8.0E-07	5.9E-08	2.0E-08	2.2E-07
	R1508	298012	6258997	3.7E-06	3.7E-06	3.3E-05	1.8E-06	3.7E-06	9.9E-05	4.4E-04	8.4E-05	7.3E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.2E-09	1.4E-07	1.2E-08	8.1E-11	7.8E-09	9.2E-08	5.4E-08	3.4E-07	6.3E-07	8.1E-07	6.0E-08	2.0E-08	2.2E-07
	R1509	298062	6258997	3.7E-06	3.7E-06	3.3E-05	1.9E-06	3.7E-06	1.0E-04	4.5E-04	8.5E-05	7.4E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.2E-11	7.9E-09	9.3E-08	5.5E-08	3.4E-07	6.4E-07	8.2E-07	6.0E-08	2.1E-08	2.2E-07
	R1510	298112	6258997	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.5E-04	8.7E-05	7.5E-06	1.5E-08	3.4E-08	3.8E-09	2.6E-11	1.3E-09	1.4E-07	1.3E-08	8.3E-11	8.0E-09	9.4E-08	5.6E-08	3.5E-07	6.5E-07	8.3E-07	6.1E-08	2.1E-08	2.3E-07
	R1511	298162	6258997	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.6E-04	8.8E-05	7.7E-06	1.5E-08	3.4E-08	3.8E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.4E-11	8.1E-09	9.6E-08	5.7E-08	3.5E-07	6.6E-07	8.4E-07	6.2E-08	2.1E-08	2.3E-07
	R1512	298212	6258997	3.9E-06	3.9E-06	3.5E-05	2.0E-06	3.9E-06	1.1E-04	4.7E-04	9.0E-05	7.8E-06	1.6E-08	3.5E-08	3.9E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.6E-11	8.3E-09	9.8E-08	5.8E-08	3.6E-07	6.7E-07	8.6E-07	6.4E-08	2.2E-08	2.3E-07
	R1513	298262	6258997	4.0E-06	4.0E-06	3.6E-05	2.0E-06	4.0E-06	1.1E-04	4.8E-04	9.1E-05	7.9E-06	1.6E-08	3.6E-08	4.0E-09	2.8E-11	1.3E-09	1.5E-07	1.3E-08	8.7E-11	8.4E-09	9.9E-08	5.9E-08	3.6E-07	6.8E-07	8.7E-07	6.5E-08	2.2E-08	2.4E-07
	R1514	298312	6258997	4.0E-06	4.0E-06	3.6E-05	2.0E-06	4.0E-06	1.1E-04	4.8E-04	9.3E-05	8.1E-06	1.6E-08	3.6E-08	4.0E-09	2.8E-11	1.4E-09	1.5E-07	1.3E-08	8.9E-11	8.5E-09	1.0E-07	6.0E-08	3.7E-07	6.9E-07	8.9E-07	6.6E-08	2.3E-08	2.4E-07
	R1515	298362	6258997	4.1E-06	4.1E-06	3.7E-05	2.1E-06	4.1E-06	1.1E-04	5.0E-04	9.5E-05	8.3E-06	1.7E-08	3.7E-08	4.1E-09	2.9E-11	1.4E-09	1.5E-07	1.4E-08	9.1E-11	8.8E-09	1.0E-07	6.1E-08	3.8E-07	7.1E-07	9.1E-07	6.7E-08	2.3E-08	2.5E-07
	R1516	300862	6258997	1.9E-06	1.9E-06	1.7E-05	9.4E-07	1.9E-06	5.1E-05	2.3E-04	4.3E-05	3.8E-06	7.6E-09	1.7E-08	1.9E-09	1.3E-11	6.4E-10	7.0E-08	6.3E-09	4.2E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.2E-07	4.2E-07	3.1E-08	1.1E-08	1.1E-07
	R1517	300912	6258997	1.9E-06	1.9E-06	1.7E-05	9.3E-07	1.9E-06	5.0E-05	2.2E-04	4.3E-05	3.7E-06	7.4E-09	1.7E-08	1.9E-09	1.3E-11	6.3E-10	6.9E-08	6.2E-09	4.1E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.2E-07	4.1E-07	3.0E-08	1.0E-08	1.1E-07
	R1518	300962	6258997	1.8E-06	1.8E-06	1.6E-05	9.1E-07	1.8E-06	4.9E-05	2.2E-04	4.2E-05	3.6E-06	7.3E-09	1.6E-08	1.8E-09	1.3E-11	6.2E-10	6.7E-08	6.1E-09	4.0E-11	3.9E-09	4.5E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	3.0E-08	1.0E-08	1.1E-07
	R1519	301012	6258997	1.8E-06	1.8E-06	1.6E-05	8.9E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.6E-06	7.1E-09	1.6E-08	1.8E-09	1.2E-11	6.0E-10	6.6E-08	6.0E-09	3.9E-11	3.8E-09	4.4E-08	2.6E-08	1.6E-07	3.1E-07	3.9E-07	2.9E-08	1.0E-08	1.1E-07
	R1520	301062	6258997	1.7E-06	1.7E-06	1.6E-05	8.7E-07	1.7E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	7.0E-09	1.6E-08	1.7E-09	1.2E-11	5.9E-10	6.4E-08	5.8E-09	3.8E-11	3.7E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.8E-07	2.8E-08	9.8E-09	1.0E-07
	R1521	301112	6258997	1.7E-06	1.7E-06	1.5E-05	8.5E-07	1.7E-06	4.6E-05	2.1E-04	3.9E-05	3.4E-06	6.8E-09	1.5E-08	1.7E-09	1.2E-11	5.8E-10	6.3E-08	5.7E-09	3.8E-11	3.6E-09	4.3E-08	2.5E-08	1.6E-07	2.9E-07	3.8E-07	2.8E-08	9.6E-09	1.0E-07
	R1522	301162	6258997	1.7E-06	1.7E-06	1.5E-05	8.4E-07	1.7E-06	4.5E-05	2.0E-04	3.9E-05	3.4E-06	6.7E-09	1.5E-08	1.7E-09	1.2E-11	5.7E-10	6.2E-08	5.6E-09	3.7E-11	3.6E-09	4.2E-08	2.5E-08	1.5E-07	2.9E-07	3.7E-07	2.7E-08	9.4E-09	1.0E-07
	R1523	301212	6258997	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.6E-09	1.2E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.2E-09	9.8E-08
	R1524	301262	6258997	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	1.9E-04	3.7E-05	3.2E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.4E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.6E-08	9.1E-09	9.7E-08
	R1525	301312	6258997	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.5E-08

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																									
													Metal									Heavy Metal							
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R1526	297912	6259047	3.5E-06	3.5E-06	3.1E-05	1.7E-06	3.5E-06	9.4E-05	4.2E-04	8.0E-05	6.9E-06	1.4E-08	3.1E-08	3.5E-09	2.4E-11	1.2E-09	1.3E-07	1.2E-08	7.6E-11	7.4E-09	8.7E-08	5.1E-08	3.2E-07	6.0E-07	7.6E-07	5.7E-08	1.9E-08	2.1E-07
	R1527	297962	6259047	3.5E-06	3.5E-06	3.2E-05	1.8E-06	3.5E-06	9.5E-05	4.2E-04	8.1E-05	7.1E-06	1.4E-08	3.2E-08	3.5E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.8E-11	7.5E-09	8.8E-08	5.2E-08	3.3E-07	6.1E-07	7.8E-07	5.8E-08	2.0E-08	2.1E-07
	R1528	298012	6259047	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.6E-05	4.3E-04	8.2E-05	7.1E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.9E-11	7.6E-09	8.9E-08	5.3E-08	3.3E-07	6.1E-07	7.9E-07	5.8E-08	2.0E-08	2.1E-07
	R1529	298062	6259047	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.7E-05	4.3E-04	8.3E-05	7.2E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.9E-11	7.7E-09	9.0E-08	5.3E-08	3.3E-07	6.2E-07	7.9E-07	5.9E-08	2.0E-08	2.2E-07
	R1530	298112	6259047	3.7E-06	3.7E-06	3.3E-05	1.8E-06	3.7E-06	9.9E-05	4.4E-04	8.4E-05	7.3E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.2E-09	1.4E-07	1.2E-08	8.1E-11	7.8E-09	9.2E-08	5.4E-08	3.4E-07	6.3E-07	8.1E-07	6.0E-08	2.1E-08	2.2E-07
	R1531	298162	6259047	3.7E-06	3.7E-06	3.4E-05	1.9E-06	3.7E-06	1.0E-04	4.5E-04	8.6E-05	7.5E-06	1.5E-08	3.4E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.2E-11	7.9E-09	9.3E-08	5.5E-08	3.4E-07	6.4E-07	8.2E-07	6.1E-08	2.1E-08	2.2E-07
	R1532	298212	6259047	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.6E-04	8.7E-05	7.6E-06	1.5E-08	3.4E-08	3.8E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.3E-11	8.0E-09	9.5E-08	5.6E-08	3.5E-07	6.5E-07	8.3E-07	6.2E-08	2.1E-08	2.3E-07
	R1533	298262	6259047	3.9E-06	3.9E-06	3.5E-05	1.9E-06	3.9E-06	1.0E-04	4.6E-04	8.9E-05	7.7E-06	1.5E-08	3.5E-08	3.9E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.5E-11	8.2E-09	9.7E-08	5.7E-08	3.6E-07	6.6E-07	8.5E-07	6.3E-08	2.2E-08	2.3E-07
	R1534	298312	6259047	4.0E-06	4.0E-06	3.6E-05	2.0E-06	4.0E-06	1.1E-04	4.7E-04	9.1E-05	7.9E-06	1.6E-08	3.6E-08	4.0E-09	2.8E-11	1.3E-09	1.5E-07	1.3E-08	8.7E-11	8.4E-09	9.9E-08	5.8E-08	3.6E-07	6.8E-07	8.7E-07	6.4E-08	2.2E-08	2.4E-07
	R1535	298362	6259047	4.0E-06	4.0E-06	3.6E-05	2.0E-06	4.0E-06	1.1E-04	4.8E-04	9.3E-05	8.1E-06	1.6E-08	3.6E-08	4.0E-09	2.8E-11	1.4E-09	1.5E-07	1.3E-08	8.9E-11	8.5E-09	1.0E-07	6.0E-08	3.7E-07	6.9E-07	8.9E-07	6.6E-08	2.3E-08	2.4E-07
	R1536	300862	6259047	1.9E-06	1.9E-06	1.7E-05	9.4E-07	1.9E-06	5.1E-05	2.3E-04	4.3E-05	3.8E-06	7.5E-09	1.7E-08	1.9E-09	1.3E-11	6.4E-10	7.0E-08	6.3E-09	4.1E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.2E-07	4.1E-07	3.1E-08	1.1E-08	1.1E-07
	R1537	300912	6259047	1.9E-06	1.9E-06	1.7E-05	9.3E-07	1.9E-06	5.0E-05	2.2E-04	4.3E-05	3.7E-06	7.4E-09	1.7E-08	1.9E-09	1.3E-11	6.3E-10	6.9E-08	6.2E-09	4.1E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.2E-07	4.1E-07	3.0E-08	1.0E-08	1.1E-07
	R1538	300962	6259047	1.8E-06	1.8E-06	1.6E-05	9.1E-07	1.8E-06	4.9E-05	2.2E-04	4.2E-05	3.6E-06	7.3E-09	1.6E-08	1.8E-09	1.3E-11	6.2E-10	6.7E-08	6.0E-09	4.0E-11	3.8E-09	4.5E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	3.0E-08	1.0E-08	1.1E-07
	R1539	301012	6259047	1.8E-06	1.8E-06	1.6E-05	8.9E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.6E-06	7.1E-09	1.6E-08	1.8E-09	1.2E-11	6.0E-10	6.6E-08	5.9E-09	3.9E-11	3.8E-09	4.4E-08	2.6E-08	1.6E-07	3.1E-07	3.9E-07	2.9E-08	9.9E-09	1.1E-07
	R1540	301062	6259047	1.7E-06	1.7E-06	1.6E-05	8.7E-07	1.7E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	7.0E-09	1.6E-08	1.7E-09	1.2E-11	5.9E-10	6.5E-08	5.8E-09	3.8E-11	3.7E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.8E-07	2.8E-08	9.8E-09	1.0E-07
	R1541	301112	6259047	1.7E-06	1.7E-06	1.5E-05	8.5E-07	1.7E-06	4.6E-05	2.0E-04	3.9E-05	3.4E-06	6.8E-09	1.5E-08	1.7E-09	1.2E-11	5.8E-10	6.3E-08	5.7E-09	3.8E-11	3.6E-09	4.3E-08	2.5E-08	1.6E-07	2.9E-07	3.8E-07	2.8E-08	9.6E-09	1.0E-07
	R1542	301162	6259047	1.7E-06	1.7E-06	1.5E-05	8.4E-07	1.7E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.7E-09	1.5E-08	1.7E-09	1.2E-11	5.7E-10	6.2E-08	5.6E-09	3.7E-11	3.5E-09	4.2E-08	2.5E-08	1.5E-07	2.9E-07	3.7E-07	2.7E-08	9.4E-09	1.0E-07
	R1543	301212	6259047	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.4E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.6E-09	1.2E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.2E-09	9.9E-08
	R1544	301262	6259047	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	1.9E-04	3.7E-05	3.2E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.4E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.6E-08	9.1E-09	9.7E-08
	R1545	301312	6259047	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.6E-08
	R1546	297912	6259097	3.4E-06	3.4E-06	3.0E-05	1.7E-06	3.4E-06	9.1E-05	4.0E-04	7.8E-05	6.7E-06	1.3E-08	3.0E-08	3.4E-09	2.4E-11	1.1E-09	1.2E-07	1.1E-08	7.4E-11	7.1E-09	8.4E-08	5.0E-08	3.1E-07	5.8E-07	7.4E-07	5.5E-08	1.9E-08	2.0E-07
	R1547	297962	6259097	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.3E-05	4.1E-04	7.9E-05	6.9E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.6E-11	7.3E-09	8.6E-08	5.1E-08	3.2E-07	5.9E-07	7.6E-07	5.6E-08	1.9E-08	2.1E-07
	R1548	298012	6259097	3.5E-06	3.5E-06	3.1E-05	1.7E-06	3.5E-06	9.4E-05	4.2E-04	8.0E-05	7.0E-06	1.4E-08	3.1E-08	3.5E-09	2.4E-11	1.2E-09	1.3E-07	1.2E-08	7.7E-11	7.4E-09	8.7E-08	5.2E-08	3.2E-07	6.0E-07	7.7E-07	5.7E-08	2.0E-08	2.1E-07
	R1549	298062	6259097	3.5E-06	3.5E-06	3.2E-05	1.8E-06	3.5E-06	9.5E-05	4.2E-04	8.1E-05	7.0E-06	1.4E-08	3.2E-08	3.5E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.7E-11	7.5E-09	8.8E-08	5.2E-08	3.2E-07	6.1E-07	7.7E-07	5.7E-08	2.0E-08	2.1E-07
	R1550	298112	6259097	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.7E-05	4.3E-04	8.2E-05	7.2E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.9E-11	7.6E-09	9.0E-08	5.3E-08	3.3E-07	6.2E-07	7.9E-07	5.8E-08	2.0E-08	2.1E-07
	R1551	298162	6259097	3.6E-06	3.6E-06	3.3E-05	1.8E-06	3.6E-06	9.8E-05	4.4E-04	8.4E-05	7.3E-06	1.5E-08	3.3E-08	3.6E-09	2.6E-11	1.2E-09	1.3E-07	1.2E-08	8.0E-11	7.7E-09	9.1E-08	5.4E-08	3.4E-07	6.3E-07	8.0E-07	5.9E-08	2.0E-08	2.2E-07
	R1552	298212	6259097	3.7E-06	3.7E-06	3.3E-05	1.9E-06	3.7E-06	1.0E-04	4.4E-04	8.5E-05	7.4E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.2E-11	7.9E-09	9.3E-08	5.5E-08	3.4E-07	6.4E-07	8.2E-07	6.0E-08	2.1E-08	2.2E-07
	R1553	298262	6259097	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.5E-04	8.7E-05	7.6E-06	1.5E-08	3.4E-08	3.8E-09	2.6E-11	1.3E-09	1.4E-07	1.3E-08	8.3E-11	8.0E-09	9.5E-08	5.6E-08	3.5E-07	6.5E-07	8.3E-07	6.2E-08	2.1E-08	2.3E-07
	R1554	298312	6259097	3.9E-06	3.9E-06	3.5E-05	1.9E-06	3.9E-06	1.0E-04	4.6E-04	8.9E-05	7.7E-06	1.5E-08	3.5E-08	3.9E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.5E-11	8.2E-09	9.7E-08	5.7E-08	3.6E-07	6.6E-07	8.5E-07	6.3E-08	2.2E-08	2.3E-07
	R1555	298362	6259097	3.9E-06	3.9E-06	3.5E-05	2.0E-06	3.9E-06	1.1E-04	4.7E-04	9.0E-05	7.9E-06	1.6E-08	3.5E-08	3.9E-09	2.8E-11	1.3E-09	1.5E-07	1.3E-08	8.6E-11	8.3E-09	9.8E-08	5.8E-08	3.6E-07	6.8E-07	8.6E-07	6.4E-08	2.2E-08	2.4E-07
	R1556	300862	6259097	1.9E-06	1.9E-06	1.7E-05	9.4E-07	1.9E-06	5.1E-05	2.3E-04	4.3E-05	3.8E-06	7.5E-09	1.7E-08	1.9E-09	1.3E-11	6.4E-10	7.0E-08	6.3E-09	4.1E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.2E-07	4.1E-07	3.1E-08	1.1E-08	1.1E-07
	R1557	300912	6259097	1.9E-06	1.9E-06	1.7E-05	9.3E-07	1.9E-06	5.0E-05	2.2E-04	4.3E-05	3.7E-06	7.4E-09	1.7E-08	1.9E-09	1.3E-11	6.3E-10	6.8E-08	6.2E-09	4.1E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.2E-07	4.1E-07	3.0E-08	1.0E-08	1.1E-07
	R1558	300962	6259097	1.8E-06	1.8E-06	1.6E-05	9.1E-07	1.8E-06	4.9E-05	2.2E-04	4.2E-05	3.6E-06	7.2E-09	1.6E-08	1.8E-09	1.3E-11	6.2E-10	6.7E-08	6.0E-09	4.0E-11	3.8E-09	4.5E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	3.0E-08	1.0E-08	1.1E-07
	R1559	301012	6259097	1.8E-06	1.8E-06	1.6E-05	8.9E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.5E-06	7.1E-09	1.6E-08	1.8E-09	1.2E-11	6.0E-10	6.6E-08	5.9E-09	3.9E-11	3.8E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.9E-07	2.9E-08	9.9E-09	1.1E-07
	R1560	301062	6259097	1.7E-06	1.7E-06	1.6E-05	8.7E-07	1.7E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	7.0E-09	1.6E-08	1.7E-09	1.2E-11	5.9E-10	6.4E-08	5.8E-09	3.8E-11	3.7E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.8E-07	2.8E-08	9.8E-09	1.0E-07
	R1561	301112	6259097	1.7E-06	1.7E-06	1.5E-05	8.6E-07	1.7E-06	4.6E-05	2.1E-04	3.9E-05	3.4E-06	6.8E-09	1.5E-08	1.7E-09	1.2E-11	5.8E-10	6.3E-08	5.7E-09	3.8E-11	3.6E-09	4.3E-08	2.5E-08	1.6E-07	2.9E-07	3.8E-07	2.8E-08	9.6E-09	1.0E-07
	R1562	301162	6259097	1.7E-06	1.7E-06	1.5E-05	8.4E-07	1.7E-06	4.5E-05	2.0E-04	3.9E-05	3.4E-06	6.7E-09	1.5E-08	1.7E-09	1.2E-11	5.7E-10	6.2E-08	5.6E-09	3.7E-11	3.6E-09	4.2E-08	2.5E-08	1.5E-07	2.9E-07	3.7E-07	2.7E-08	9.4E-09	1.0E-07
	R1563	301212	6259097	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.4E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.6E-09	1.2E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.2E-09	9.9E-08
	R1564	301262	6259097	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	1.9E-04	3.7E-05	3.2E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.6E-08	9.1E-09	9.7E-08
	R1565	301312	6259097	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.5E-08
	R1566	297912	6259147	3.3E-06	3.3E-06	3.0E-05	1.6E-06	3.3E-06	8.9E-05	3.9E-04	7.5E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.2E-11	7.0E-09	8.2E-08	4.9E-08	3.0E-07	5.6E-07	7.2E-07	5.3E-08	1.8E-08	2.0E-07
	R1567	297962	6259147	3.4E-06	3.4E-06	3.0E-05	1.7E-06	3.4E-06	9.0E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.4E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.4E-11	7.1E-09	8.4E-08	5.0E-08	3.1E-07	5.8E-07	7.4E-07	5.5E-08	1.9E-08	2.0E-07
	R1568	298012	6259147	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.2E-05	4.1E-04	7.8E-05	6.8E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.5E-11	7.2E-09	8.5E-08	5.0E-08	3.1E-07	5.8E-07	7.5E-07	5.5E-08	1.9E-08	2.0E-07
	R1569	298062	6259147	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.3E-05	4.1E-04	7.9E-05	6.9E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.6E-11	7.3E-09	8.6E-08	5.1E-08	3.2E-07	5.9E-07	7.6E-07	5.6E-08	1.9E-08	2.1E-07
	R1570	298112	6259147	3.5E-06	3.5E-06	3.1E-05	1.7E-06	3.5E-06	9.4E-05	4.2E-04	8.0E-05	7.0E-06	1.4E-08	3.1E-08	3.5E-09	2.4E-11	1.2E-09	1.3E-07	1.2E-08	7.7E-11	7.4E-09	8.7E-08	5.2E-08	3.2E-07	6.0E-07	7.7E-07	5.7E-08	2.0E-08	2.1E-07
	R1571	298162	6259147	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.6E-05	4.3E-04	8.2E-05	7.1E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.8E-11	7.5E-09	8.9E-08	5.3E-08	3.3E-07	6.1E-07	7.8E-07	5.8E-08	2.0E-08	2.1E-07
	R1572	298212	6259147	3.6E-06	3.6E-06	3.3E-05	1.8E-06	3.6E-06	9.8E-05	4.4E-04	8.3E-05	7.3E-06	1.5E-08	3.3E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	8.0E-11	7.7E-09	9.1E-08	5.4E-08	3.3E-07	6.2E-07	8.0E-07	5.9E-08	2.0E-08	2.2E-07
	R1573	298262	6259147	3.7E-06	3.7E-06	3.3E-05	1.8E-06	3.7E-06	1.0E-04	4.4E-04	8.5E-05	7.4E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.1E-11	7.8E-09	9.2E-08	5.5E-08	3.4E-07	6.4E-07	8.1E-07	6.0E-08	2.1E-08	2.2E-07
	R1574	298312	6259147	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.5E-04	8.7E-05	7.5E-06	1.5E-08	3.4E-08	3.8E-09	2.6E-11	1.3E-09	1.4E-07	1.3E-08	8.3E-11	8.0E-09	9.4E-08	5.6E-08	3.5E-07	6.5E-07	8.3E-07	6.2E-08	2.1E-08	2.3E-07
	R1575	298362	6259147	3.8E-06	3.8E-06	3.5E-05	1.9E-06	3.8E-06	1.0E-04	4.6E-04	8.8E-05	7.7E-06	1.5E-08	3.5E-08	3.8E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.4E-11	8.1E-09	9.6E-08	5.7E-08	3.5E-07	6.6E-07	8.4E-07	6.3E-08	2.1E-08	2.3E-07
	R1576	300862	6259147	1.9E-06	1.9E-06	1.7E-05	9.4E-07	1.9E-06	5.1E-05	2.3E-04	4.3E-05	3.8E-06	7.6E-09	1.7E-08	1.9E-09	1.3E-11	6.4E-10	7.0E-08	6.3E-09	4.2E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.2E-07	4.2E-07	3.1E-08	1.1E-08	1.1E-07
	R1577	300912	6259147	1.8E-06	1.8E-06	1.7E-05	9.2E-07	1.8E-06	5.0E-05	2.2E-04	4.3E-05	3.7E-06	7.4E-09	1.7E-08	1.8E-09	1.3E-11	6.3E-10	6.8E-08	6.2E-09	4.1E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.2E-07	4.1E-07	3.0E-08	1.0E-08	1.1E-07
	R1578	300962	6259147	1.8E-06	1.8E-06	1.6E-05	9.0E-07	1.8E-06	4.9E-05	2.2E-04	4.2E-05	3.6E-06	7.2E-09	1.6E-08	1.8E-09	1.3E-11	6.1E-10	6.7E-08	6.0E-09	4.0E-11	3.8E-09	4.5E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	2.9E-08	1.0E-08	1.1E-07
	R1579	301012	6259147	1.8E-06	1.8E-06	1.6E-05	8.9E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.5E-06	7.1E-09	1.6E-08	1.8E-09	1.2E-11	6.0E-10	6.6E-08	5.9E-09	3.9E-11	3.8E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.9E-07	2.9E-08	9.9E-09	1.1E-07
	R1580	301062	6259147	1.7E-06	1.7E-06	1.6E-05	8.7E-07	1.7E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	7.0E-09	1.6E-08	1.7E-09	1.2E-11	5.9E-10	6.4E-08	5.8E-09	3.8E-11	3.7E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.8E-07	2.8E-08	9.8E-09	1.0E-07
	R1581	301112	6259147	1.7E-06	1.7E-06	1.5E-05	8.6E-07	1.7E-06	4.6E-05	2.1E-04	3.9E-05	3.4E-06	6.8E-09	1.5E-08	1.7E-09	1.2E-11	5.8E-10	6.3E-08	5.7E-09	3.8E-11	3.6E-09	4.3E-08	2.5E-08	1.6E-07	2.9E-07	3.8E-07	2.8E-08	9.6E-09	1.0E-07
	R1582	301162	6259147	1.7E-06	1.7E-06	1.5E-05	8.4E-07	1.7E-06	4.5E-05	2.0E-04	3.9E-05	3.4E-06	6.7E-09	1.5E-08	1.7E-09	1.2E-11	5.7E-10	6.2E-08	5.6E-09	3.7E-11	3.6E-09	4.2E-08	2.5E-08	1.5E-07	2.9E-07	3.7E-07	2.7E-08	9.4E-09	1.0E-07
	R1583	301212	6259147	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.4E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.6E-09	1.2E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.2E-09	9.9E-08
	R1584	301262	6259147	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	1.9E-04	3.7E-05	3.2E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.6E-08	9.0E-09	9.7E-08
	R1585	301312	6259147	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.6E-05	3.2E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.3E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.5E-08
	R1586	297912	6259197	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.6E-05	3.8E-04	7.4E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.8E-09	8.0E-08	4.7E-08	2.9E-07	5.5E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																									
													Metal									Heavy Metal							
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm ³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R1587	297962	6259197	3.3E-06	3.3E-06	2.9E-05	1.6E-06	3.3E-06	8.8E-05	3.9E-04	7.5E-05	6.5E-06	1.3E-08	2.9E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.2E-11	6.9E-09	8.2E-08	4.8E-08	3.0E-07	5.6E-07	7.2E-07	5.3E-08	1.8E-08	2.0E-07
	R1588	298012	6259197	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	9.0E-05	4.0E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.0E-09	8.3E-08	4.9E-08	3.1E-07	5.7E-07	7.3E-07	5.4E-08	1.9E-08	2.0E-07
	R1589	298062	6259197	3.4E-06	3.4E-06	3.0E-05	1.7E-06	3.4E-06	9.1E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.4E-09	2.4E-11	1.1E-09	1.2E-07	1.1E-08	7.4E-11	7.1E-09	8.4E-08	5.0E-08	3.1E-07	5.8E-07	7.4E-07	5.5E-08	1.9E-08	2.0E-07
	R1590	298112	6259197	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.2E-05	4.1E-04	7.8E-05	6.8E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.5E-11	7.2E-09	8.5E-08	5.0E-08	3.1E-07	5.9E-07	7.5E-07	5.6E-08	1.9E-08	2.0E-07
	R1591	298162	6259197	3.5E-06	3.5E-06	3.1E-05	1.7E-06	3.5E-06	9.4E-05	4.2E-04	8.0E-05	7.0E-06	1.4E-08	3.1E-08	3.5E-09	2.4E-11	1.2E-09	1.3E-07	1.2E-08	7.7E-11	7.4E-09	8.7E-08	5.1E-08	3.2E-07	6.0E-07	7.7E-07	5.7E-08	1.9E-08	2.1E-07
	R1592	298212	6259197	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.6E-05	4.3E-04	8.2E-05	7.1E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.8E-11	7.5E-09	8.9E-08	5.3E-08	3.3E-07	6.1E-07	7.8E-07	5.8E-08	2.0E-08	2.1E-07
	R1593	298262	6259197	3.6E-06	3.6E-06	3.3E-05	1.8E-06	3.6E-06	9.8E-05	4.4E-04	8.3E-05	7.3E-06	1.5E-08	3.3E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	8.0E-11	7.7E-09	9.1E-08	5.4E-08	3.3E-07	6.2E-07	8.0E-07	5.9E-08	2.0E-08	2.2E-07
	R1594	298312	6259197	3.7E-06	3.7E-06	3.3E-05	1.8E-06	3.7E-06	1.0E-04	4.4E-04	8.5E-05	7.4E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.1E-11	7.8E-09	9.2E-08	5.5E-08	3.4E-07	6.3E-07	8.1E-07	6.0E-08	2.1E-08	2.2E-07
	R1595	298362	6259197	3.7E-06	3.7E-06	3.4E-05	1.9E-06	3.7E-06	1.0E-04	4.5E-04	8.6E-05	7.5E-06	1.5E-08	3.4E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.2E-11	7.9E-09	9.4E-08	5.5E-08	3.4E-07	6.4E-07	8.2E-07	6.1E-08	2.1E-08	2.2E-07
	R1596	300862	6259197	1.9E-06	1.9E-06	1.7E-05	9.4E-07	1.9E-06	5.1E-05	2.3E-04	4.3E-05	3.8E-06	7.5E-09	1.7E-08	1.9E-09	1.3E-11	6.4E-10	7.0E-08	6.3E-09	4.1E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.2E-07	4.1E-07	3.1E-08	1.1E-08	1.1E-07
	R1597	300912	6259197	1.8E-06	1.8E-06	1.7E-05	9.2E-07	1.8E-06	5.0E-05	2.2E-04	4.2E-05	3.7E-06	7.4E-09	1.7E-08	1.8E-09	1.3E-11	6.3E-10	6.8E-08	6.1E-09	4.1E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.2E-07	4.1E-07	3.0E-08	1.0E-08	1.1E-07
	R1598	300962	6259197	1.8E-06	1.8E-06	1.6E-05	9.0E-07	1.8E-06	4.9E-05	2.2E-04	4.2E-05	3.6E-06	7.2E-09	1.6E-08	1.8E-09	1.3E-11	6.1E-10	6.7E-08	6.0E-09	4.0E-11	3.8E-09	4.5E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	2.9E-08	1.0E-08	1.1E-07
	R1599	301012	6259197	1.8E-06	1.8E-06	1.6E-05	8.9E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.5E-06	7.1E-09	1.6E-08	1.8E-09	1.2E-11	6.0E-10	6.6E-08	5.9E-09	3.9E-11	3.8E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.9E-07	2.9E-08	9.9E-09	1.1E-07
	R1600	301062	6259197	1.7E-06	1.7E-06	1.6E-05	8.7E-07	1.7E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	7.0E-09	1.6E-08	1.7E-09	1.2E-11	5.9E-10	6.4E-08	5.8E-09	3.8E-11	3.7E-09	4.3E-08	2.6E-08	1.6E-07	3.0E-07	3.8E-07	2.8E-08	9.7E-09	1.0E-07
	R1601	301112	6259197	1.7E-06	1.7E-06	1.5E-05	8.5E-07	1.7E-06	4.6E-05	2.1E-04	3.9E-05	3.4E-06	6.8E-09	1.5E-08	1.7E-09	1.2E-11	5.8E-10	6.3E-08	5.7E-09	3.8E-11	3.6E-09	4.3E-08	2.5E-08	1.6E-07	2.9E-07	3.8E-07	2.8E-08	9.6E-09	1.0E-07
	R1602	301162	6259197	1.7E-06	1.7E-06	1.5E-05	8.4E-07	1.7E-06	4.5E-05	2.0E-04	3.9E-05	3.4E-06	6.7E-09	1.5E-08	1.7E-09	1.2E-11	5.7E-10	6.2E-08	5.6E-09	3.7E-11	3.6E-09	4.2E-08	2.5E-08	1.5E-07	2.9E-07	3.7E-07	2.7E-08	9.4E-09	1.0E-07
	R1603	301212	6259197	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.4E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.6E-09	1.2E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.2E-09	9.9E-08
	R1604	301262	6259197	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	1.9E-04	3.7E-05	3.2E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.6E-08	9.0E-09	9.7E-08
	R1605	301312	6259197	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.6E-05	3.2E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.3E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.5E-08
	R1606	297912	6259247	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.5E-05	3.8E-04	7.2E-05	6.3E-06	1.3E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.2E-07	1.0E-08	6.9E-11	6.6E-09	7.8E-08	4.6E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.8E-08	1.9E-07
	R1607	297962	6259247	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.6E-05	3.8E-04	7.3E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.8E-09	8.0E-08	4.7E-08	2.9E-07	5.5E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R1608	298012	6259247	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.8E-05	3.9E-04	7.5E-05	6.5E-06	1.3E-08	2.9E-08	3.2E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.9E-09	8.1E-08	4.8E-08	3.0E-07	5.6E-07	7.1E-07	5.3E-08	1.8E-08	1.9E-07
	R1609	298062	6259247	3.3E-06	3.3E-06	3.0E-05	1.6E-06	3.3E-06	8.9E-05	4.0E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.0E-09	8.2E-08	4.9E-08	3.0E-07	5.7E-07	7.3E-07	5.4E-08	1.8E-08	2.0E-07
	R1610	298112	6259247	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	9.0E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.4E-11	7.1E-09	8.4E-08	4.9E-08	3.1E-07	5.7E-07	7.4E-07	5.4E-08	1.9E-08	2.0E-07
	R1611	298162	6259247	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.2E-05	4.1E-04	7.8E-05	6.8E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.5E-11	7.2E-09	8.5E-08	5.1E-08	3.1E-07	5.9E-07	7.5E-07	5.6E-08	1.9E-08	2.0E-07
	R1612	298212	6259247	3.5E-06	3.5E-06	3.1E-05	1.7E-06	3.5E-06	9.4E-05	4.2E-04	8.0E-05	7.0E-06	1.4E-08	3.1E-08	3.5E-09	2.4E-11	1.2E-09	1.3E-07	1.2E-08	7.7E-11	7.4E-09	8.7E-08	5.2E-08	3.2E-07	6.0E-07	7.7E-07	5.7E-08	2.0E-08	2.1E-07
	R1613	298262	6259247	3.5E-06	3.5E-06	3.2E-05	1.8E-06	3.5E-06	9.6E-05	4.3E-04	8.2E-05	7.1E-06	1.4E-08	3.2E-08	3.5E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.8E-11	7.5E-09	8.9E-08	5.2E-08	3.3E-07	6.1E-07	7.8E-07	5.8E-08	2.0E-08	2.1E-07
	R1614	298312	6259247	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.7E-05	4.3E-04	8.3E-05	7.2E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.9E-11	7.6E-09	9.0E-08	5.3E-08	3.3E-07	6.2E-07	7.9E-07	5.9E-08	2.0E-08	2.2E-07
	R1615	298362	6259247	3.6E-06	3.6E-06	3.3E-05	1.8E-06	3.6E-06	9.9E-05	4.4E-04	8.4E-05	7.3E-06	1.5E-08	3.3E-08	3.6E-09	2.6E-11	1.2E-09	1.4E-07	1.2E-08	8.0E-11	7.7E-09	9.1E-08	5.4E-08	3.4E-07	6.3E-07	8.0E-07	5.9E-08	2.0E-08	2.2E-07
	R1616	300862	6259247	1.9E-06	1.9E-06	1.7E-05	9.4E-07	1.9E-06	5.1E-05	2.3E-04	4.3E-05	3.8E-06	7.5E-09	1.7E-08	1.9E-09	1.3E-11	6.4E-10	7.0E-08	6.3E-09	4.1E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.2E-07	4.1E-07	3.1E-08	1.1E-08	1.1E-07
	R1617	300912	6259247	1.8E-06	1.8E-06	1.7E-05	9.2E-07	1.8E-06	5.0E-05	2.2E-04	4.2E-05	3.7E-06	7.4E-09	1.7E-08	1.8E-09	1.3E-11	6.3E-10	6.8E-08	6.1E-09	4.1E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.2E-07	4.1E-07	3.0E-08	1.0E-08	1.1E-07
	R1618	300962	6259247	1.8E-06	1.8E-06	1.6E-05	9.1E-07	1.8E-06	4.9E-05	2.2E-04	4.2E-05	3.6E-06	7.2E-09	1.6E-08	1.8E-09	1.3E-11	6.2E-10	6.7E-08	6.0E-09	4.0E-11	3.8E-09	4.5E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	3.0E-08	1.0E-08	1.1E-07
	R1619	301012	6259247	1.8E-06	1.8E-06	1.6E-05	8.9E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.5E-06	7.1E-09	1.6E-08	1.8E-09	1.2E-11	6.0E-10	6.6E-08	5.9E-09	3.9E-11	3.8E-09	4.4E-08	2.6E-08	1.6E-07	3.1E-07	3.9E-07	2.9E-08	9.9E-09	1.1E-07
	R1620	301062	6259247	1.7E-06	1.7E-06	1.6E-05	8.7E-07	1.7E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	6.9E-09	1.6E-08	1.7E-09	1.2E-11	5.9E-10	6.4E-08	5.8E-09	3.8E-11	3.7E-09	4.3E-08	2.6E-08	1.6E-07	3.0E-07	3.8E-07	2.8E-08	9.7E-09	1.0E-07
	R1621	301112	6259247	1.7E-06	1.7E-06	1.5E-05	8.5E-07	1.7E-06	4.6E-05	2.0E-04	3.9E-05	3.4E-06	6.8E-09	1.5E-08	1.7E-09	1.2E-11	5.8E-10	6.3E-08	5.7E-09	3.8E-11	3.6E-09	4.3E-08	2.5E-08	1.6E-07	2.9E-07	3.8E-07	2.8E-08	9.6E-09	1.0E-07
	R1622	301162	6259247	1.7E-06	1.7E-06	1.5E-05	8.4E-07	1.7E-06	4.5E-05	2.0E-04	3.9E-05	3.4E-06	6.7E-09	1.5E-08	1.7E-09	1.2E-11	5.7E-10	6.2E-08	5.6E-09	3.7E-11	3.6E-09	4.2E-08	2.5E-08	1.5E-07	2.9E-07	3.7E-07	2.7E-08	9.4E-09	1.0E-07
	R1623	301212	6259247	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.4E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.6E-09	1.2E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.2E-09	9.9E-08
	R1624	301262	6259247	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	1.9E-04	3.7E-05	3.2E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.7E-08
	R1625	301312	6259247	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.6E-05	3.2E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.3E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.5E-08
	R1626	297912	6259297	3.1E-06	3.1E-06	2.8E-05	1.5E-06	3.1E-06	8.3E-05	3.7E-04	7.0E-05	6.1E-06	1.2E-08	2.8E-08	3.1E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.5E-09	7.6E-08	4.5E-08	2.8E-07	5.3E-07	6.7E-07	5.0E-08	1.7E-08	1.8E-07
	R1627	297962	6259297	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.4E-05	3.7E-04	7.1E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.1E-07	1.0E-08	6.8E-11	6.6E-09	7.8E-08	4.6E-08	2.9E-07	5.3E-07	6.8E-07	5.1E-08	1.7E-08	1.9E-07
	R1628	298012	6259297	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.6E-05	3.8E-04	7.3E-05	6.3E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.7E-09	7.9E-08	4.7E-08	2.9E-07	5.5E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R1629	298062	6259297	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.7E-05	3.9E-04	7.4E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.8E-09	8.1E-08	4.8E-08	3.0E-07	5.5E-07	7.1E-07	5.3E-08	1.8E-08	1.9E-07
	R1630	298112	6259297	3.3E-06	3.3E-06	3.0E-05	1.6E-06	3.3E-06	8.9E-05	3.9E-04	7.5E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.2E-11	6.9E-09	8.2E-08	4.9E-08	3.0E-07	5.6E-07	7.2E-07	5.3E-08	1.8E-08	2.0E-07
	R1631	298162	6259297	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	9.0E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.1E-09	8.4E-08	4.9E-08	3.1E-07	5.7E-07	7.3E-07	5.4E-08	1.9E-08	2.0E-07
	R1632	298212	6259297	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.2E-05	4.1E-04	7.8E-05	6.8E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.5E-11	7.2E-09	8.5E-08	5.0E-08	3.1E-07	5.8E-07	7.5E-07	5.5E-08	1.9E-08	2.0E-07
	R1633	298262	6259297	3.5E-06	3.5E-06	3.1E-05	1.7E-06	3.5E-06	9.3E-05	4.1E-04	7.9E-05	6.9E-06	1.4E-08	3.1E-08	3.5E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.6E-11	7.3E-09	8.6E-08	5.1E-08	3.2E-07	5.9E-07	7.6E-07	5.6E-08	1.9E-08	2.1E-07
	R1634	298312	6259297	3.5E-06	3.5E-06	3.1E-05	1.7E-06	3.5E-06	9.4E-05	4.2E-04	8.0E-05	7.0E-06	1.4E-08	3.1E-08	3.5E-09	2.4E-11	1.2E-09	1.3E-07	1.2E-08	7.7E-11	7.4E-09	8.7E-08	5.2E-08	3.2E-07	6.0E-07	7.7E-07	5.7E-08	2.0E-08	2.1E-07
	R1635	298362	6259297	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.6E-05	4.3E-04	8.2E-05	7.1E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.8E-11	7.5E-09	8.9E-08	5.3E-08	3.3E-07	6.1E-07	7.8E-07	5.8E-08	2.0E-08	2.1E-07
	R1636	300862	6259297	1.9E-06	1.9E-06	1.7E-05	9.4E-07	1.9E-06	5.1E-05	2.3E-04	4.3E-05	3.8E-06	7.5E-09	1.7E-08	1.9E-09	1.3E-11	6.4E-10	7.0E-08	6.3E-09	4.1E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.2E-07	4.1E-07	3.1E-08	1.1E-08	1.1E-07
	R1637	300912	6259297	1.8E-06	1.8E-06	1.7E-05	9.2E-07	1.8E-06	5.0E-05	2.2E-04	4.2E-05	3.7E-06	7.4E-09	1.7E-08	1.8E-09	1.3E-11	6.3E-10	6.8E-08	6.1E-09	4.1E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.2E-07	4.1E-07	3.0E-08	1.0E-08	1.1E-07
	R1638	300962	6259297	1.8E-06	1.8E-06	1.6E-05	9.0E-07	1.8E-06	4.9E-05	2.2E-04	4.2E-05	3.6E-06	7.2E-09	1.6E-08	1.8E-09	1.3E-11	6.2E-10	6.7E-08	6.0E-09	4.0E-11	3.8E-09	4.5E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	2.9E-08	1.0E-08	1.1E-07
	R1639	301012	6259297	1.8E-06	1.8E-06	1.6E-05	8.9E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.5E-06	7.1E-09	1.6E-08	1.8E-09	1.2E-11	6.0E-10	6.6E-08	5.9E-09	3.9E-11	3.8E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.9E-07	2.9E-08	9.9E-09	1.1E-07
	R1640	301062	6259297	1.7E-06	1.7E-06	1.6E-05	8.7E-07	1.7E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	6.9E-09	1.6E-08	1.7E-09	1.2E-11	5.9E-10	6.4E-08	5.8E-09	3.8E-11	3.7E-09	4.3E-08	2.6E-08	1.6E-07	3.0E-07	3.8E-07	2.8E-08	9.7E-09	1.0E-07
	R1641	301112	6259297	1.7E-06	1.7E-06	1.5E-05	8.5E-07	1.7E-06	4.6E-05	2.0E-04	3.9E-05	3.4E-06	6.8E-09	1.5E-08	1.7E-09	1.2E-11	5.8E-10	6.3E-08	5.7E-09	3.8E-11	3.6E-09	4.3E-08	2.5E-08	1.6E-07	2.9E-07	3.8E-07	2.8E-08	9.6E-09	1.0E-07
	R1642	301162	6259297	1.7E-06	1.7E-06	1.5E-05	8.4E-07	1.7E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.7E-09	1.5E-08	1.7E-09	1.2E-11	5.7E-10	6.2E-08	5.6E-09	3.7E-11	3.5E-09	4.2E-08	2.5E-08	1.5E-07	2.9E-07	3.7E-07	2.7E-08	9.4E-09	1.0E-07
	R1643	301212	6259297	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.4E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.6E-09	1.2E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.2E-09	9.9E-08
	R1644	301262	6259297	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	1.9E-04	3.7E-05	3.2E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.7E-08
	R1645	301312	6259297	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.6E-05	3.2E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.3E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.5E-08
	R1646	297912	6259347	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.1E-05	3.6E-04	6.9E-05	6.0E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	9.9E-09	6.6E-11	6.3E-09	7.5E-08	4.4E-08	2.7E-07	5.1E-07	6.6E-07	4.9E-08	1.7E-08	1.8E-07
	R1647	297962	6259347	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.2E-05	3.6E-04	7.0E-05	6.1E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.4E-09	7.6E-08	4.5E-08	2.8E-07	5.2E-07	6.7E-07	4.9E-08	1.7E-08	1.8E-07

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

				Annual GLCs																									
													Metal									Heavy Metal							
Sensitive Receptor	ID	X	Y	PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R1648	298012	6259347	3.1E-06	3.1E-06	2.8E-05	1.5E-06	3.1E-06	8.3E-05	3.7E-04	7.1E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.0E-09	1.1E-07	1.0E-08	6.8E-11	6.5E-09	7.7E-08	4.6E-08	2.8E-07	5.3E-07	6.8E-07	5.0E-08	1.7E-08	1.9E-07
	R1649	298062	6259347	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.5E-05	3.8E-04	7.2E-05	6.3E-06	1.3E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.2E-07	1.0E-08	6.9E-11	6.7E-09	7.8E-08	4.6E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.8E-08	1.9E-07
	R1650	298112	6259347	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.7E-05	3.8E-04	7.4E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.8E-09	8.0E-08	4.7E-08	2.9E-07	5.5E-07	7.1E-07	5.2E-08	1.8E-08	1.9E-07
	R1651	298162	6259347	3.3E-06	3.3E-06	2.9E-05	1.6E-06	3.3E-06	8.8E-05	3.9E-04	7.5E-05	6.5E-06	1.3E-08	2.9E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.2E-11	6.9E-09	8.2E-08	4.8E-08	3.0E-07	5.6E-07	7.2E-07	5.3E-08	1.8E-08	2.0E-07
	R1652	298212	6259347	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	8.9E-05	4.0E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.0E-09	8.3E-08	4.9E-08	3.0E-07	5.7E-07	7.3E-07	5.4E-08	1.9E-08	2.0E-07
	R1653	298262	6259347	3.4E-06	3.4E-06	3.0E-05	1.7E-06	3.4E-06	9.1E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.4E-09	2.4E-11	1.1E-09	1.2E-07	1.1E-08	7.4E-11	7.1E-09	8.4E-08	5.0E-08	3.1E-07	5.8E-07	7.4E-07	5.5E-08	1.9E-08	2.0E-07
	R1654	298312	6259347	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.2E-05	4.1E-04	7.8E-05	6.8E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.5E-11	7.2E-09	8.5E-08	5.0E-08	3.1E-07	5.9E-07	7.5E-07	5.6E-08	1.9E-08	2.0E-07
	R1655	298362	6259347	3.5E-06	3.5E-06	3.1E-05	1.7E-06	3.5E-06	9.3E-05	4.2E-04	8.0E-05	6.9E-06	1.4E-08	3.1E-08	3.5E-09	2.4E-11	1.2E-09	1.3E-07	1.2E-08	7.6E-11	7.3E-09	8.7E-08	5.1E-08	3.2E-07	6.0E-07	7.6E-07	5.6E-08	1.9E-08	2.1E-07
	R1656	298412	6259347	3.5E-06	3.5E-06	3.2E-05	1.8E-06	3.5E-06	9.5E-05	4.2E-04	8.1E-05	7.0E-06	1.4E-08	3.2E-08	3.5E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.7E-11	7.5E-09	8.8E-08	5.2E-08	3.2E-07	6.1E-07	7.7E-07	5.7E-08	2.0E-08	2.1E-07
	R1657	298462	6259347	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.7E-05	4.3E-04	8.2E-05	7.2E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.9E-11	7.6E-09	8.9E-08	5.3E-08	3.3E-07	6.2E-07	7.9E-07	5.8E-08	2.0E-08	2.1E-07
	R1658	298512	6259347	3.6E-06	3.6E-06	3.3E-05	1.8E-06	3.6E-06	9.8E-05	4.4E-04	8.4E-05	7.3E-06	1.5E-08	3.3E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	8.0E-11	7.7E-09	9.1E-08	5.4E-08	3.3E-07	6.3E-07	8.0E-07	5.9E-08	2.0E-08	2.2E-07
	R1659	298562	6259347	3.7E-06	3.7E-06	3.3E-05	1.8E-06	3.7E-06	1.0E-04	4.4E-04	8.5E-05	7.4E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.1E-11	7.8E-09	9.2E-08	5.5E-08	3.4E-07	6.4E-07	8.1E-07	6.0E-08	2.1E-08	2.2E-07
	R1660	298612	6259347	3.7E-06	3.7E-06	3.4E-05	1.9E-06	3.7E-06	1.0E-04	4.5E-04	8.6E-05	7.5E-06	1.5E-08	3.4E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.2E-11	7.9E-09	9.4E-08	5.5E-08	3.4E-07	6.4E-07	8.2E-07	6.1E-08	2.1E-08	2.2E-07
	R1661	298662	6259347	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.5E-04	8.7E-05	7.6E-06	1.5E-08	3.4E-08	3.8E-09	2.6E-11	1.3E-09	1.4E-07	1.3E-08	8.3E-11	8.0E-09	9.4E-08	5.6E-08	3.5E-07	6.5E-07	8.3E-07	6.2E-08	2.1E-08	2.3E-07
	R1662	298712	6259347	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.6E-04	8.8E-05	7.6E-06	1.5E-08	3.4E-08	3.8E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.4E-11	8.1E-09	9.5E-08	5.6E-08	3.5E-07	6.6E-07	8.4E-07	6.2E-08	2.1E-08	2.3E-07
	R1663	298762	6259347	3.9E-06	3.9E-06	3.5E-05	1.9E-06	3.9E-06	1.0E-04	4.6E-04	8.9E-05	7.7E-06	1.5E-08	3.5E-08	3.9E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.5E-11	8.2E-09	9.6E-08	5.7E-08	3.6E-07	6.6E-07	8.5E-07	6.3E-08	2.2E-08	2.3E-07
	R1664	298812	6259347	3.9E-06	3.9E-06	3.5E-05	1.9E-06	3.9E-06	1.1E-04	4.7E-04	9.0E-05	7.8E-06	1.6E-08	3.5E-08	3.9E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.6E-11	8.3E-09	9.7E-08	5.8E-08	3.6E-07	6.7E-07	8.6E-07	6.4E-08	2.2E-08	2.3E-07
	R1665	298862	6259347	3.9E-06	3.9E-06	3.5E-05	2.0E-06	3.9E-06	1.1E-04	4.7E-04	9.0E-05	7.9E-06	1.6E-08	3.5E-08	3.9E-09	2.8E-11	1.3E-09	1.5E-07	1.3E-08	8.6E-11	8.3E-09	9.8E-08	5.8E-08	3.6E-07	6.8E-07	8.6E-07	6.4E-08	2.2E-08	2.4E-07
	R1666	298912	6259347	4.0E-06	4.0E-06	3.6E-05	2.0E-06	4.0E-06	1.1E-04	4.8E-04	9.1E-05	7.9E-06	1.6E-08	3.6E-08	4.0E-09	2.8E-11	1.3E-09	1.5E-07	1.3E-08	8.7E-11	8.4E-09	9.9E-08	5.9E-08	3.6E-07	6.8E-07	8.7E-07	6.5E-08	2.2E-08	2.4E-07
	R1667	298962	6259347	4.0E-06	4.0E-06	3.6E-05	2.0E-06	4.0E-06	1.1E-04	4.8E-04	9.1E-05	7.9E-06	1.6E-08	3.6E-08	4.0E-09	2.8E-11	1.4E-09	1.5E-07	1.3E-08	8.7E-11	8.4E-09	9.9E-08	5.9E-08	3.7E-07	6.8E-07	8.7E-07	6.5E-08	2.2E-08	2.4E-07
	R1668	299012	6259347	4.0E-06	4.0E-06	3.6E-05	2.0E-06	4.0E-06	1.1E-04	4.8E-04	9.1E-05	8.0E-06	1.6E-08	3.6E-08	4.0E-09	2.8E-11	1.4E-09	1.5E-07	1.3E-08	8.7E-11	8.4E-09	9.9E-08	5.9E-08	3.7E-07	6.8E-07	8.7E-07	6.5E-08	2.2E-08	2.4E-07
	R1669	299062	6259347	4.0E-06	4.0E-06	3.6E-05	2.0E-06	4.0E-06	1.1E-04	4.8E-04	9.2E-05	8.0E-06	1.6E-08	3.6E-08	4.0E-09	2.8E-11	1.4E-09	1.5E-07	1.3E-08	8.8E-11	8.4E-09	1.0E-07	5.9E-08	3.7E-07	6.8E-07	8.8E-07	6.5E-08	2.2E-08	2.4E-07
	R1670	299112	6259347	4.0E-06	4.0E-06	3.6E-05	2.0E-06	4.0E-06	1.1E-04	4.8E-04	9.2E-05	8.0E-06	1.6E-08	3.6E-08	4.0E-09	2.8E-11	1.4E-09	1.5E-07	1.3E-08	8.8E-11	8.4E-09	1.0E-07	5.9E-08	3.7E-07	6.8E-07	8.8E-07	6.5E-08	2.2E-08	2.4E-07
	R1671	299162	6259347	4.0E-06	4.0E-06	3.6E-05	2.0E-06	4.0E-06	1.1E-04	4.8E-04	9.1E-05	7.9E-06	1.6E-08	3.6E-08	4.0E-09	2.8E-11	1.3E-09	1.5E-07	1.3E-08	8.7E-11	8.4E-09	9.9E-08	5.9E-08	3.6E-07	6.8E-07	8.7E-07	6.5E-08	2.2E-08	2.4E-07
	R1672	299212	6259347	3.9E-06	3.9E-06	3.5E-05	2.0E-06	3.9E-06	1.1E-04	4.7E-04	9.0E-05	7.9E-06	1.6E-08	3.5E-08	3.9E-09	2.7E-11	1.3E-09	1.5E-07	1.3E-08	8.6E-11	8.3E-09	9.8E-08	5.8E-08	3.6E-07	6.8E-07	8.6E-07	6.4E-08	2.2E-08	2.4E-07
	R1673	299262	6259347	3.8E-06	3.8E-06	3.5E-05	1.9E-06	3.8E-06	1.0E-04	4.6E-04	8.9E-05	7.7E-06	1.5E-08	3.5E-08	3.8E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.5E-11	8.2E-09	9.6E-08	5.7E-08	3.5E-07	6.6E-07	8.5E-07	6.3E-08	2.2E-08	2.3E-07
	R1674	299312	6259347	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.5E-04	8.7E-05	7.6E-06	1.5E-08	3.4E-08	3.8E-09	2.6E-11	1.3E-09	1.4E-07	1.3E-08	8.3E-11	8.0E-09	9.4E-08	5.6E-08	3.5E-07	6.5E-07	8.3E-07	6.2E-08	2.1E-08	2.3E-07
	R1675	299362	6259347	3.7E-06	3.7E-06	3.3E-05	1.8E-06	3.7E-06	9.9E-05	4.4E-04	8.5E-05	7.4E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.1E-11	7.8E-09	9.2E-08	5.5E-08	3.4E-07	6.3E-07	8.1E-07	6.0E-08	2.1E-08	2.2E-07
	R1676	299412	6259347	3.7E-06	3.7E-06	3.3E-05	1.8E-06	3.7E-06	9.9E-05	4.4E-04	8.4E-05	7.3E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.2E-09	1.4E-07	1.2E-08	8.0E-11	7.7E-09	9.1E-08	5.4E-08	3.4E-07	6.3E-07	8.0E-07	6.0E-08	2.0E-08	2.2E-07
	R1677	299462	6259347	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.7E-05	4.3E-04	8.3E-05	7.2E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.9E-11	7.6E-09	9.0E-08	5.3E-08	3.3E-07	6.2E-07	7.9E-07	5.9E-08	2.0E-08	2.2E-07
	R1678	299512	6259347	3.5E-06	3.5E-06	3.2E-05	1.8E-06	3.5E-06	9.6E-05	4.3E-04	8.2E-05	7.1E-06	1.4E-08	3.2E-08	3.5E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.8E-11	7.5E-09	8.9E-08	5.2E-08	3.3E-07	6.1E-07	7.8E-07	5.8E-08	2.0E-08	2.1E-07
	R1679	299562	6259347	3.5E-06	3.5E-06	3.1E-05	1.7E-06	3.5E-06	9.4E-05	4.2E-04	8.0E-05	7.0E-06	1.4E-08	3.1E-08	3.5E-09	2.4E-11	1.2E-09	1.3E-07	1.2E-08	7.6E-11	7.4E-09	8.7E-08	5.1E-08	3.2E-07	6.0E-07	7.6E-07	5.7E-08	1.9E-08	2.1E-07
	R1680	299612	6259347	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.2E-05	4.1E-04	7.8E-05	6.8E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.5E-11	7.2E-09	8.5E-08	5.0E-08	3.1E-07	5.8E-07	7.5E-07	5.5E-08	1.9E-08	2.0E-07
	R1681	299662	6259347	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	9.0E-05	4.0E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.0E-09	8.3E-08	4.9E-08	3.1E-07	5.7E-07	7.3E-07	5.4E-08	1.9E-08	2.0E-07
	R1682	299712	6259347	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.7E-05	3.9E-04	7.4E-05	6.5E-06	1.3E-08	2.9E-08	3.2E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.9E-09	8.1E-08	4.8E-08	3.0E-07	5.6E-07	7.1E-07	5.3E-08	1.8E-08	1.9E-07
	R1683	299762	6259347	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.5E-05	3.8E-04	7.2E-05	6.3E-06	1.3E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.2E-07	1.0E-08	6.9E-11	6.7E-09	7.9E-08	4.7E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.8E-08	1.9E-07
	R1684	299812	6259347	3.1E-06	3.1E-06	2.8E-05	1.5E-06	3.1E-06	8.3E-05	3.7E-04	7.0E-05	6.1E-06	1.2E-08	2.8E-08	3.1E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.5E-09	7.7E-08	4.5E-08	2.8E-07	5.3E-07	6.7E-07	5.0E-08	1.7E-08	1.8E-07
	R1685	299862	6259347	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.1E-05	3.6E-04	6.9E-05	6.0E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	9.9E-09	6.6E-11	6.3E-09	7.5E-08	4.4E-08	2.7E-07	5.1E-07	6.6E-07	4.9E-08	1.7E-08	1.8E-07
	R1686	299912	6259347	2.9E-06	2.9E-06	2.6E-05	1.5E-06	2.9E-06	7.8E-05	3.5E-04	6.7E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.9E-10	1.1E-07	9.7E-09	6.4E-11	6.2E-09	7.3E-08	4.3E-08	2.7E-07	5.0E-07	6.4E-07	4.7E-08	1.6E-08	1.7E-07
	R1687	299962	6259347	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.6E-05	3.4E-04	6.5E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.6E-10	1.0E-07	9.4E-09	6.2E-11	6.0E-09	7.1E-08	4.2E-08	2.6E-07	4.9E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R1688	300012	6259347	2.7E-06	2.7E-06	2.5E-05	1.4E-06	2.7E-06	7.4E-05	3.3E-04	6.3E-05	5.5E-06	1.1E-08	2.5E-08	2.7E-09	1.9E-11	9.3E-10	1.0E-07	9.2E-09	6.0E-11	5.8E-09	6.9E-08	4.1E-08	2.5E-07	4.7E-07	6.0E-07	4.5E-08	1.5E-08	1.6E-07
	R1689	300062	6259347	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.2E-05	3.2E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.1E-10	9.9E-08	8.9E-09	5.9E-11	5.7E-09	6.7E-08	4.0E-08	2.5E-07	4.6E-07	5.9E-07	4.4E-08	1.5E-08	1.6E-07
	R1690	300112	6259347	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.2E-04	6.0E-05	5.3E-06	1.1E-08	2.4E-08	2.6E-09	1.8E-11	8.9E-10	9.7E-08	8.7E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.5E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R1691	300162	6259347	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	7.0E-05	3.1E-04	5.9E-05	5.2E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.8E-10	9.5E-08	8.6E-09	5.7E-11	5.5E-09	6.4E-08	3.8E-08	2.4E-07	4.4E-07	5.7E-07	4.2E-08	1.4E-08	1.5E-07
	R1692	300212	6259347	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.0E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.6E-10	9.3E-08	8.4E-09	5.5E-11	5.3E-09	6.3E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R1693	300262	6259347	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.8E-09	2.2E-08	2.5E-09	1.7E-11	8.3E-10	9.1E-08	8.2E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.3E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R1694	300312	6259347	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.5E-05	4.8E-06	9.6E-09	2.2E-08	2.4E-09	1.7E-11	8.1E-10	8.9E-08	8.0E-09	5.3E-11	5.1E-09	6.0E-08	3.5E-08	2.2E-07	4.1E-07	5.3E-07	3.9E-08	1.3E-08	1.4E-07
	R1695	300362	6259347	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.4E-09	2.1E-08	2.3E-09	1.6E-11	8.0E-10	8.7E-08	7.8E-09	5.1E-11	5.0E-09	5.8E-08	3.5E-08	2.2E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R1696	300412	6259347	2.3E-06	2.3E-06	2.1E-05	1.1E-06	2.3E-06	6.2E-05	2.8E-04	5.3E-05	4.6E-06	9.2E-09	2.1E-08	2.3E-09	1.6E-11	7.8E-10	8.5E-08	7.6E-09	5.1E-11	4.9E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.1E-07	3.7E-08	1.3E-08	1.4E-07
	R1697	300462	6259347	2.3E-06	2.3E-06	2.0E-05	1.1E-06	2.3E-06	6.1E-05	2.7E-04	5.2E-05	4.5E-06	9.0E-09	2.0E-08	2.3E-09	1.6E-11	7.7E-10	8.3E-08	7.5E-09	5.0E-11	4.8E-09	5.6E-08	3.3E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R1698	300512	6259347	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	5.9E-05	2.6E-04	5.1E-05	4.4E-06	8.8E-09	2.0E-08	2.2E-09	1.5E-11	7.5E-10	8.2E-08	7.3E-09	4.8E-11	4.7E-09	5.5E-08	3.3E-08	2.0E-07	3.8E-07	4.8E-07	3.6E-08	1.2E-08	1.3E-07
	R1699	300562	6259347	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.8E-05	2.6E-04	4.9E-05	4.3E-06	8.6E-09	1.9E-08	2.1E-09	1.5E-11	7.3E-10	7.9E-08	7.1E-09	4.7E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
	R1700	300612	6259347	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.5E-04	4.8E-05	4.2E-06	8.4E-09	1.9E-08	2.1E-09	1.5E-11	7.1E-10	7.8E-08	7.0E-09	4.6E-11	4.5E-09	5.3E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.3E-07
	R1701	300662	6259347	2.1E-06	2.1E-06	1.8E-05	1.0E-06	2.1E-06	5.5E-05	2.5E-04	4.7E-05	4.1E-06	8.2E-09	1.8E-08	2.1E-09	1.4E-11	7.0E-10	7.6E-08	6.8E-09	4.5E-11	4.3E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.3E-08	1.1E-08	1.2E-07
	R1702	300712	6259347	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	8.0E-09	1.8E-08	2.0E-09	1.4E-11	6.8E-10	7.4E-08	6.7E-09	4.4E-11	4.3E-09	5.0E-08	3.0E-08	1.8E-07	3.5E-07	4.4E-07	3.3E-08	1.1E-08	1.2E-07
	R1703	300762	6259347	2.0E-06	2.0E-06	1.8E-05	9.8E-07	2.0E-06	5.3E-05	2.4E-04	4.5E-05	3.9E-06	7.9E-09	1.8E-08	2.0E-09	1.4E-11	6.7E-10	7.3E-08	6.6E-09	4.3E-11	4.2E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R1704	300812	6259347	1.9E-06	1.9E-06	1.7E-05	9.6E-07	1.9E-06	5.2E-05	2.3E-04	4.4E-05	3.9E-06	7.7E-09	1.7E-08	1.9E-09	1.3E-11	6.5E-10	7.1E-08	6.4E-09	4.2E-11	4.1E-09	4.8E-08	2.8E-08	1.8E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.2E-07
	R1705	300862	6259347	1.9E-06	1.9E-06	1.7E-05	9.4E-07	1.9E-06	5.1E-05	2.3E-04	4.3E-05	3.8E-06	7.5E-09	1.7E-08	1.9E-09	1.3E-11	6.4E-10	7.0E-08	6.3E-09	4.1E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.2E-07	4.1E-07	3.1E-08	1.1E-08	1.1E-07
	R1706	300912	6259347	1.8E-06	1.8E-06	1.7E-05	9.2E-07	1.8E-06	5.0E-05	2.2E-04	4.3E-05	3.7E-06	7.4E-09	1.7E-08	1.8E-09	1.3E-11	6.3E-10	6.8E-08	6.2E-09	4.1E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.2E-07	4.1E-07	3.0E-08	1.0E-08	1.1E-07
	R1707	300962	6259347	1.8E-06	1.8E-06	1.6E-05	9.1E-07	1.8E-06	4.9E-05	2.2E-04	4.2E-05	3.6E-06	7.2E-09	1.6E-08	1.8E-09	1.3E-11	6.2E-10	6.7E-08	6.0E-09	4.0E-11	3.8E-09	4.5E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	3.0E-08	1.0E-08	1.1E-07
	R1708	301012	6259347	1.8E-06	1.8E-06	1.6E-05	8.9E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.5E-06	7.1E-09	1.6E-08	1.8E-09	1.2E-11	6.0E-10	6.6E-08	5.9E-09	3.9E-11	3.8E-09	4.4E-08	2.6E-08	1.6E-07	3.1E-07	3.9E-07	2.9E-08	9.9E-09	1.1E-07

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																										
													Metal									Heavy Metal								
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm ³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R1709	301062	6259347	1.7E-06	1.7E-06	1.6E-05	8.7E-07	1.7E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	6.9E-09	1.6E-08	1.7E-09	1.2E-11	5.9E-10	6.4E-08	5.8E-09	3.8E-11	3.7E-09	4.3E-08	2.6E-08	1.6E-07	3.0E-07	3.8E-07	2.8E-08	9.7E-09	1.0E-07
	R1710	301112	6259347	1.7E-06	1.7E-06	1.5E-05	8.5E-07	1.7E-06	4.6E-05	2.0E-04	3.9E-05	3.4E-06	6.8E-09	1.5E-08	1.7E-09	1.2E-11	5.8E-10	6.3E-08	5.7E-09	3.7E-11	3.6E-09	4.3E-08	2.5E-08	1.6E-07	2.9E-07	3.7E-07	2.8E-08	9.5E-09	1.0E-07
	R1711	301162	6259347	1.7E-06	1.7E-06	1.5E-05	8.4E-07	1.7E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.7E-09	1.5E-08	1.7E-09	1.2E-11	5.7E-10	6.2E-08	5.6E-09	3.7E-11	3.5E-09	4.2E-08	2.5E-08	1.5E-07	2.9E-07	3.7E-07	2.7E-08	9.4E-09	1.0E-07
	R1712	301212	6259347	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.4E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.6E-09	1.2E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.2E-09	9.9E-08
	R1713	301262	6259347	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	1.9E-04	3.7E-05	3.2E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.6E-08	9.0E-09	9.7E-08
	R1714	301312	6259347	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.6E-05	3.2E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.3E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.5E-08
	R1715	297912	6259397	2.9E-06	2.9E-06	2.6E-05	1.5E-06	2.9E-06	7.9E-05	3.5E-04	6.7E-05	5.9E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	1.0E-09	1.1E-07	9.7E-09	6.4E-11	6.2E-09	7.3E-08	4.3E-08	2.7E-07	5.0E-07	6.4E-07	4.8E-08	1.6E-08	1.8E-07
	R1716	297962	6259397	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.0E-05	3.6E-04	6.8E-05	5.9E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	9.9E-09	6.5E-11	6.3E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.7E-08	1.8E-07
	R1717	298012	6259397	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.1E-05	3.6E-04	6.9E-05	6.0E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.6E-11	6.4E-09	7.5E-08	4.5E-08	2.8E-07	5.2E-07	6.6E-07	4.9E-08	1.7E-08	1.8E-07
	R1718	298062	6259397	3.1E-06	3.1E-06	2.8E-05	1.5E-06	3.1E-06	8.3E-05	3.7E-04	7.1E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.0E-09	1.1E-07	1.0E-08	6.8E-11	6.5E-09	7.7E-08	4.6E-08	2.8E-07	5.3E-07	6.8E-07	5.0E-08	1.7E-08	1.8E-07
	R1719	298112	6259397	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.5E-05	3.8E-04	7.2E-05	6.3E-06	1.3E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.2E-07	1.0E-08	6.9E-11	6.7E-09	7.8E-08	4.6E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.8E-08	1.9E-07
	R1720	298162	6259397	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.6E-05	3.8E-04	7.3E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.7E-09	8.0E-08	4.7E-08	2.9E-07	5.5E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R1721	298212	6259397	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.7E-05	3.9E-04	7.4E-05	6.5E-06	1.3E-08	2.9E-08	3.2E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.8E-09	8.1E-08	4.8E-08	3.0E-07	5.6E-07	7.1E-07	5.3E-08	1.8E-08	1.9E-07
	R1722	298262	6259397	3.3E-06	3.3E-06	3.0E-05	1.6E-06	3.3E-06	8.9E-05	3.9E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.2E-11	7.0E-09	8.2E-08	4.9E-08	3.0E-07	5.6E-07	7.2E-07	5.4E-08	1.8E-08	2.0E-07
	R1723	298312	6259397	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	9.0E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.1E-09	8.3E-08	4.9E-08	3.1E-07	5.7E-07	7.3E-07	5.4E-08	1.9E-08	2.0E-07
	R1724	298362	6259397	3.4E-06	3.4E-06	3.0E-05	1.7E-06	3.4E-06	9.1E-05	4.1E-04	7.8E-05	6.8E-06	1.4E-08	3.0E-08	3.4E-09	2.4E-11	1.1E-09	1.3E-07	1.1E-08	7.4E-11	7.2E-09	8.5E-08	5.0E-08	3.1E-07	5.8E-07	7.4E-07	5.5E-08	1.9E-08	2.0E-07
	R1725	298412	6259397	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.3E-05	4.1E-04	7.9E-05	6.9E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.6E-11	7.3E-09	8.6E-08	5.1E-08	3.2E-07	5.9E-07	7.6E-07	5.6E-08	1.9E-08	2.1E-07
	R1726	298462	6259397	3.5E-06	3.5E-06	3.2E-05	1.8E-06	3.5E-06	9.5E-05	4.2E-04	8.1E-05	7.0E-06	1.4E-08	3.2E-08	3.5E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.7E-11	7.4E-09	8.8E-08	5.2E-08	3.2E-07	6.0E-07	7.7E-07	5.7E-08	2.0E-08	2.1E-07
	R1727	298512	6259397	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.6E-05	4.3E-04	8.2E-05	7.1E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.8E-11	7.5E-09	8.9E-08	5.3E-08	3.3E-07	6.1E-07	7.8E-07	5.8E-08	2.0E-08	2.1E-07
	R1728	298562	6259397	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.7E-05	4.3E-04	8.3E-05	7.2E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.9E-11	7.6E-09	9.0E-08	5.3E-08	3.3E-07	6.2E-07	7.9E-07	5.9E-08	2.0E-08	2.2E-07
	R1729	298612	6259397	3.7E-06	3.7E-06	3.3E-05	1.8E-06	3.7E-06	9.9E-05	4.4E-04	8.4E-05	7.3E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.2E-09	1.4E-07	1.2E-08	8.0E-11	7.7E-09	9.1E-08	5.4E-08	3.4E-07	6.3E-07	8.0E-07	6.0E-08	2.0E-08	2.2E-07
	R1730	298662	6259397	3.7E-06	3.7E-06	3.3E-05	1.8E-06	3.7E-06	1.0E-04	4.4E-04	8.5E-05	7.4E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.1E-11	7.8E-09	9.2E-08	5.5E-08	3.4E-07	6.3E-07	8.1E-07	6.0E-08	2.1E-08	2.2E-07
	R1731	298712	6259397	3.7E-06	3.7E-06	3.3E-05	1.9E-06	3.7E-06	1.0E-04	4.5E-04	8.5E-05	7.4E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.2E-11	7.9E-09	9.3E-08	5.5E-08	3.4E-07	6.4E-07	8.2E-07	6.1E-08	2.1E-08	2.2E-07
	R1732	298762	6259397	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.5E-04	8.7E-05	7.6E-06	1.5E-08	3.4E-08	3.8E-09	2.6E-11	1.3E-09	1.4E-07	1.3E-08	8.3E-11	8.0E-09	9.4E-08	5.6E-08	3.5E-07	6.5E-07	8.3E-07	6.2E-08	2.1E-08	2.3E-07
	R1733	298812	6259397	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.6E-04	8.8E-05	7.7E-06	1.5E-08	3.4E-08	3.8E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.4E-11	8.1E-09	9.6E-08	5.7E-08	3.5E-07	6.6E-07	8.4E-07	6.2E-08	2.1E-08	2.3E-07
	R1734	298862	6259397	3.8E-06	3.8E-06	3.5E-05	1.9E-06	3.8E-06	1.0E-04	4.6E-04	8.8E-05	7.7E-06	1.5E-08	3.5E-08	3.8E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.4E-11	8.1E-09	9.6E-08	5.7E-08	3.5E-07	6.6E-07	8.4E-07	6.3E-08	2.1E-08	2.3E-07
	R1735	298912	6259397	3.9E-06	3.9E-06	3.5E-05	1.9E-06	3.9E-06	1.0E-04	4.6E-04	8.9E-05	7.7E-06	1.5E-08	3.5E-08	3.9E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.5E-11	8.2E-09	9.7E-08	5.7E-08	3.6E-07	6.7E-07	8.5E-07	6.3E-08	2.2E-08	2.3E-07
	R1736	298962	6259397	3.9E-06	3.9E-06	3.5E-05	1.9E-06	3.9E-06	1.0E-04	4.7E-04	8.9E-05	7.8E-06	1.6E-08	3.5E-08	3.9E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.5E-11	8.2E-09	9.7E-08	5.7E-08	3.6E-07	6.7E-07	8.5E-07	6.3E-08	2.2E-08	2.3E-07
	R1737	299012	6259397	3.9E-06	3.9E-06	3.5E-05	1.9E-06	3.9E-06	1.0E-04	4.7E-04	8.9E-05	7.8E-06	1.6E-08	3.5E-08	3.9E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.5E-11	8.2E-09	9.7E-08	5.7E-08	3.6E-07	6.7E-07	8.5E-07	6.3E-08	2.2E-08	2.3E-07
	R1738	299062	6259397	3.9E-06	3.9E-06	3.5E-05	1.9E-06	3.9E-06	1.1E-04	4.7E-04	8.9E-05	7.8E-06	1.6E-08	3.5E-08	3.9E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.6E-11	8.2E-09	9.7E-08	5.8E-08	3.6E-07	6.7E-07	8.6E-07	6.3E-08	2.2E-08	2.3E-07
	R1739	299112	6259397	3.9E-06	3.9E-06	3.5E-05	1.9E-06	3.9E-06	1.1E-04	4.7E-04	9.0E-05	7.8E-06	1.6E-08	3.5E-08	3.9E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.6E-11	8.3E-09	9.7E-08	5.8E-08	3.6E-07	6.7E-07	8.6E-07	6.4E-08	2.2E-08	2.3E-07
	R1740	299162	6259397	3.9E-06	3.9E-06	3.5E-05	1.9E-06	3.9E-06	1.0E-04	4.6E-04	8.9E-05	7.7E-06	1.5E-08	3.5E-08	3.9E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.5E-11	8.2E-09	9.7E-08	5.7E-08	3.6E-07	6.6E-07	8.5E-07	6.3E-08	2.2E-08	2.3E-07
	R1741	299212	6259397	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.6E-04	8.8E-05	7.6E-06	1.5E-08	3.4E-08	3.8E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.4E-11	8.1E-09	9.6E-08	5.7E-08	3.5E-07	6.6E-07	8.4E-07	6.2E-08	2.1E-08	2.3E-07
	R1742	299262	6259397	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.5E-04	8.7E-05	7.5E-06	1.5E-08	3.4E-08	3.8E-09	2.6E-11	1.3E-09	1.4E-07	1.3E-08	8.3E-11	8.0E-09	9.4E-08	5.6E-08	3.5E-07	6.5E-07	8.3E-07	6.1E-08	2.1E-08	2.3E-07
	R1743	299312	6259397	3.7E-06	3.7E-06	3.3E-05	1.8E-06	3.7E-06	1.0E-04	4.4E-04	8.5E-05	7.4E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.1E-11	7.8E-09	9.2E-08	5.5E-08	3.4E-07	6.3E-07	8.1E-07	6.0E-08	2.1E-08	2.2E-07
	R1744	299362	6259397	3.6E-06	3.6E-06	3.3E-05	1.8E-06	3.6E-06	9.8E-05	4.3E-04	8.3E-05	7.2E-06	1.4E-08	3.3E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	8.0E-11	7.7E-09	9.0E-08	5.3E-08	3.3E-07	6.2E-07	8.0E-07	5.9E-08	2.0E-08	2.2E-07
	R1745	299412	6259397	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.7E-05	4.3E-04	8.3E-05	7.2E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.9E-11	7.6E-09	9.0E-08	5.3E-08	3.3E-07	6.2E-07	7.9E-07	5.9E-08	2.0E-08	2.2E-07
	R1746	299462	6259397	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.6E-05	4.3E-04	8.2E-05	7.1E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.9E-11	7.6E-09	8.9E-08	5.3E-08	3.3E-07	6.1E-07	7.9E-07	5.8E-08	2.0E-08	2.1E-07
	R1747	299512	6259397	3.5E-06	3.5E-06	3.2E-05	1.8E-06	3.5E-06	9.5E-05	4.2E-04	8.1E-05	7.0E-06	1.4E-08	3.2E-08	3.5E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.7E-11	7.5E-09	8.8E-08	5.2E-08	3.2E-07	6.1E-07	7.7E-07	5.7E-08	2.0E-08	2.1E-07
	R1748	299562	6259397	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.3E-05	4.1E-04	7.9E-05	6.9E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.6E-11	7.3E-09	8.6E-08	5.1E-08	3.2E-07	5.9E-07	7.6E-07	5.6E-08	1.9E-08	2.1E-07
	R1749	299612	6259397	3.4E-06	3.4E-06	3.0E-05	1.7E-06	3.4E-06	9.1E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.4E-09	2.4E-11	1.1E-09	1.2E-07	1.1E-08	7.4E-11	7.1E-09	8.4E-08	5.0E-08	3.1E-07	5.8E-07	7.4E-07	5.5E-08	1.9E-08	2.0E-07
	R1750	299662	6259397	3.3E-06	3.3E-06	3.0E-05	1.6E-06	3.3E-06	8.9E-05	3.9E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.2E-11	7.0E-09	8.2E-08	4.9E-08	3.0E-07	5.7E-07	7.2E-07	5.4E-08	1.8E-08	2.0E-07
	R1751	299712	6259397	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.7E-05	3.8E-04	7.4E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.8E-09	8.0E-08	4.7E-08	3.0E-07	5.5E-07	7.1E-07	5.2E-08	1.8E-08	1.9E-07
	R1752	299762	6259397	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.4E-05	3.8E-04	7.2E-05	6.3E-06	1.3E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.2E-07	1.0E-08	6.9E-11	6.6E-09	7.8E-08	4.6E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.8E-08	1.9E-07
	R1753	299812	6259397	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.2E-05	3.7E-04	7.0E-05	6.1E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.5E-09	7.6E-08	4.5E-08	2.8E-07	5.2E-07	6.7E-07	5.0E-08	1.7E-08	1.8E-07
	R1754	299862	6259397	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.0E-05	3.6E-04	6.8E-05	6.0E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	9.9E-09	6.5E-11	6.3E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.9E-08	1.7E-08	1.8E-07
	R1755	299912	6259397	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.8E-05	3.5E-04	6.6E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.8E-10	1.1E-07	9.6E-09	6.4E-11	6.1E-09	7.2E-08	4.3E-08	2.7E-07	5.0E-07	6.4E-07	4.7E-08	1.6E-08	1.7E-07
	R1756	299962	6259397	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.6E-05	3.4E-04	6.4E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.5E-10	1.0E-07	9.3E-09	6.2E-11	5.9E-09	7.0E-08	4.1E-08	2.6E-07	4.8E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R1757	300012	6259397	2.7E-06	2.7E-06	2.5E-05	1.4E-06	2.7E-06	7.4E-05	3.3E-04	6.3E-05	5.5E-06	1.1E-08	2.5E-08	2.7E-09	1.9E-11	9.3E-10	1.0E-07	9.1E-09	6.0E-11	5.8E-09	6.8E-08	4.0E-08	2.5E-07	4.7E-07	6.0E-07	4.5E-08	1.5E-08	1.6E-07
	R1758	300062	6259397	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.2E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.1E-10	9.9E-08	8.9E-09	5.9E-11	5.7E-09	6.7E-08	3.9E-08	2.5E-07	4.6E-07	5.9E-07	4.3E-08	1.5E-08	1.6E-07
	R1759	300112	6259397	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	7.0E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.9E-10	9.7E-08	8.7E-09	5.7E-11	5.5E-09	6.5E-08	3.9E-08	2.4E-07	4.5E-07	5.7E-07	4.3E-08	1.5E-08	1.6E-07
	R1760	300162	6259397	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.7E-10	9.5E-08	8.5E-09	5.6E-11	5.4E-09	6.4E-08	3.8E-08	2.4E-07	4.4E-07	5.6E-07	4.2E-08	1.4E-08	1.5E-07
	R1761	300212	6259397	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.0E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.5E-10	9.3E-08	8.3E-09	5.5E-11	5.3E-09	6.3E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R1762	300262	6259397	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.8E-09	2.2E-08	2.4E-09	1.7E-11	8.3E-10	9.0E-08	8.1E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.2E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R1763	300312	6259397	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.9E-04	5.5E-05	4.8E-06	9.5E-09	2.1E-08	2.4E-09	1.7E-11	8.1E-10	8.8E-08	7.9E-09	5.2E-11	5.1E-09	6.0E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.9E-08	1.3E-08	1.4E-07
	R1764	300362	6259397	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.8E-09	5.1E-11	4.9E-09	5.8E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R1765	300412	6259397	2.3E-06	2.3E-06	2.1E-05	1.1E-06	2.3E-06	6.2E-05	2.7E-04	5.3E-05	4.6E-06	9.1E-09	2.1E-08	2.3E-09	1.6E-11	7.8E-10	8.5E-08	7.6E-09	5.0E-11	4.8E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R1766	300462	6259397	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.5E-06	9.0E-09	2.0E-08	2.2E-09	1.6E-11	7.6E-10	8.3E-08	7.5E-09	4.9E-11	4.7E-09	5.6E-08	3.3E-08	2.1E-07	3.8E-07	4.9E-07	3.6E-08	1.3E-08	1.3E-07
	R1767	300512	6259397	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	5.9E-05	2.6E-04	5.1E-05	4.4E-06	8.8E-09	2.0E-08	2.2E-09	1.5E-11	7.5E-10	8.1E-08	7.3E-09	4.8E-11	4.7E-09	5.5E-08	3.3E-08	2.0E-07	3.8E-07	4.8E-07	3.6E-08	1.2E-08	1.3E-07
	R1768	300562	6259397	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.8E-05	2.6E-04	4.9E-05	4.3E-06	8.6E-09	1.9E-08	2.1E-09	1.5E-11	7.3E-10	7.9E-08	7.1E-09	4.7E-11	4.5E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
	R1769	300612	6259397	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.5E-04	4.8E-05	4.2E-06	8.4E-09	1.9E-08	2.1E-09	1.5E-11	7.2E-10	7.8E-08	7.0E-09	4.6E-11	4.5E-09	5.3E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.3E-07

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																										
													Metal									Heavy Metal								
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R1770	300662	6259397	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.7E-05	4.1E-06	8.2E-09	1.9E-08	2.1E-09	1.4E-11	7.0E-10	7.6E-08	6.8E-09	4.5E-11	4.4E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.4E-08	1.2E-08	1.2E-07
	R1771	300712	6259397	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	8.0E-09	1.8E-08	2.0E-09	1.4E-11	6.8E-10	7.4E-08	6.7E-09	4.4E-11	4.3E-09	5.0E-08	3.0E-08	1.8E-07	3.5E-07	4.4E-07	3.3E-08	1.1E-08	1.2E-07
	R1772	300762	6259397	2.0E-06	2.0E-06	1.8E-05	9.8E-07	2.0E-06	5.3E-05	2.4E-04	4.5E-05	3.9E-06	7.9E-09	1.8E-08	2.0E-09	1.4E-11	6.7E-10	7.3E-08	6.5E-09	4.3E-11	4.2E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R1773	300812	6259397	1.9E-06	1.9E-06	1.7E-05	9.6E-07	1.9E-06	5.2E-05	2.3E-04	4.4E-05	3.8E-06	7.7E-09	1.7E-08	1.9E-09	1.3E-11	6.5E-10	7.1E-08	6.4E-09	4.2E-11	4.1E-09	4.8E-08	2.8E-08	1.8E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.2E-07
	R1774	300862	6259397	1.9E-06	1.9E-06	1.7E-05	9.4E-07	1.9E-06	5.1E-05	2.3E-04	4.3E-05	3.8E-06	7.5E-09	1.7E-08	1.9E-09	1.3E-11	6.4E-10	7.0E-08	6.3E-09	4.1E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.2E-07	4.1E-07	3.1E-08	1.1E-08	1.1E-07
	R1775	300912	6259397	1.8E-06	1.8E-06	1.7E-05	9.2E-07	1.8E-06	5.0E-05	2.2E-04	4.2E-05	3.7E-06	7.4E-09	1.7E-08	1.8E-09	1.3E-11	6.3E-10	6.8E-08	6.1E-09	4.1E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.2E-07	4.1E-07	3.0E-08	1.0E-08	1.1E-07
	R1776	300962	6259397	1.8E-06	1.8E-06	1.6E-05	9.0E-07	1.8E-06	4.9E-05	2.2E-04	4.2E-05	3.6E-06	7.2E-09	1.6E-08	1.8E-09	1.3E-11	6.1E-10	6.7E-08	6.0E-09	4.0E-11	3.8E-09	4.5E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	2.9E-08	1.0E-08	1.1E-07
	R1777	301012	6259397	1.8E-06	1.8E-06	1.6E-05	8.8E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.5E-06	7.1E-09	1.6E-08	1.8E-09	1.2E-11	6.0E-10	6.5E-08	5.9E-09	3.9E-11	3.8E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.9E-07	2.9E-08	9.9E-09	1.1E-07
	R1778	301062	6259397	1.7E-06	1.7E-06	1.6E-05	8.7E-07	1.7E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	6.9E-09	1.6E-08	1.7E-09	1.2E-11	5.9E-10	6.4E-08	5.8E-09	3.8E-11	3.7E-09	4.3E-08	2.6E-08	1.6E-07	3.0E-07	3.8E-07	2.8E-08	9.7E-09	1.0E-07
	R1779	301112	6259397	1.7E-06	1.7E-06	1.5E-05	8.5E-07	1.7E-06	4.6E-05	2.0E-04	3.9E-05	3.4E-06	6.8E-09	1.5E-08	1.7E-09	1.2E-11	5.8E-10	6.3E-08	5.7E-09	3.7E-11	3.6E-09	4.3E-08	2.5E-08	1.6E-07	2.9E-07	3.7E-07	2.8E-08	9.5E-09	1.0E-07
	R1780	301162	6259397	1.7E-06	1.7E-06	1.5E-05	8.4E-07	1.7E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.7E-09	1.5E-08	1.7E-09	1.2E-11	5.7E-10	6.2E-08	5.6E-09	3.7E-11	3.5E-09	4.2E-08	2.5E-08	1.5E-07	2.9E-07	3.7E-07	2.7E-08	9.4E-09	1.0E-07
	R1781	301212	6259397	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.4E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.6E-09	1.2E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.2E-09	9.9E-08
	R1782	301262	6259397	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	1.9E-04	3.7E-05	3.2E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.7E-08
	R1783	301312	6259397	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.6E-05	3.2E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.3E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.5E-08
	R1784	297912	6259447	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.7E-05	3.4E-04	6.6E-05	5.7E-06	1.1E-08	2.6E-08	2.9E-09	2.0E-11	9.8E-10	1.1E-07	9.6E-09	6.3E-11	6.1E-09	7.2E-08	4.2E-08	2.6E-07	4.9E-07	6.3E-07	4.7E-08	1.6E-08	1.7E-07
	R1785	297962	6259447	2.9E-06	2.9E-06	2.6E-05	1.5E-06	2.9E-06	7.9E-05	3.5E-04	6.7E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.9E-10	1.1E-07	9.7E-09	6.4E-11	6.2E-09	7.3E-08	4.3E-08	2.7E-07	5.0E-07	6.4E-07	4.7E-08	1.6E-08	1.7E-07
	R1786	298012	6259447	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.0E-05	3.6E-04	6.8E-05	5.9E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	9.9E-09	6.5E-11	6.3E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.7E-08	1.8E-07
	R1787	298062	6259447	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.1E-05	3.6E-04	6.9E-05	6.0E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.6E-11	6.4E-09	7.5E-08	4.5E-08	2.8E-07	5.2E-07	6.6E-07	4.9E-08	1.7E-08	1.8E-07
	R1788	298112	6259447	3.1E-06	3.1E-06	2.8E-05	1.5E-06	3.1E-06	8.3E-05	3.7E-04	7.1E-05	6.1E-06	1.2E-08	2.8E-08	3.1E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.8E-11	6.5E-09	7.7E-08	4.5E-08	2.8E-07	5.3E-07	6.8E-07	5.0E-08	1.7E-08	1.8E-07
	R1789	298162	6259447	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.4E-05	3.7E-04	7.2E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.2E-07	1.0E-08	6.8E-11	6.6E-09	7.8E-08	4.6E-08	2.9E-07	5.4E-07	6.8E-07	5.1E-08	1.7E-08	1.9E-07
	R1790	298212	6259447	3.2E-06	3.2E-06	2.8E-05	1.6E-06	3.2E-06	8.5E-05	3.8E-04	7.3E-05	6.3E-06	1.3E-08	2.8E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.7E-09	7.9E-08	4.7E-08	2.9E-07	5.4E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R1791	298262	6259447	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.7E-05	3.9E-04	7.4E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.8E-09	8.0E-08	4.8E-08	3.0E-07	5.5E-07	7.1E-07	5.2E-08	1.8E-08	1.9E-07
	R1792	298312	6259447	3.3E-06	3.3E-06	2.9E-05	1.6E-06	3.3E-06	8.8E-05	3.9E-04	7.5E-05	6.5E-06	1.3E-08	2.9E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.2E-11	6.9E-09	8.2E-08	4.8E-08	3.0E-07	5.6E-07	7.2E-07	5.3E-08	1.8E-08	2.0E-07
	R1793	298362	6259447	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	9.0E-05	4.0E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.0E-09	8.3E-08	4.9E-08	3.1E-07	5.7E-07	7.3E-07	5.4E-08	1.9E-08	2.0E-07
	R1794	298412	6259447	3.4E-06	3.4E-06	3.0E-05	1.7E-06	3.4E-06	9.1E-05	4.1E-04	7.8E-05	6.8E-06	1.4E-08	3.0E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.4E-11	7.2E-09	8.5E-08	5.0E-08	3.1E-07	5.8E-07	7.4E-07	5.5E-08	1.9E-08	2.0E-07
	R1795	298462	6259447	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.3E-05	4.1E-04	7.9E-05	6.9E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.6E-11	7.3E-09	8.6E-08	5.1E-08	3.2E-07	5.9E-07	7.6E-07	5.6E-08	1.9E-08	2.1E-07
	R1796	298512	6259447	3.5E-06	3.5E-06	3.1E-05	1.7E-06	3.5E-06	9.4E-05	4.2E-04	8.0E-05	7.0E-06	1.4E-08	3.1E-08	3.5E-09	2.4E-11	1.2E-09	1.3E-07	1.2E-08	7.6E-11	7.4E-09	8.7E-08	5.1E-08	3.2E-07	6.0E-07	7.6E-07	5.7E-08	1.9E-08	2.1E-07
	R1797	298562	6259447	3.5E-06	3.5E-06	3.2E-05	1.8E-06	3.5E-06	9.5E-05	4.2E-04	8.1E-05	7.0E-06	1.4E-08	3.2E-08	3.5E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.7E-11	7.4E-09	8.8E-08	5.2E-08	3.2E-07	6.0E-07	7.7E-07	5.7E-08	2.0E-08	2.1E-07
	R1798	298612	6259447	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.6E-05	4.3E-04	8.2E-05	7.1E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.8E-11	7.6E-09	8.9E-08	5.3E-08	3.3E-07	6.1E-07	7.8E-07	5.8E-08	2.0E-08	2.1E-07
	R1799	298662	6259447	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.7E-05	4.3E-04	8.3E-05	7.2E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.9E-11	7.6E-09	9.0E-08	5.3E-08	3.3E-07	6.2E-07	7.9E-07	5.9E-08	2.0E-08	2.2E-07
	R1800	298712	6259447	3.6E-06	3.6E-06	3.3E-05	1.8E-06	3.6E-06	9.8E-05	4.4E-04	8.4E-05	7.3E-06	1.5E-08	3.3E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	8.0E-11	7.7E-09	9.1E-08	5.4E-08	3.3E-07	6.3E-07	8.0E-07	5.9E-08	2.0E-08	2.2E-07
	R1801	298762	6259447	3.7E-06	3.7E-06	3.3E-05	1.8E-06	3.7E-06	1.0E-04	4.4E-04	8.5E-05	7.4E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.1E-11	7.8E-09	9.2E-08	5.5E-08	3.4E-07	6.4E-07	8.1E-07	6.0E-08	2.1E-08	2.2E-07
	R1802	298812	6259447	3.7E-06	3.7E-06	3.4E-05	1.9E-06	3.7E-06	1.0E-04	4.5E-04	8.6E-05	7.5E-06	1.5E-08	3.4E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.2E-11	7.9E-09	9.4E-08	5.5E-08	3.4E-07	6.4E-07	8.2E-07	6.1E-08	2.1E-08	2.2E-07
	R1803	298862	6259447	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.5E-04	8.7E-05	7.5E-06	1.5E-08	3.4E-08	3.8E-09	2.6E-11	1.3E-09	1.4E-07	1.3E-08	8.3E-11	8.0E-09	9.4E-08	5.6E-08	3.5E-07	6.5E-07	8.3E-07	6.1E-08	2.1E-08	2.3E-07
	R1804	298912	6259447	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.5E-04	8.7E-05	7.6E-06	1.5E-08	3.4E-08	3.8E-09	2.6E-11	1.3E-09	1.4E-07	1.3E-08	8.3E-11	8.0E-09	9.5E-08	5.6E-08	3.5E-07	6.5E-07	8.3E-07	6.2E-08	2.1E-08	2.3E-07
	R1805	298962	6259447	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.5E-04	8.7E-05	7.6E-06	1.5E-08	3.4E-08	3.8E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.3E-11	8.0E-09	9.5E-08	5.6E-08	3.5E-07	6.5E-07	8.3E-07	6.2E-08	2.1E-08	2.3E-07
	R1806	299012	6259447	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.6E-04	8.7E-05	7.6E-06	1.5E-08	3.4E-08	3.8E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.4E-11	8.1E-09	9.5E-08	5.6E-08	3.5E-07	6.5E-07	8.4E-07	6.2E-08	2.1E-08	2.3E-07
	R1807	299062	6259447	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.6E-04	8.8E-05	7.6E-06	1.5E-08	3.4E-08	3.8E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.4E-11	8.1E-09	9.5E-08	5.6E-08	3.5E-07	6.5E-07	8.4E-07	6.2E-08	2.1E-08	2.3E-07
	R1808	299112	6259447	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.6E-04	8.8E-05	7.6E-06	1.5E-08	3.4E-08	3.8E-09	2.7E-11	1.3E-09	1.4E-07	1.3E-08	8.4E-11	8.1E-09	9.5E-08	5.6E-08	3.5E-07	6.6E-07	8.4E-07	6.2E-08	2.1E-08	2.3E-07
	R1809	299162	6259447	3.8E-06	3.8E-06	3.4E-05	1.9E-06	3.8E-06	1.0E-04	4.5E-04	8.7E-05	7.5E-06	1.5E-08	3.4E-08	3.8E-09	2.6E-11	1.3E-09	1.4E-07	1.3E-08	8.3E-11	8.0E-09	9.4E-08	5.6E-08	3.5E-07	6.5E-07	8.3E-07	6.1E-08	2.1E-08	2.3E-07
	R1810	299212	6259447	3.7E-06	3.7E-06	3.4E-05	1.9E-06	3.7E-06	1.0E-04	4.5E-04	8.6E-05	7.5E-06	1.5E-08	3.4E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.2E-11	7.9E-09	9.4E-08	5.5E-08	3.4E-07	6.4E-07	8.2E-07	6.1E-08	2.1E-08	2.2E-07
	R1811	299262	6259447	3.7E-06	3.7E-06	3.3E-05	1.8E-06	3.7E-06	1.0E-04	4.4E-04	8.5E-05	7.4E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.1E-11	7.8E-09	9.2E-08	5.5E-08	3.4E-07	6.3E-07	8.1E-07	6.0E-08	2.1E-08	2.2E-07
	R1812	299312	6259447	3.6E-06	3.6E-06	3.3E-05	1.8E-06	3.6E-06	9.8E-05	4.4E-04	8.3E-05	7.3E-06	1.5E-08	3.3E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	8.0E-11	7.7E-09	9.1E-08	5.4E-08	3.3E-07	6.2E-07	8.0E-07	5.9E-08	2.0E-08	2.2E-07
	R1813	299362	6259447	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.7E-05	4.3E-04	8.2E-05	7.2E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.9E-11	7.6E-09	9.0E-08	5.3E-08	3.3E-07	6.2E-07	7.9E-07	5.8E-08	2.0E-08	2.1E-07
	R1814	299412	6259447	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.6E-05	4.3E-04	8.2E-05	7.1E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.8E-11	7.6E-09	8.9E-08	5.3E-08	3.3E-07	6.1E-07	7.8E-07	5.8E-08	2.0E-08	2.1E-07
	R1815	299462	6259447	3.5E-06	3.5E-06	3.2E-05	1.8E-06	3.5E-06	9.6E-05	4.3E-04	8.2E-05	7.1E-06	1.4E-08	3.2E-08	3.5E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.8E-11	7.5E-09	8.9E-08	5.2E-08	3.3E-07	6.1E-07	7.8E-07	5.8E-08	2.0E-08	2.1E-07
	R1816	299512	6259447	3.5E-06	3.5E-06	3.1E-05	1.7E-06	3.5E-06	9.4E-05	4.2E-04	8.0E-05	6.9E-06	1.4E-08	3.1E-08	3.5E-09	2.4E-11	1.2E-09	1.3E-07	1.2E-08	7.6E-11	7.4E-09	8.7E-08	5.1E-08	3.2E-07	6.0E-07	7.6E-07	5.7E-08	1.9E-08	2.1E-07
	R1817	299562	6259447	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.2E-05	4.1E-04	7.8E-05	6.8E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.5E-11	7.2E-09	8.5E-08	5.0E-08	3.1E-07	5.8E-07	7.5E-07	5.5E-08	1.9E-08	2.0E-07
	R1818	299612	6259447	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	9.0E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.1E-09	8.3E-08	4.9E-08	3.1E-07	5.7E-07	7.3E-07	5.4E-08	1.9E-08	2.0E-07
	R1819	299662	6259447	3.3E-06	3.3E-06	2.9E-05	1.6E-06	3.3E-06	8.8E-05	3.9E-04	7.5E-05	6.5E-06	1.3E-08	2.9E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.2E-11	6.9E-09	8.1E-08	4.8E-08	3.0E-07	5.6E-07	7.2E-07	5.3E-08	1.8E-08	2.0E-07
	R1820	299712	6259447	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.6E-05	3.8E-04	7.3E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.7E-09	8.0E-08	4.7E-08	2.9E-07	5.5E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R1821	299762	6259447	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.4E-05	3.7E-04	7.1E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.1E-07	1.0E-08	6.8E-11	6.6E-09	7.8E-08	4.6E-08	2.9E-07	5.3E-07	6.8E-07	5.1E-08	1.7E-08	1.9E-07
	R1822	299812	6259447	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.2E-05	3.6E-04	7.0E-05	6.1E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.4E-09	7.6E-08	4.5E-08	2.8E-07	5.2E-07	6.7E-07	4.9E-08	1.7E-08	1.8E-07
	R1823	299862	6259447	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.0E-05	3.5E-04	6.8E-05	5.9E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	9.8E-09	6.5E-11	6.3E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.7E-08	1.8E-07
	R1824	299912	6259447	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.8E-05	3.4E-04	6.6E-05	5.7E-06	1.1E-08	2.6E-08	2.9E-09	2.0E-11	9.8E-10	1.1E-07	9.6E-09	6.3E-11	6.1E-09	7.2E-08	4.3E-08	2.6E-07	4.9E-07	6.3E-07	4.7E-08	1.6E-08	1.7E-07
	R1825	299962	6259447	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.5E-05	3.3E-04	6.4E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.5E-10	1.0E-07	9.3E-09	6.1E-11	5.9E-09	7.0E-08	4.1E-08	2.6E-07	4.8E-07	6.1E-07	4.5E-08	1.6E-08	1.7E-07
	R1826	300012	6259447	2.7E-06	2.7E-06	2.4E-05	1.4E-06	2.7E-06	7.3E-05	3.3E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.2E-10	1.0E-07	9.0E-09	6.0E-11	5.7E-09	6.8E-08	4.0E-08	2.5E-07	4.7E-07	6.0E-07	4.4E-08	1.5E-08	1.6E-07
	R1827	300062	6259447	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.6E-09	1.9E-11	9.0E-10	9.8E-08	8.8E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.5E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R1828	300112	6259447	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	7.0E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.8E-10	9.6E-08	8.6E-09	5.7E-11	5.5E-09	6.5E-08	3.8E-08	2.4E-07	4.5E-07	5.7E-07	4.2E-08	1.4E-08	1.6E-07
	R1829	300162	6259447	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.7E-10	9.4E-08	8.5E-09	5.6E-11	5.4E-09	6.4E-08	3.8E-08	2.3E-07	4.4E-07	5.6E-07	4.2E-08	1.4E-08	1.5E-07
	R1830	300212	6259447	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.7E-05	3.0E-04	5.7E-05	5.0E-06	9.9E-09	2.2E-08	2.5E-09	1.7E-11	8.5E-10	9.2E-08	8.3E-09	5.5E-11	5.3E-09	6.2E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																										
													Metal									Heavy Metal								
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R1831	300262	6259447	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.7E-09	2.2E-08	2.4E-09	1.7E-11	8.3E-10	9.0E-08	8.1E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.2E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R1832	300312	6259447	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.9E-04	5.5E-05	4.8E-06	9.5E-09	2.1E-08	2.4E-09	1.7E-11	8.1E-10	8.8E-08	7.9E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.9E-08	1.3E-08	1.4E-07
	R1833	300362	6259447	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.3E-05	4.6E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.7E-09	5.1E-11	4.9E-09	5.8E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R1834	300412	6259447	2.3E-06	2.3E-06	2.0E-05	1.1E-06	2.3E-06	6.1E-05	2.7E-04	5.2E-05	4.5E-06	9.1E-09	2.0E-08	2.3E-09	1.6E-11	7.7E-10	8.4E-08	7.6E-09	5.0E-11	4.8E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R1835	300462	6259447	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.5E-06	8.9E-09	2.0E-08	2.2E-09	1.6E-11	7.6E-10	8.2E-08	7.4E-09	4.9E-11	4.7E-09	5.6E-08	3.3E-08	2.1E-07	3.8E-07	4.9E-07	3.6E-08	1.2E-08	1.3E-07
	R1836	300512	6259447	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	5.9E-05	2.6E-04	5.0E-05	4.4E-06	8.8E-09	2.0E-08	2.2E-09	1.5E-11	7.4E-10	8.1E-08	7.3E-09	4.8E-11	4.6E-09	5.5E-08	3.2E-08	2.0E-07	3.8E-07	4.8E-07	3.6E-08	1.2E-08	1.3E-07
	R1837	300562	6259447	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.8E-05	2.6E-04	4.9E-05	4.3E-06	8.6E-09	1.9E-08	2.1E-09	1.5E-11	7.3E-10	7.9E-08	7.1E-09	4.7E-11	4.5E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
	R1838	300612	6259447	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.5E-04	4.8E-05	4.2E-06	8.4E-09	1.9E-08	2.1E-09	1.5E-11	7.1E-10	7.8E-08	7.0E-09	4.6E-11	4.5E-09	5.3E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.3E-07
	R1839	300662	6259447	2.1E-06	2.1E-06	1.8E-05	1.0E-06	2.1E-06	5.5E-05	2.5E-04	4.7E-05	4.1E-06	8.2E-09	1.8E-08	2.1E-09	1.4E-11	7.0E-10	7.6E-08	6.8E-09	4.5E-11	4.3E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.3E-08	1.1E-08	1.2E-07
	R1840	300712	6259447	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	8.0E-09	1.8E-08	2.0E-09	1.4E-11	6.8E-10	7.4E-08	6.7E-09	4.4E-11	4.3E-09	5.0E-08	3.0E-08	1.8E-07	3.5E-07	4.4E-07	3.3E-08	1.1E-08	1.2E-07
	R1841	300762	6259447	2.0E-06	2.0E-06	1.8E-05	9.8E-07	2.0E-06	5.3E-05	2.4E-04	4.5E-05	3.9E-06	7.9E-09	1.8E-08	2.0E-09	1.4E-11	6.7E-10	7.3E-08	6.5E-09	4.3E-11	4.2E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R1842	300812	6259447	1.9E-06	1.9E-06	1.7E-05	9.6E-07	1.9E-06	5.2E-05	2.3E-04	4.4E-05	3.9E-06	7.7E-09	1.7E-08	1.9E-09	1.3E-11	6.6E-10	7.1E-08	6.4E-09	4.2E-11	4.1E-09	4.8E-08	2.9E-08	1.8E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.2E-07
	R1843	300862	6259447	1.9E-06	1.9E-06	1.7E-05	9.4E-07	1.9E-06	5.1E-05	2.3E-04	4.3E-05	3.8E-06	7.5E-09	1.7E-08	1.9E-09	1.3E-11	6.4E-10	7.0E-08	6.3E-09	4.1E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.2E-07	4.1E-07	3.1E-08	1.1E-08	1.1E-07
	R1844	300912	6259447	1.8E-06	1.8E-06	1.7E-05	9.2E-07	1.8E-06	5.0E-05	2.2E-04	4.2E-05	3.7E-06	7.4E-09	1.7E-08	1.8E-09	1.3E-11	6.3E-10	6.8E-08	6.1E-09	4.1E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.2E-07	4.1E-07	3.0E-08	1.0E-08	1.1E-07
	R1845	300962	6259447	1.8E-06	1.8E-06	1.6E-05	9.0E-07	1.8E-06	4.9E-05	2.2E-04	4.2E-05	3.6E-06	7.2E-09	1.6E-08	1.8E-09	1.3E-11	6.1E-10	6.7E-08	6.0E-09	4.0E-11	3.8E-09	4.5E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	2.9E-08	1.0E-08	1.1E-07
	R1846	301012	6259447	1.8E-06	1.8E-06	1.6E-05	8.9E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.5E-06	7.1E-09	1.6E-08	1.8E-09	1.2E-11	6.0E-10	6.6E-08	5.9E-09	3.9E-11	3.8E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.9E-07	2.9E-08	9.9E-09	1.1E-07
	R1847	301062	6259447	1.7E-06	1.7E-06	1.6E-05	8.7E-07	1.7E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	6.9E-09	1.6E-08	1.7E-09	1.2E-11	5.9E-10	6.4E-08	5.8E-09	3.8E-11	3.7E-09	4.3E-08	2.6E-08	1.6E-07	3.0E-07	3.8E-07	2.8E-08	9.7E-09	1.0E-07
	R1848	301112	6259447	1.7E-06	1.7E-06	1.5E-05	8.5E-07	1.7E-06	4.6E-05	2.0E-04	3.9E-05	3.4E-06	6.8E-09	1.5E-08	1.7E-09	1.2E-11	5.8E-10	6.3E-08	5.7E-09	3.7E-11	3.6E-09	4.3E-08	2.5E-08	1.6E-07	2.9E-07	3.7E-07	2.8E-08	9.5E-09	1.0E-07
	R1849	301162	6259447	1.7E-06	1.7E-06	1.5E-05	8.4E-07	1.7E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.7E-09	1.5E-08	1.7E-09	1.2E-11	5.7E-10	6.2E-08	5.6E-09	3.7E-11	3.5E-09	4.2E-08	2.5E-08	1.5E-07	2.9E-07	3.7E-07	2.7E-08	9.4E-09	1.0E-07
	R1850	301212	6259447	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.4E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.6E-09	1.1E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.2E-09	9.8E-08
	R1851	301262	6259447	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.7E-08
	R1852	301312	6259447	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.6E-05	3.2E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.3E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.5E-08
	R1853	297912	6259497	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.6E-05	3.4E-04	6.5E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.5E-10	1.0E-07	9.4E-09	6.2E-11	6.0E-09	7.0E-08	4.2E-08	2.6E-07	4.8E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R1854	297962	6259497	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.7E-05	3.4E-04	6.6E-05	5.7E-06	1.1E-08	2.6E-08	2.9E-09	2.0E-11	9.7E-10	1.1E-07	9.5E-09	6.3E-11	6.0E-09	7.1E-08	4.2E-08	2.6E-07	4.9E-07	6.3E-07	4.6E-08	1.6E-08	1.7E-07
	R1855	298012	6259497	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.8E-05	3.5E-04	6.7E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.8E-10	1.1E-07	9.6E-09	6.4E-11	6.1E-09	7.2E-08	4.3E-08	2.7E-07	5.0E-07	6.4E-07	4.7E-08	1.6E-08	1.7E-07
	R1856	298062	6259497	2.9E-06	2.9E-06	2.7E-05	1.5E-06	2.9E-06	8.0E-05	3.5E-04	6.8E-05	5.9E-06	1.2E-08	2.7E-08	2.9E-09	2.1E-11	1.0E-09	1.1E-07	9.8E-09	6.5E-11	6.2E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.6E-08	1.8E-07
	R1857	298112	6259497	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.1E-05	3.6E-04	6.9E-05	6.0E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.6E-11	6.4E-09	7.5E-08	4.4E-08	2.8E-07	5.2E-07	6.6E-07	4.9E-08	1.7E-08	1.8E-07
	R1858	298162	6259497	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.2E-05	3.7E-04	7.0E-05	6.1E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.5E-09	7.6E-08	4.5E-08	2.8E-07	5.2E-07	6.7E-07	5.0E-08	1.7E-08	1.8E-07
	R1859	298212	6259497	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.4E-05	3.7E-04	7.1E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.1E-07	1.0E-08	6.8E-11	6.6E-09	7.8E-08	4.6E-08	2.9E-07	5.3E-07	6.8E-07	5.1E-08	1.7E-08	1.9E-07
	R1860	298262	6259497	3.2E-06	3.2E-06	2.8E-05	1.6E-06	3.2E-06	8.5E-05	3.8E-04	7.3E-05	6.3E-06	1.3E-08	2.8E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.7E-09	7.9E-08	4.7E-08	2.9E-07	5.4E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R1861	298312	6259497	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.7E-05	3.8E-04	7.4E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.8E-09	8.0E-08	4.7E-08	2.9E-07	5.5E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R1862	298362	6259497	3.3E-06	3.3E-06	2.9E-05	1.6E-06	3.3E-06	8.8E-05	3.9E-04	7.5E-05	6.5E-06	1.3E-08	2.9E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.2E-11	6.9E-09	8.1E-08	4.8E-08	3.0E-07	5.6E-07	7.2E-07	5.3E-08	1.8E-08	2.0E-07
	R1863	298412	6259497	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	8.9E-05	4.0E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.0E-09	8.3E-08	4.9E-08	3.0E-07	5.7E-07	7.3E-07	5.4E-08	1.9E-08	2.0E-07
	R1864	298462	6259497	3.4E-06	3.4E-06	3.0E-05	1.7E-06	3.4E-06	9.1E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.4E-09	2.4E-11	1.1E-09	1.2E-07	1.1E-08	7.4E-11	7.1E-09	8.4E-08	5.0E-08	3.1E-07	5.8E-07	7.4E-07	5.5E-08	1.9E-08	2.0E-07
	R1865	298512	6259497	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.2E-05	4.1E-04	7.8E-05	6.8E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.5E-11	7.2E-09	8.5E-08	5.0E-08	3.1E-07	5.8E-07	7.5E-07	5.5E-08	1.9E-08	2.0E-07
	R1866	298562	6259497	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.3E-05	4.1E-04	7.9E-05	6.9E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.6E-11	7.3E-09	8.6E-08	5.1E-08	3.2E-07	5.9E-07	7.6E-07	5.6E-08	1.9E-08	2.1E-07
	R1867	298612	6259497	3.5E-06	3.5E-06	3.1E-05	1.7E-06	3.5E-06	9.4E-05	4.2E-04	8.0E-05	7.0E-06	1.4E-08	3.1E-08	3.5E-09	2.4E-11	1.2E-09	1.3E-07	1.2E-08	7.7E-11	7.4E-09	8.7E-08	5.2E-08	3.2E-07	6.0E-07	7.7E-07	5.7E-08	2.0E-08	2.1E-07
	R1868	298662	6259497	3.5E-06	3.5E-06	3.2E-05	1.8E-06	3.5E-06	9.5E-05	4.2E-04	8.1E-05	7.1E-06	1.4E-08	3.2E-08	3.5E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.8E-11	7.5E-09	8.8E-08	5.2E-08	3.2E-07	6.1E-07	7.8E-07	5.8E-08	2.0E-08	2.1E-07
	R1869	298712	6259497	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.6E-05	4.3E-04	8.2E-05	7.1E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.8E-11	7.6E-09	8.9E-08	5.3E-08	3.3E-07	6.1E-07	7.8E-07	5.8E-08	2.0E-08	2.1E-07
	R1870	298762	6259497	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.7E-05	4.3E-04	8.3E-05	7.2E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.9E-11	7.6E-09	9.0E-08	5.3E-08	3.3E-07	6.2E-07	7.9E-07	5.9E-08	2.0E-08	2.2E-07
	R1871	298812	6259497	3.7E-06	3.7E-06	3.3E-05	1.8E-06	3.7E-06	9.9E-05	4.4E-04	8.4E-05	7.3E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.2E-09	1.4E-07	1.2E-08	8.0E-11	7.7E-09	9.1E-08	5.4E-08	3.4E-07	6.3E-07	8.0E-07	6.0E-08	2.0E-08	2.2E-07
	R1872	298862	6259497	3.7E-06	3.7E-06	3.3E-05	1.8E-06	3.7E-06	9.9E-05	4.4E-04	8.5E-05	7.4E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.1E-11	7.8E-09	9.2E-08	5.5E-08	3.4E-07	6.3E-07	8.1E-07	6.0E-08	2.1E-08	2.2E-07
	R1873	298912	6259497	3.7E-06	3.7E-06	3.3E-05	1.8E-06	3.7E-06	1.0E-04	4.4E-04	8.5E-05	7.4E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.1E-11	7.8E-09	9.2E-08	5.5E-08	3.4E-07	6.4E-07	8.1E-07	6.0E-08	2.1E-08	2.2E-07
	R1874	298962	6259497	3.7E-06	3.7E-06	3.3E-05	1.9E-06	3.7E-06	1.0E-04	4.4E-04	8.5E-05	7.4E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.2E-11	7.9E-09	9.3E-08	5.5E-08	3.4E-07	6.4E-07	8.2E-07	6.0E-08	2.1E-08	2.2E-07
	R1875	299012	6259497	3.7E-06	3.7E-06	3.3E-05	1.9E-06	3.7E-06	1.0E-04	4.5E-04	8.5E-05	7.4E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.2E-11	7.9E-09	9.3E-08	5.5E-08	3.4E-07	6.4E-07	8.2E-07	6.1E-08	2.1E-08	2.2E-07
	R1876	299062	6259497	3.7E-06	3.7E-06	3.3E-05	1.9E-06	3.7E-06	1.0E-04	4.5E-04	8.6E-05	7.4E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.2E-11	7.9E-09	9.3E-08	5.5E-08	3.4E-07	6.4E-07	8.2E-07	6.1E-08	2.1E-08	2.2E-07
	R1877	299112	6259497	3.7E-06	3.7E-06	3.3E-05	1.9E-06	3.7E-06	1.0E-04	4.5E-04	8.5E-05	7.4E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.2E-11	7.9E-09	9.3E-08	5.5E-08	3.4E-07	6.4E-07	8.2E-07	6.1E-08	2.1E-08	2.2E-07
	R1878	299162	6259497	3.7E-06	3.7E-06	3.3E-05	1.8E-06	3.7E-06	9.9E-05	4.4E-04	8.5E-05	7.4E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.3E-09	1.4E-07	1.2E-08	8.1E-11	7.8E-09	9.2E-08	5.5E-08	3.4E-07	6.3E-07	8.1E-07	6.0E-08	2.1E-08	2.2E-07
	R1879	299212	6259497	3.7E-06	3.7E-06	3.3E-05	1.8E-06	3.7E-06	9.9E-05	4.4E-04	8.4E-05	7.3E-06	1.5E-08	3.3E-08	3.7E-09	2.6E-11	1.2E-09	1.4E-07	1.2E-08	8.1E-11	7.8E-09	9.2E-08	5.4E-08	3.4E-07	6.3E-07	8.1E-07	6.0E-08	2.0E-08	2.2E-07
	R1880	299262	6259497	3.6E-06	3.6E-06	3.3E-05	1.8E-06	3.6E-06	9.8E-05	4.4E-04	8.3E-05	7.3E-06	1.5E-08	3.3E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	8.0E-11	7.7E-09	9.1E-08	5.4E-08	3.3E-07	6.2E-07	8.0E-07	5.9E-08	2.0E-08	2.2E-07
	R1881	299312	6259497	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.7E-05	4.3E-04	8.3E-05	7.2E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.9E-11	7.6E-09	9.0E-08	5.3E-08	3.3E-07	6.2E-07	7.9E-07	5.9E-08	2.0E-08	2.2E-07
	R1882	299362	6259497	3.5E-06	3.5E-06	3.2E-05	1.8E-06	3.5E-06	9.6E-05	4.3E-04	8.1E-05	7.1E-06	1.4E-08	3.2E-08	3.5E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.8E-11	7.5E-09	8.9E-08	5.2E-08	3.3E-07	6.1E-07	7.8E-07	5.8E-08	2.0E-08	2.1E-07
	R1883	299412	6259497	3.5E-06	3.5E-06	3.2E-05	1.8E-06	3.5E-06	9.5E-05	4.2E-04	8.1E-05	7.0E-06	1.4E-08	3.2E-08	3.5E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.7E-11	7.4E-09	8.8E-08	5.2E-08	3.2E-07	6.0E-07	7.7E-07	5.7E-08	2.0E-08	2.1E-07
	R1884	299462	6259497	3.5E-06	3.5E-06	3.1E-05	1.7E-06	3.5E-06	9.4E-05	4.2E-04	8.0E-05	6.9E-06	1.4E-08	3.1E-08	3.5E-09	2.4E-11	1.2E-09	1.3E-07	1.2E-08	7.6E-11	7.4E-09	8.7E-08	5.1E-08	3.2E-07	6.0E-07	7.6E-07	5.7E-08	1.9E-08	2.1E-07
	R1885	299512	6259497	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.3E-05	4.1E-04	7.9E-05	6.9E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.6E-11	7.3E-09	8.6E-08	5.1E-08	3.2E-07	5.9E-07	7.6E-07	5.6E-08	1.9E-08	2.1E-07
	R1886	299562	6259497	3.4E-06	3.4E-06	3.0E-05	1.7E-06	3.4E-06	9.1E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.4E-09	2.4E-11	1.1E-09	1.2E-07	1.1E-08	7.4E-11	7.1E-09	8.4E-08	5.0E-08	3.1E-07	5.8E-07	7.4E-07	5.5E-08	1.9E-08	2.0E-07
	R1887	299612	6259497	3.3E-06	3.3E-06	3.0E-05	1.6E-06	3.3E-06	8.9E-05	4.0E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.2E-11	7.0E-09	8.2E-08	4.9E-08	3.0E-07	5.7E-07	7.2E-07	5.4E-08	1.8E-08	2.0E-07
	R1888	299662	6259497	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.7E-05	3.9E-04	7.4E-05	6.5E-06	1.3E-08	2.9E-08	3.2E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.8E-09	8.1E-08	4.8E-08	3.0E-07	5.5E-07	7.1E-07	5.3E-08	1.8E-08	1.9E-07
	R1889	299712	6259497	3.2E-06	3.2E-06	2.8E-05	1.6E-06	3.2E-06	8.5E-05	3.8E-04	7.3E-05	6.3E-06	1.3E-08	2.8E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	6.9E-11	6.7E-09	7.9E-08	4.7E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.8E-08	1.9E-07
	R1890	299762	6259497	3.1E-06	3.1E-06	2.8E-05	1.5E-06	3.1E-06	8.3E-05	3.7E-04	7.1E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.0E-09	1.1E-07	1.0E-08	6.8E-11	6.5E-09	7.7E-08	4.6E-08	2.8E-07	5.3E-07	6.8E-07	5.0E-08	1.7E-08	1.8E-07
	R1891	299812	6259497	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.1E-05	3.6E-04	6.9E-05	6.0E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.6E-11	6.4E-09	7.5E-08	4.5E-08	2.8E-07	5.2E-07	6.6E-07	4.9E-08	1.7E-08	1.8E-07

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																										
													Metal									Heavy Metal								
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R1892	299862	6259497	2.9E-06	2.9E-06	2.6E-05	1.5E-06	2.9E-06	7.9E-05	3.5E-04	6.8E-05	5.9E-06	1.2E-08	2.6E-08	2.9E-09	2.1E-11	1.0E-09	1.1E-07	9.8E-09	6.5E-11	6.2E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.6E-08	1.8E-07
	R1893	299912	6259497	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.7E-05	3.4E-04	6.6E-05	5.7E-06	1.1E-08	2.6E-08	2.9E-09	2.0E-11	9.7E-10	1.1E-07	9.5E-09	6.3E-11	6.0E-09	7.1E-08	4.2E-08	2.6E-07	4.9E-07	6.3E-07	4.6E-08	1.6E-08	1.7E-07
	R1894	299962	6259497	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.5E-05	3.3E-04	6.4E-05	5.5E-06	1.1E-08	2.5E-08	2.8E-09	1.9E-11	9.4E-10	1.0E-07	9.2E-09	6.1E-11	5.9E-09	6.9E-08	4.1E-08	2.5E-07	4.8E-07	6.1E-07	4.5E-08	1.6E-08	1.7E-07
	R1895	300012	6259497	2.7E-06	2.7E-06	2.4E-05	1.4E-06	2.7E-06	7.3E-05	3.2E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.2E-10	1.0E-07	9.0E-09	5.9E-11	5.7E-09	6.8E-08	4.0E-08	2.5E-07	4.6E-07	5.9E-07	4.4E-08	1.5E-08	1.6E-07
	R1896	300062	6259497	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.6E-09	1.8E-11	9.0E-10	9.8E-08	8.8E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.5E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R1897	300112	6259497	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	7.0E-05	3.1E-04	5.9E-05	5.2E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.8E-10	9.5E-08	8.6E-09	5.7E-11	5.5E-09	6.4E-08	3.8E-08	2.4E-07	4.4E-07	5.7E-07	4.2E-08	1.4E-08	1.5E-07
	R1898	300162	6259497	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.1E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.6E-10	9.4E-08	8.4E-09	5.6E-11	5.4E-09	6.3E-08	3.8E-08	2.3E-07	4.4E-07	5.6E-07	4.1E-08	1.4E-08	1.5E-07
	R1899	300212	6259497	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.7E-05	3.0E-04	5.7E-05	5.0E-06	9.9E-09	2.2E-08	2.5E-09	1.7E-11	8.4E-10	9.2E-08	8.3E-09	5.5E-11	5.3E-09	6.2E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.0E-08	1.4E-08	1.5E-07
	R1900	300262	6259497	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.7E-09	2.2E-08	2.4E-09	1.7E-11	8.3E-10	9.0E-08	8.1E-09	5.3E-11	5.1E-09	6.1E-08	3.6E-08	2.2E-07	4.2E-07	5.3E-07	4.0E-08	1.4E-08	1.5E-07
	R1901	300312	6259497	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.8E-04	5.5E-05	4.7E-06	9.5E-09	2.1E-08	2.4E-09	1.7E-11	8.1E-10	8.8E-08	7.9E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.9E-08	1.3E-08	1.4E-07
	R1902	300362	6259497	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.3E-05	4.6E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.7E-09	5.1E-11	4.9E-09	5.8E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R1903	300412	6259497	2.3E-06	2.3E-06	2.0E-05	1.1E-06	2.3E-06	6.1E-05	2.7E-04	5.2E-05	4.5E-06	9.1E-09	2.0E-08	2.3E-09	1.6E-11	7.7E-10	8.4E-08	7.5E-09	5.0E-11	4.8E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R1904	300462	6259497	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.4E-06	8.9E-09	2.0E-08	2.2E-09	1.6E-11	7.5E-10	8.2E-08	7.4E-09	4.9E-11	4.7E-09	5.5E-08	3.3E-08	2.0E-07	3.8E-07	4.9E-07	3.6E-08	1.2E-08	1.3E-07
	R1905	300512	6259497	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	5.9E-05	2.6E-04	5.0E-05	4.4E-06	8.7E-09	2.0E-08	2.2E-09	1.5E-11	7.4E-10	8.1E-08	7.3E-09	4.8E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.8E-07	3.6E-08	1.2E-08	1.3E-07
	R1906	300562	6259497	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.8E-05	2.6E-04	4.9E-05	4.3E-06	8.6E-09	1.9E-08	2.1E-09	1.5E-11	7.3E-10	7.9E-08	7.1E-09	4.7E-11	4.5E-09	5.3E-08	3.2E-08	2.0E-07	3.7E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
	R1907	300612	6259497	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.7E-05	2.5E-04	4.8E-05	4.2E-06	8.4E-09	1.9E-08	2.1E-09	1.5E-11	7.1E-10	7.8E-08	7.0E-09	4.6E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.3E-07
	R1908	300662	6259497	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.5E-05	2.5E-04	4.7E-05	4.1E-06	8.2E-09	1.8E-08	2.0E-09	1.4E-11	7.0E-10	7.6E-08	6.8E-09	4.5E-11	4.3E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.3E-08	1.1E-08	1.2E-07
	R1909	300712	6259497	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	8.0E-09	1.8E-08	2.0E-09	1.4E-11	6.8E-10	7.4E-08	6.7E-09	4.4E-11	4.3E-09	5.0E-08	3.0E-08	1.8E-07	3.5E-07	4.4E-07	3.3E-08	1.1E-08	1.2E-07
	R1910	300762	6259497	2.0E-06	2.0E-06	1.8E-05	9.8E-07	2.0E-06	5.3E-05	2.4E-04	4.5E-05	3.9E-06	7.8E-09	1.8E-08	2.0E-09	1.4E-11	6.7E-10	7.3E-08	6.5E-09	4.3E-11	4.2E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R1911	300812	6259497	1.9E-06	1.9E-06	1.7E-05	9.6E-07	1.9E-06	5.2E-05	2.3E-04	4.4E-05	3.8E-06	7.7E-09	1.7E-08	1.9E-09	1.3E-11	6.5E-10	7.1E-08	6.4E-09	4.2E-11	4.1E-09	4.8E-08	2.8E-08	1.8E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.2E-07
	R1912	300862	6259497	1.9E-06	1.9E-06	1.7E-05	9.4E-07	1.9E-06	5.1E-05	2.3E-04	4.3E-05	3.8E-06	7.5E-09	1.7E-08	1.9E-09	1.3E-11	6.4E-10	7.0E-08	6.3E-09	4.1E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.2E-07	4.1E-07	3.1E-08	1.1E-08	1.1E-07
	R1913	300912	6259497	1.8E-06	1.8E-06	1.7E-05	9.2E-07	1.8E-06	5.0E-05	2.2E-04	4.2E-05	3.7E-06	7.4E-09	1.7E-08	1.8E-09	1.3E-11	6.3E-10	6.8E-08	6.1E-09	4.1E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.2E-07	4.1E-07	3.0E-08	1.0E-08	1.1E-07
	R1914	300962	6259497	1.8E-06	1.8E-06	1.6E-05	9.0E-07	1.8E-06	4.9E-05	2.2E-04	4.2E-05	3.6E-06	7.2E-09	1.6E-08	1.8E-09	1.3E-11	6.1E-10	6.7E-08	6.0E-09	4.0E-11	3.8E-09	4.5E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	2.9E-08	1.0E-08	1.1E-07
	R1915	301012	6259497	1.8E-06	1.8E-06	1.6E-05	8.9E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.5E-06	7.1E-09	1.6E-08	1.8E-09	1.2E-11	6.0E-10	6.6E-08	5.9E-09	3.9E-11	3.8E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.9E-07	2.9E-08	9.9E-09	1.1E-07
	R1916	301062	6259497	1.7E-06	1.7E-06	1.6E-05	8.7E-07	1.7E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	6.9E-09	1.6E-08	1.7E-09	1.2E-11	5.9E-10	6.4E-08	5.8E-09	3.8E-11	3.7E-09	4.3E-08	2.6E-08	1.6E-07	3.0E-07	3.8E-07	2.8E-08	9.7E-09	1.0E-07
	R1917	301112	6259497	1.7E-06	1.7E-06	1.5E-05	8.5E-07	1.7E-06	4.6E-05	2.0E-04	3.9E-05	3.4E-06	6.8E-09	1.5E-08	1.7E-09	1.2E-11	5.8E-10	6.3E-08	5.7E-09	3.7E-11	3.6E-09	4.3E-08	2.5E-08	1.6E-07	2.9E-07	3.7E-07	2.8E-08	9.5E-09	1.0E-07
	R1918	301162	6259497	1.7E-06	1.7E-06	1.5E-05	8.4E-07	1.7E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.7E-09	1.5E-08	1.7E-09	1.2E-11	5.7E-10	6.2E-08	5.6E-09	3.7E-11	3.5E-09	4.2E-08	2.5E-08	1.5E-07	2.9E-07	3.7E-07	2.7E-08	9.4E-09	1.0E-07
	R1919	301212	6259497	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.4E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.6E-09	1.1E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.2E-09	9.8E-08
	R1920	301262	6259497	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.5E-10	5.9E-08	5.4E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.6E-08
	R1921	301312	6259497	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.6E-05	3.2E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.3E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.5E-08
	R1922	297912	6259547	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.4E-05	3.3E-04	6.3E-05	5.5E-06	1.1E-08	2.5E-08	2.8E-09	1.9E-11	9.4E-10	1.0E-07	9.2E-09	6.1E-11	5.8E-09	6.9E-08	4.1E-08	2.5E-07	4.7E-07	6.1E-07	4.5E-08	1.5E-08	1.7E-07
	R1923	297962	6259547	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.5E-05	3.4E-04	6.4E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.5E-10	1.0E-07	9.3E-09	6.1E-11	5.9E-09	7.0E-08	4.1E-08	2.6E-07	4.8E-07	6.1E-07	4.6E-08	1.6E-08	1.7E-07
	R1924	298012	6259547	2.8E-06	2.8E-06	2.6E-05	1.4E-06	2.8E-06	7.7E-05	3.4E-04	6.5E-05	5.7E-06	1.1E-08	2.6E-08	2.8E-09	2.0E-11	9.6E-10	1.0E-07	9.4E-09	6.2E-11	6.0E-09	7.1E-08	4.2E-08	2.6E-07	4.9E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R1925	298062	6259547	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.8E-05	3.5E-04	6.6E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.8E-10	1.1E-07	9.6E-09	6.4E-11	6.1E-09	7.2E-08	4.3E-08	2.7E-07	5.0E-07	6.4E-07	4.7E-08	1.6E-08	1.7E-07
	R1926	298112	6259547	2.9E-06	2.9E-06	2.6E-05	1.5E-06	2.9E-06	7.9E-05	3.5E-04	6.8E-05	5.9E-06	1.2E-08	2.6E-08	2.9E-09	2.1E-11	1.0E-09	1.1E-07	9.8E-09	6.5E-11	6.2E-09	7.3E-08	4.3E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.6E-08	1.8E-07
	R1927	298162	6259547	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.1E-05	3.6E-04	6.9E-05	6.0E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.6E-11	6.3E-09	7.5E-08	4.4E-08	2.8E-07	5.1E-07	6.6E-07	4.9E-08	1.7E-08	1.8E-07
	R1928	298212	6259547	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.2E-05	3.7E-04	7.0E-05	6.1E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.5E-09	7.6E-08	4.5E-08	2.8E-07	5.2E-07	6.7E-07	5.0E-08	1.7E-08	1.8E-07
	R1929	298262	6259547	3.1E-06	3.1E-06	2.8E-05	1.5E-06	3.1E-06	8.4E-05	3.7E-04	7.1E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.1E-07	1.0E-08	6.8E-11	6.6E-09	7.7E-08	4.6E-08	2.9E-07	5.3E-07	6.8E-07	5.1E-08	1.7E-08	1.9E-07
	R1930	298312	6259547	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.5E-05	3.8E-04	7.2E-05	6.3E-06	1.3E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.2E-07	1.0E-08	6.9E-11	6.7E-09	7.9E-08	4.7E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.8E-08	1.9E-07
	R1931	298362	6259547	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.6E-05	3.8E-04	7.3E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.8E-09	8.0E-08	4.7E-08	2.9E-07	5.5E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R1932	298412	6259547	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.8E-05	3.9E-04	7.5E-05	6.5E-06	1.3E-08	2.9E-08	3.2E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.9E-09	8.1E-08	4.8E-08	3.0E-07	5.6E-07	7.1E-07	5.3E-08	1.8E-08	1.9E-07
	R1933	298462	6259547	3.3E-06	3.3E-06	3.0E-05	1.6E-06	3.3E-06	8.9E-05	3.9E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.2E-11	7.0E-09	8.2E-08	4.9E-08	3.0E-07	5.7E-07	7.2E-07	5.4E-08	1.8E-08	2.0E-07
	R1934	298512	6259547	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	9.0E-05	4.0E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.0E-09	8.3E-08	4.9E-08	3.1E-07	5.7E-07	7.3E-07	5.4E-08	1.9E-08	2.0E-07
	R1935	298562	6259547	3.4E-06	3.4E-06	3.0E-05	1.7E-06	3.4E-06	9.1E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.4E-09	2.4E-11	1.1E-09	1.2E-07	1.1E-08	7.4E-11	7.1E-09	8.4E-08	5.0E-08	3.1E-07	5.8E-07	7.4E-07	5.5E-08	1.9E-08	2.0E-07
	R1936	298612	6259547	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.2E-05	4.1E-04	7.8E-05	6.8E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.5E-11	7.2E-09	8.5E-08	5.0E-08	3.1E-07	5.9E-07	7.5E-07	5.6E-08	1.9E-08	2.0E-07
	R1937	298662	6259547	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.3E-05	4.1E-04	7.9E-05	6.9E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.6E-11	7.3E-09	8.6E-08	5.1E-08	3.2E-07	5.9E-07	7.6E-07	5.6E-08	1.9E-08	2.1E-07
	R1938	298712	6259547	3.5E-06	3.5E-06	3.1E-05	1.7E-06	3.5E-06	9.4E-05	4.2E-04	8.0E-05	7.0E-06	1.4E-08	3.1E-08	3.5E-09	2.4E-11	1.2E-09	1.3E-07	1.2E-08	7.7E-11	7.4E-09	8.7E-08	5.2E-08	3.2E-07	6.0E-07	7.7E-07	5.7E-08	2.0E-08	2.1E-07
	R1939	298762	6259547	3.5E-06	3.5E-06	3.2E-05	1.8E-06	3.5E-06	9.5E-05	4.2E-04	8.1E-05	7.1E-06	1.4E-08	3.2E-08	3.5E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.8E-11	7.5E-09	8.8E-08	5.2E-08	3.2E-07	6.1E-07	7.8E-07	5.8E-08	2.0E-08	2.1E-07
	R1940	298812	6259547	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.6E-05	4.3E-04	8.2E-05	7.1E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.8E-11	7.6E-09	8.9E-08	5.3E-08	3.3E-07	6.1E-07	7.8E-07	5.8E-08	2.0E-08	2.1E-07
	R1941	298862	6259547	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.7E-05	4.3E-04	8.3E-05	7.2E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.9E-11	7.6E-09	9.0E-08	5.3E-08	3.3E-07	6.2E-07	7.9E-07	5.9E-08	2.0E-08	2.2E-07
	R1942	298912	6259547	3.6E-06	3.6E-06	3.3E-05	1.8E-06	3.6E-06	9.8E-05	4.3E-04	8.3E-05	7.2E-06	1.4E-08	3.3E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	8.0E-11	7.7E-09	9.0E-08	5.3E-08	3.3E-07	6.2E-07	8.0E-07	5.9E-08	2.0E-08	2.2E-07
	R1943	298962	6259547	3.6E-06	3.6E-06	3.3E-05	1.8E-06	3.6E-06	9.8E-05	4.3E-04	8.3E-05	7.2E-06	1.4E-08	3.3E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	8.0E-11	7.7E-09	9.1E-08	5.4E-08	3.3E-07	6.2E-07	8.0E-07	5.9E-08	2.0E-08	2.2E-07
	R1944	299012	6259547	3.6E-06	3.6E-06	3.3E-05	1.8E-06	3.6E-06	9.8E-05	4.4E-04	8.4E-05	7.3E-06	1.5E-08	3.3E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	8.0E-11	7.7E-09	9.1E-08	5.4E-08	3.3E-07	6.2E-07	8.0E-07	5.9E-08	2.0E-08	2.2E-07
	R1945	299062	6259547	3.6E-06	3.6E-06	3.3E-05	1.8E-06	3.6E-06	9.8E-05	4.4E-04	8.4E-05	7.3E-06	1.5E-08	3.3E-08	3.6E-09	2.6E-11	1.2E-09	1.3E-07	1.2E-08	8.0E-11	7.7E-09	9.1E-08	5.4E-08	3.4E-07	6.3E-07	8.0E-07	5.9E-08	2.0E-08	2.2E-07
	R1946	299112	6259547	3.6E-06	3.6E-06	3.3E-05	1.8E-06	3.6E-06	9.8E-05	4.4E-04	8.3E-05	7.3E-06	1.5E-08	3.3E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	8.0E-11	7.7E-09	9.1E-08	5.4E-08	3.3E-07	6.2E-07	8.0E-07	5.9E-08	2.0E-08	2.2E-07
	R1947	299162	6259547	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.7E-05	4.3E-04	8.3E-05	7.2E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.9E-11	7.6E-09	9.0E-08	5.3E-08	3.3E-07	6.2E-07	7.9E-07	5.9E-08	2.0E-08	2.2E-07
	R1948	299212	6259547	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.7E-05	4.3E-04	8.3E-05	7.2E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.9E-11	7.6E-09	9.0E-08	5.3E-08	3.3E-07	6.2E-07	7.9E-07	5.9E-08	2.0E-08	2.2E-07
	R1949	299262	6259547	3.5E-06	3.5E-06	3.2E-05	1.8E-06	3.5E-06	9.6E-05	4.3E-04	8.2E-05	7.1E-06	1.4E-08	3.2E-08	3.5E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.8E-11	7.5E-09	8.9E-08	5.3E-08	3.3E-07	6.1E-07	7.8E-07	5.8E-08	2.0E-08	2.1E-07
	R1950	299312	6259547	3.5E-06	3.5E-06	3.2E-05	1.8E-06	3.5E-06	9.5E-05	4.2E-04	8.1E-05	7.0E-06	1.4E-08	3.2E-08	3.5E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.7E-11	7.4E-09	8.8E-08	5.2E-08	3.2E-07	6.0E-07	7.7E-07	5.7E-08	2.0E-08	2.1E-07
	R1951	299362	6259547	3.5E-06	3.5E-06	3.1E-05	1.7E-06	3.5E-06	9.4E-05	4.2E-04	8.0E-05	7.0E-06	1.4E-08	3.1E-08	3.5E-09	2.4E-11	1.2E-09	1.3E-07	1.2E-08	7.7E-11	7.4E-09	8.7E-08	5.1E-08	3.2E-07	6.0E-07	7.7E-07	5.7E-08	1.9E-08	2.1E-07
	R1952	299412	6259547	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.3E-05	4.1E-04	7.9E-05	6.9E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.6E-11	7.3E-09	8.6E-08	5.1E-08	3.2E-07	5.9E-07	7.6E-07	5.6E-08	1.9E-08	2.1E-07

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																										
													Metal										Heavy Metal							
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R1953	299462	6259547	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.2E-05	4.1E-04	7.8E-05	6.8E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.5E-11	7.2E-09	8.5E-08	5.0E-08	3.1E-07	5.9E-07	7.5E-07	5.6E-08	1.9E-08	2.0E-07
	R1954	299512	6259547	3.4E-06	3.4E-06	3.0E-05	1.7E-06	3.4E-06	9.1E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.4E-09	2.4E-11	1.1E-09	1.2E-07	1.1E-08	7.4E-11	7.1E-09	8.4E-08	5.0E-08	3.1E-07	5.8E-07	7.4E-07	5.5E-08	1.9E-08	2.0E-07
	R1955	299562	6259547	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	9.0E-05	4.0E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.0E-09	8.3E-08	4.9E-08	3.1E-07	5.7E-07	7.3E-07	5.4E-08	1.9E-08	2.0E-07
	R1956	299612	6259547	3.3E-06	3.3E-06	2.9E-05	1.6E-06	3.3E-06	8.8E-05	3.9E-04	7.5E-05	6.5E-06	1.3E-08	2.9E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.2E-11	6.9E-09	8.1E-08	4.8E-08	3.0E-07	5.6E-07	7.2E-07	5.3E-08	1.8E-08	2.0E-07
	R1957	299662	6259547	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.6E-05	3.8E-04	7.3E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.8E-09	8.0E-08	4.7E-08	2.9E-07	5.5E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R1958	299712	6259547	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.4E-05	3.7E-04	7.2E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.2E-07	1.0E-08	6.9E-11	6.6E-09	7.8E-08	4.6E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.7E-08	1.9E-07
	R1959	299762	6259547	3.1E-06	3.1E-06	2.7E-05	1.5E-06	3.1E-06	8.2E-05	3.7E-04	7.0E-05	6.1E-06	1.2E-08	2.7E-08	3.1E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.5E-09	7.6E-08	4.5E-08	2.8E-07	5.3E-07	6.7E-07	5.0E-08	1.7E-08	1.8E-07
	R1960	299812	6259547	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.1E-05	3.6E-04	6.9E-05	6.0E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.6E-11	6.3E-09	7.5E-08	4.4E-08	2.8E-07	5.1E-07	6.6E-07	4.9E-08	1.7E-08	1.8E-07
	R1961	299862	6259547	2.9E-06	2.9E-06	2.6E-05	1.5E-06	2.9E-06	7.9E-05	3.5E-04	6.7E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.9E-10	1.1E-07	9.7E-09	6.4E-11	6.2E-09	7.3E-08	4.3E-08	2.7E-07	5.0E-07	6.4E-07	4.8E-08	1.6E-08	1.8E-07
	R1962	299912	6259547	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.6E-05	3.4E-04	6.5E-05	5.7E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.6E-10	1.0E-07	9.4E-09	6.2E-11	6.0E-09	7.1E-08	4.2E-08	2.6E-07	4.9E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R1963	299962	6259547	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.4E-05	3.3E-04	6.3E-05	5.5E-06	1.1E-08	2.5E-08	2.8E-09	1.9E-11	9.4E-10	1.0E-07	9.2E-09	6.1E-11	5.8E-09	6.9E-08	4.1E-08	2.5E-07	4.7E-07	6.1E-07	4.5E-08	1.5E-08	1.7E-07
	R1964	300012	6259547	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.2E-05	3.2E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.1E-10	9.9E-08	8.9E-09	5.9E-11	5.7E-09	6.7E-08	4.0E-08	2.5E-07	4.6E-07	5.9E-07	4.4E-08	1.5E-08	1.6E-07
	R1965	300062	6259547	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.4E-08	2.6E-09	1.8E-11	8.9E-10	9.7E-08	8.7E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.5E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R1966	300112	6259547	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.7E-10	9.5E-08	8.5E-09	5.6E-11	5.4E-09	6.4E-08	3.8E-08	2.4E-07	4.4E-07	5.6E-07	4.2E-08	1.4E-08	1.5E-07
	R1967	300162	6259547	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.0E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.5E-10	9.3E-08	8.4E-09	5.5E-11	5.3E-09	6.3E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R1968	300212	6259547	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.6E-05	3.0E-04	5.7E-05	4.9E-06	9.8E-09	2.2E-08	2.5E-09	1.7E-11	8.4E-10	9.1E-08	8.2E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.3E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R1969	300262	6259547	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.6E-05	4.8E-06	9.7E-09	2.2E-08	2.4E-09	1.7E-11	8.2E-10	8.9E-08	8.0E-09	5.3E-11	5.1E-09	6.0E-08	3.6E-08	2.2E-07	4.2E-07	5.3E-07	3.9E-08	1.4E-08	1.4E-07
	R1970	300312	6259547	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.8E-04	5.4E-05	4.7E-06	9.5E-09	2.1E-08	2.4E-09	1.7E-11	8.0E-10	8.7E-08	7.9E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.9E-08	1.3E-08	1.4E-07
	R1971	300362	6259547	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.2E-05	2.8E-04	5.3E-05	4.6E-06	9.2E-09	2.1E-08	2.3E-09	1.6E-11	7.8E-10	8.5E-08	7.7E-09	5.1E-11	4.9E-09	5.8E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R1972	300412	6259547	2.3E-06	2.3E-06	2.0E-05	1.1E-06	2.3E-06	6.1E-05	2.7E-04	5.2E-05	4.5E-06	9.0E-09	2.0E-08	2.3E-09	1.6E-11	7.7E-10	8.3E-08	7.5E-09	5.0E-11	4.8E-09	5.6E-08	3.3E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R1973	300462	6259547	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.4E-06	8.8E-09	2.0E-08	2.2E-09	1.5E-11	7.5E-10	8.2E-08	7.4E-09	4.9E-11	4.7E-09	5.5E-08	3.3E-08	2.0E-07	3.8E-07	4.9E-07	3.6E-08	1.2E-08	1.3E-07
	R1974	300512	6259547	2.2E-06	2.2E-06	1.9E-05	1.1E-06	2.2E-06	5.8E-05	2.6E-04	5.0E-05	4.3E-06	8.7E-09	1.9E-08	2.2E-09	1.5E-11	7.4E-10	8.0E-08	7.2E-09	4.8E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.8E-07	3.5E-08	1.2E-08	1.3E-07
	R1975	300562	6259547	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.5E-04	4.9E-05	4.2E-06	8.5E-09	1.9E-08	2.1E-09	1.5E-11	7.2E-10	7.9E-08	7.1E-09	4.7E-11	4.5E-09	5.3E-08	3.1E-08	2.0E-07	3.7E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
	R1976	300612	6259547	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.8E-05	4.2E-06	8.3E-09	1.9E-08	2.1E-09	1.5E-11	7.1E-10	7.7E-08	6.9E-09	4.6E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.3E-07
	R1977	300662	6259547	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.5E-05	2.5E-04	4.7E-05	4.1E-06	8.2E-09	1.8E-08	2.0E-09	1.4E-11	7.0E-10	7.6E-08	6.8E-09	4.5E-11	4.3E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.3E-08	1.1E-08	1.2E-07
	R1978	300712	6259547	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	8.0E-09	1.8E-08	2.0E-09	1.4E-11	6.8E-10	7.4E-08	6.7E-09	4.4E-11	4.2E-09	5.0E-08	3.0E-08	1.8E-07	3.4E-07	4.4E-07	3.3E-08	1.1E-08	1.2E-07
	R1979	300762	6259547	2.0E-06	2.0E-06	1.8E-05	9.8E-07	2.0E-06	5.3E-05	2.3E-04	4.5E-05	3.9E-06	7.8E-09	1.8E-08	2.0E-09	1.4E-11	6.6E-10	7.2E-08	6.5E-09	4.3E-11	4.1E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R1980	300812	6259547	1.9E-06	1.9E-06	1.7E-05	9.6E-07	1.9E-06	5.2E-05	2.3E-04	4.4E-05	3.8E-06	7.7E-09	1.7E-08	1.9E-09	1.3E-11	6.5E-10	7.1E-08	6.4E-09	4.2E-11	4.1E-09	4.8E-08	2.8E-08	1.8E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.1E-07
	R1981	300862	6259547	1.9E-06	1.9E-06	1.7E-05	9.4E-07	1.9E-06	5.1E-05	2.3E-04	4.3E-05	3.8E-06	7.5E-09	1.7E-08	1.9E-09	1.3E-11	6.4E-10	6.9E-08	6.2E-09	4.1E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.2E-07	4.1E-07	3.1E-08	1.1E-08	1.1E-07
	R1982	300912	6259547	1.8E-06	1.8E-06	1.7E-05	9.2E-07	1.8E-06	5.0E-05	2.2E-04	4.2E-05	3.7E-06	7.3E-09	1.7E-08	1.8E-09	1.3E-11	6.2E-10	6.8E-08	6.1E-09	4.0E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.2E-07	4.0E-07	3.0E-08	1.0E-08	1.1E-07
	R1983	300962	6259547	1.8E-06	1.8E-06	1.6E-05	9.0E-07	1.8E-06	4.9E-05	2.2E-04	4.1E-05	3.6E-06	7.2E-09	1.6E-08	1.8E-09	1.3E-11	6.1E-10	6.7E-08	6.0E-09	4.0E-11	3.8E-09	4.5E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	2.9E-08	1.0E-08	1.1E-07
	R1984	301012	6259547	1.8E-06	1.8E-06	1.6E-05	8.8E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.5E-06	7.1E-09	1.6E-08	1.8E-09	1.2E-11	6.0E-10	6.5E-08	5.9E-09	3.9E-11	3.7E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.9E-07	2.9E-08	9.9E-09	1.1E-07
	R1985	301062	6259547	1.7E-06	1.7E-06	1.6E-05	8.7E-07	1.7E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	6.9E-09	1.6E-08	1.7E-09	1.2E-11	5.9E-10	6.4E-08	5.8E-09	3.8E-11	3.7E-09	4.3E-08	2.6E-08	1.6E-07	3.0E-07	3.8E-07	2.8E-08	9.7E-09	1.0E-07
	R1986	301112	6259547	1.7E-06	1.7E-06	1.5E-05	8.5E-07	1.7E-06	4.6E-05	2.0E-04	3.9E-05	3.4E-06	6.8E-09	1.5E-08	1.7E-09	1.2E-11	5.8E-10	6.3E-08	5.7E-09	3.7E-11	3.6E-09	4.3E-08	2.5E-08	1.6E-07	2.9E-07	3.7E-07	2.8E-08	9.5E-09	1.0E-07
	R1987	301162	6259547	1.7E-06	1.7E-06	1.5E-05	8.4E-07	1.7E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.7E-09	1.5E-08	1.7E-09	1.2E-11	5.7E-10	6.2E-08	5.6E-09	3.7E-11	3.5E-09	4.2E-08	2.5E-08	1.5E-07	2.9E-07	3.7E-07	2.7E-08	9.4E-09	1.0E-07
	R1988	301212	6259547	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.4E-05	2.0E-04	3.8E-05	3.3E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.6E-10	6.0E-08	5.4E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.2E-09	9.8E-08
	R1989	301262	6259547	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.5E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.6E-08
	R1990	301312	6259547	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.6E-05	3.2E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.8E-08	5.3E-09	3.5E-11	3.3E-09	3.9E-08	2.3E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.8E-09	9.5E-08
	R1991	297912	6259597	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.3E-05	3.2E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.2E-10	1.0E-07	9.0E-09	5.9E-11	5.7E-09	6.7E-08	4.0E-08	2.5E-07	4.6E-07	5.9E-07	4.4E-08	1.5E-08	1.6E-07
	R1992	297962	6259597	2.7E-06	2.7E-06	2.5E-05	1.4E-06	2.7E-06	7.4E-05	3.3E-04	6.3E-05	5.5E-06	1.1E-08	2.5E-08	2.7E-09	1.9E-11	9.3E-10	1.0E-07	9.1E-09	6.0E-11	5.8E-09	6.8E-08	4.1E-08	2.5E-07	4.7E-07	6.0E-07	4.5E-08	1.5E-08	1.6E-07
	R1993	298012	6259597	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.5E-05	3.3E-04	6.4E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	1.9E-11	9.5E-10	1.0E-07	9.3E-09	6.1E-11	5.9E-09	7.0E-08	4.1E-08	2.6E-07	4.8E-07	6.1E-07	4.5E-08	1.6E-08	1.7E-07
	R1994	298062	6259597	2.8E-06	2.8E-06	2.6E-05	1.4E-06	2.8E-06	7.7E-05	3.4E-04	6.5E-05	5.7E-06	1.1E-08	2.6E-08	2.8E-09	2.0E-11	9.6E-10	1.0E-07	9.4E-09	6.2E-11	6.0E-09	7.1E-08	4.2E-08	2.6E-07	4.9E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R1995	298112	6259597	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.8E-05	3.5E-04	6.6E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.8E-10	1.1E-07	9.6E-09	6.3E-11	6.1E-09	7.2E-08	4.3E-08	2.7E-07	5.0E-07	6.3E-07	4.7E-08	1.6E-08	1.7E-07
	R1996	298162	6259597	2.9E-06	2.9E-06	2.6E-05	1.5E-06	2.9E-06	7.9E-05	3.5E-04	6.7E-05	5.9E-06	1.2E-08	2.6E-08	2.9E-09	2.1E-11	1.0E-09	1.1E-07	9.8E-09	6.5E-11	6.2E-09	7.3E-08	4.3E-08	2.7E-07	5.0E-07	6.5E-07	4.8E-08	1.6E-08	1.8E-07
	R1997	298212	6259597	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.0E-05	3.6E-04	6.9E-05	6.0E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	9.9E-09	6.6E-11	6.3E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.6E-07	4.9E-08	1.7E-08	1.8E-07
	R1998	298262	6259597	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.2E-05	3.6E-04	7.0E-05	6.1E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.4E-09	7.6E-08	4.5E-08	2.8E-07	5.2E-07	6.7E-07	4.9E-08	1.7E-08	1.8E-07
	R1999	298312	6259597	3.1E-06	3.1E-06	2.8E-05	1.5E-06	3.1E-06	8.3E-05	3.7E-04	7.1E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.0E-09	1.1E-07	1.0E-08	6.8E-11	6.5E-09	7.7E-08	4.6E-08	2.8E-07	5.3E-07	6.8E-07	5.0E-08	1.7E-08	1.8E-07
	R2000	298362	6259597	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.4E-05	3.8E-04	7.2E-05	6.3E-06	1.3E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.2E-07	1.0E-08	6.9E-11	6.6E-09	7.8E-08	4.6E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.8E-08	1.9E-07
	R2001	298412	6259597	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.6E-05	3.8E-04	7.3E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.7E-09	7.9E-08	4.7E-08	2.9E-07	5.5E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R2002	298462	6259597	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.7E-05	3.9E-04	7.4E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.8E-09	8.0E-08	4.8E-08	3.0E-07	5.5E-07	7.1E-07	5.2E-08	1.8E-08	1.9E-07
	R2003	298512	6259597	3.3E-06	3.3E-06	2.9E-05	1.6E-06	3.3E-06	8.8E-05	3.9E-04	7.5E-05	6.5E-06	1.3E-08	2.9E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.2E-11	6.9E-09	8.1E-08	4.8E-08	3.0E-07	5.6E-07	7.2E-07	5.3E-08	1.8E-08	2.0E-07
	R2004	298562	6259597	3.3E-06	3.3E-06	3.0E-05	1.6E-06	3.3E-06	8.9E-05	4.0E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.0E-09	8.2E-08	4.9E-08	3.0E-07	5.7E-07	7.3E-07	5.4E-08	1.8E-08	2.0E-07
	R2005	298612	6259597	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	9.0E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.1E-09	8.3E-08	4.9E-08	3.1E-07	5.7E-07	7.3E-07	5.4E-08	1.9E-08	2.0E-07
	R2006	298662	6259597	3.4E-06	3.4E-06	3.0E-05	1.7E-06	3.4E-06	9.1E-05	4.0E-04	7.8E-05	6.7E-06	1.3E-08	3.0E-08	3.4E-09	2.4E-11	1.1E-09	1.2E-07	1.1E-08	7.4E-11	7.2E-09	8.4E-08	5.0E-08	3.1E-07	5.8E-07	7.4E-07	5.5E-08	1.9E-08	2.0E-07
	R2007	298712	6259597	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.2E-05	4.1E-04	7.8E-05	6.8E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.5E-11	7.2E-09	8.5E-08	5.0E-08	3.1E-07	5.9E-07	7.5E-07	5.6E-08	1.9E-08	2.0E-07
	R2008	298762	6259597	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.3E-05	4.1E-04	7.9E-05	6.9E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.6E-11	7.3E-09	8.6E-08	5.1E-08	3.2E-07	5.9E-07	7.6E-07	5.6E-08	1.9E-08	2.1E-07
	R2009	298812	6259597	3.5E-06	3.5E-06	3.1E-05	1.7E-06	3.5E-06	9.4E-05	4.2E-04	8.0E-05	7.0E-06	1.4E-08	3.1E-08	3.5E-09	2.4E-11	1.2E-09	1.3E-07	1.2E-08	7.7E-11	7.4E-09	8.7E-08	5.2E-08	3.2E-07	6.0E-07	7.7E-07	5.7E-08	2.0E-08	2.1E-07
	R2010	298862	6259597	3.5E-06	3.5E-06	3.2E-05	1.8E-06	3.5E-06	9.5E-05	4.2E-04	8.1E-05	7.0E-06	1.4E-08	3.2E-08	3.5E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.7E-11	7.5E-09	8.8E-08	5.2E-08	3.2E-07	6.0E-07	7.7E-07	5.7E-08	2.0E-08	2.1E-07
	R2011	298912	6259597	3.5E-06	3.5E-06	3.2E-05	1.8E-06	3.5E-06	9.6E-05	4.2E-04	8.1E-05	7.1E-06	1.4E-08	3.2E-08	3.5E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.8E-11	7.5E-09	8.8E-08	5.2E-08	3.3E-07	6.1E-07	7.8E-07	5.8E-08	2.0E-08	2.1E-07
	R2012	298962	6259597	3.5E-06	3.5E-06	3.2E-05	1.8E-06	3.5E-06	9.6E-05	4.3E-04	8.2E-05	7.1E-06	1.4E-08	3.2E-08	3.5E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.8E-11	7.5E-09	8.9E-08	5.2E-08	3.3E-07	6.1E-07	7.8E-07	5.8E-08	2.0E-08	2.1E-07
	R2013	299012	6259597	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.6E-05	4.3E-04	8.2E-05	7.1E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.8E-11	7.5E-09	8.9E-08	5.3E-08	3.3E-07	6.1E-07	7.8E-07	5.8E-08	2.0E-08	2.1E-07

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																									
													Metal										Heavy Metal							
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3
In-stack Concentration (mg/Nm ^{3})				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R2014	299062	6259597	3.6E-06	3.6E-06	3.2E-05	1.8E-06	3.6E-06	9.6E-05	4.3E-04	8.2E-05	7.1E-06	1.4E-08	3.2E-08	3.6E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.9E-11	7.6E-09	8.9E-08	5.3E-08	3.3E-07	6.1E-07	7.9E-07	5.8E-08	2.0E-08	2.1E-07
	R2015	299112	6259597	3.5E-06	3.5E-06	3.2E-05	1.8E-06	3.5E-06	9.6E-05	4.3E-04	8.2E-05	7.1E-06	1.4E-08	3.2E-08	3.5E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.8E-11	7.5E-09	8.9E-08	5.2E-08	3.3E-07	6.1E-07	7.8E-07	5.8E-08	2.0E-08	2.1E-07
	R2016	299162	6259597	3.5E-06	3.5E-06	3.2E-05	1.8E-06	3.5E-06	9.5E-05	4.2E-04	8.1E-05	7.1E-06	1.4E-08	3.2E-08	3.5E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.8E-11	7.5E-09	8.8E-08	5.2E-08	3.2E-07	6.1E-07	7.8E-07	5.8E-08	2.0E-08	2.1E-07
	R2017	299212	6259597	3.5E-06	3.5E-06	3.2E-05	1.8E-06	3.5E-06	9.5E-05	4.2E-04	8.1E-05	7.0E-06	1.4E-08	3.2E-08	3.5E-09	2.5E-11	1.2E-09	1.3E-07	1.2E-08	7.8E-11	7.5E-09	8.8E-08	5.2E-08	3.2E-07	6.1E-07	7.8E-07	5.7E-08	2.0E-08	2.1E-07
	R2018	299262	6259597	3.5E-06	3.5E-06	3.1E-05	1.7E-06	3.5E-06	9.4E-05	4.2E-04	8.0E-05	7.0E-06	1.4E-08	3.1E-08	3.5E-09	2.4E-11	1.2E-09	1.3E-07	1.2E-08	7.7E-11	7.4E-09	8.7E-08	5.2E-08	3.2E-07	6.0E-07	7.7E-07	5.7E-08	2.0E-08	2.1E-07
	R2019	299312	6259597	3.5E-06	3.5E-06	3.1E-05	1.7E-06	3.5E-06	9.3E-05	4.1E-04	8.0E-05	6.9E-06	1.4E-08	3.1E-08	3.5E-09	2.4E-11	1.2E-09	1.3E-07	1.2E-08	7.6E-11	7.3E-09	8.6E-08	5.1E-08	3.2E-07	5.9E-07	7.6E-07	5.6E-08	1.9E-08	2.1E-07
	R2020	299362	6259597	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.2E-05	4.1E-04	7.9E-05	6.9E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.5E-11	7.3E-09	8.6E-08	5.1E-08	3.2E-07	5.9E-07	7.5E-07	5.6E-08	1.9E-08	2.1E-07
	R2021	299412	6259597	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.2E-05	4.1E-04	7.8E-05	6.8E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.5E-11	7.2E-09	8.5E-08	5.0E-08	3.1E-07	5.8E-07	7.5E-07	5.5E-08	1.9E-08	2.0E-07
	R2022	299462	6259597	3.4E-06	3.4E-06	3.0E-05	1.7E-06	3.4E-06	9.1E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.4E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.4E-11	7.1E-09	8.4E-08	5.0E-08	3.1E-07	5.8E-07	7.4E-07	5.5E-08	1.9E-08	2.0E-07
	R2023	299512	6259597	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	9.0E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.1E-09	8.3E-08	4.9E-08	3.1E-07	5.7E-07	7.3E-07	5.4E-08	1.9E-08	2.0E-07
	R2024	299562	6259597	3.3E-06	3.3E-06	3.0E-05	1.6E-06	3.3E-06	8.9E-05	3.9E-04	7.5E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.2E-11	7.0E-09	8.2E-08	4.9E-08	3.0E-07	5.6E-07	7.2E-07	5.3E-08	1.8E-08	2.0E-07
	R2025	299612	6259597	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.7E-05	3.9E-04	7.4E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.8E-09	8.0E-08	4.8E-08	3.0E-07	5.5E-07	7.1E-07	5.2E-08	1.8E-08	1.9E-07
	R2026	299662	6259597	3.2E-06	3.2E-06	2.8E-05	1.6E-06	3.2E-06	8.5E-05	3.8E-04	7.3E-05	6.3E-06	1.3E-08	2.8E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	6.9E-11	6.7E-09	7.9E-08	4.7E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.8E-08	1.9E-07
	R2027	299712	6259597	3.1E-06	3.1E-06	2.8E-05	1.5E-06	3.1E-06	8.3E-05	3.7E-04	7.1E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.1E-07	1.0E-08	6.8E-11	6.6E-09	7.7E-08	4.6E-08	2.8E-07	5.3E-07	6.8E-07	5.0E-08	1.7E-08	1.9E-07
	R2028	299762	6259597	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.2E-05	3.6E-04	7.0E-05	6.1E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.4E-09	7.6E-08	4.5E-08	2.8E-07	5.2E-07	6.7E-07	4.9E-08	1.7E-08	1.8E-07
	R2029	299812	6259597	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.0E-05	3.6E-04	6.8E-05	5.9E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	9.9E-09	6.5E-11	6.3E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.7E-08	1.8E-07
	R2030	299862	6259597	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.8E-05	3.5E-04	6.7E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.8E-10	1.1E-07	9.6E-09	6.4E-11	6.1E-09	7.2E-08	4.3E-08	2.7E-07	5.0E-07	6.4E-07	4.7E-08	1.6E-08	1.7E-07
	R2031	299912	6259597	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.6E-05	3.4E-04	6.5E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.6E-10	1.0E-07	9.4E-09	6.2E-11	6.0E-09	7.0E-08	4.2E-08	2.6E-07	4.8E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R2032	299962	6259597	2.7E-06	2.7E-06	2.5E-05	1.4E-06	2.7E-06	7.4E-05	3.3E-04	6.3E-05	5.5E-06	1.1E-08	2.5E-08	2.7E-09	1.9E-11	9.3E-10	1.0E-07	9.1E-09	6.0E-11	5.8E-09	6.8E-08	4.1E-08	2.5E-07	4.7E-07	6.0E-07	4.5E-08	1.5E-08	1.6E-07
	R2033	300012	6259597	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.2E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.1E-10	9.9E-08	8.9E-09	5.9E-11	5.7E-09	6.7E-08	3.9E-08	2.5E-07	4.6E-07	5.9E-07	4.3E-08	1.5E-08	1.6E-07
	R2034	300062	6259597	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	7.0E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.8E-10	9.6E-08	8.7E-09	5.7E-11	5.5E-09	6.5E-08	3.9E-08	2.4E-07	4.5E-07	5.7E-07	4.2E-08	1.5E-08	1.6E-07
	R2035	300112	6259597	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.9E-05	3.1E-04	5.8E-05	5.1E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.6E-10	9.4E-08	8.5E-09	5.6E-11	5.4E-09	6.4E-08	3.8E-08	2.3E-07	4.4E-07	5.6E-07	4.1E-08	1.4E-08	1.5E-07
	R2036	300162	6259597	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.7E-05	3.0E-04	5.7E-05	5.0E-06	1.0E-08	2.2E-08	2.5E-09	1.7E-11	8.5E-10	9.2E-08	8.3E-09	5.5E-11	5.3E-09	6.2E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R2037	300212	6259597	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.8E-09	2.2E-08	2.4E-09	1.7E-11	8.3E-10	9.0E-08	8.1E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.2E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R2038	300262	6259597	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.5E-05	4.8E-06	9.6E-09	2.2E-08	2.4E-09	1.7E-11	8.2E-10	8.9E-08	8.0E-09	5.3E-11	5.1E-09	6.0E-08	3.6E-08	2.2E-07	4.1E-07	5.3E-07	3.9E-08	1.3E-08	1.4E-07
	R2039	300312	6259597	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.4E-09	2.1E-08	2.4E-09	1.6E-11	8.0E-10	8.7E-08	7.8E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.0E-07	5.2E-07	3.8E-08	1.3E-08	1.4E-07
	R2040	300362	6259597	2.3E-06	2.3E-06	2.1E-05	1.1E-06	2.3E-06	6.2E-05	2.8E-04	5.3E-05	4.6E-06	9.2E-09	2.1E-08	2.3E-09	1.6E-11	7.8E-10	8.5E-08	7.6E-09	5.0E-11	4.9E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R2041	300412	6259597	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.1E-05	2.7E-04	5.2E-05	4.5E-06	9.0E-09	2.0E-08	2.2E-09	1.6E-11	7.6E-10	8.3E-08	7.5E-09	4.9E-11	4.8E-09	5.6E-08	3.3E-08	2.1E-07	3.9E-07	4.9E-07	3.7E-08	1.3E-08	1.3E-07
	R2042	300462	6259597	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	5.9E-05	2.6E-04	5.1E-05	4.4E-06	8.8E-09	2.0E-08	2.2E-09	1.5E-11	7.5E-10	8.1E-08	7.3E-09	4.8E-11	4.7E-09	5.5E-08	3.3E-08	2.0E-07	3.8E-07	4.8E-07	3.6E-08	1.2E-08	1.3E-07
	R2043	300512	6259597	2.2E-06	2.2E-06	1.9E-05	1.1E-06	2.2E-06	5.8E-05	2.6E-04	5.0E-05	4.3E-06	8.6E-09	1.9E-08	2.2E-09	1.5E-11	7.3E-10	8.0E-08	7.2E-09	4.7E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
	R2044	300562	6259597	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.5E-04	4.9E-05	4.2E-06	8.5E-09	1.9E-08	2.1E-09	1.5E-11	7.2E-10	7.8E-08	7.1E-09	4.7E-11	4.5E-09	5.3E-08	3.1E-08	1.9E-07	3.6E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
	R2045	300612	6259597	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.8E-05	4.2E-06	8.3E-09	1.9E-08	2.1E-09	1.5E-11	7.1E-10	7.7E-08	6.9E-09	4.6E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.2E-07
	R2046	300662	6259597	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.5E-05	2.5E-04	4.7E-05	4.1E-06	8.2E-09	1.8E-08	2.0E-09	1.4E-11	6.9E-10	7.6E-08	6.8E-09	4.5E-11	4.3E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.3E-08	1.1E-08	1.2E-07
	R2047	300712	6259597	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	8.0E-09	1.8E-08	2.0E-09	1.4E-11	6.8E-10	7.4E-08	6.6E-09	4.4E-11	4.2E-09	5.0E-08	3.0E-08	1.8E-07	3.4E-07	4.4E-07	3.3E-08	1.1E-08	1.2E-07
	R2048	300762	6259597	1.9E-06	1.9E-06	1.8E-05	9.7E-07	1.9E-06	5.3E-05	2.3E-04	4.5E-05	3.9E-06	7.8E-09	1.8E-08	1.9E-09	1.4E-11	6.6E-10	7.2E-08	6.5E-09	4.3E-11	4.1E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R2049	300812	6259597	1.9E-06	1.9E-06	1.7E-05	9.6E-07	1.9E-06	5.2E-05	2.3E-04	4.4E-05	3.8E-06	7.6E-09	1.7E-08	1.9E-09	1.3E-11	6.5E-10	7.1E-08	6.4E-09	4.2E-11	4.0E-09	4.8E-08	2.8E-08	1.8E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.1E-07
	R2050	300862	6259597	1.9E-06	1.9E-06	1.7E-05	9.4E-07	1.9E-06	5.1E-05	2.2E-04	4.3E-05	3.7E-06	7.5E-09	1.7E-08	1.9E-09	1.3E-11	6.4E-10	6.9E-08	6.2E-09	4.1E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.2E-07	4.1E-07	3.0E-08	1.0E-08	1.1E-07
	R2051	300912	6259597	1.8E-06	1.8E-06	1.6E-05	9.2E-07	1.8E-06	4.9E-05	2.2E-04	4.2E-05	3.7E-06	7.3E-09	1.6E-08	1.8E-09	1.3E-11	6.2E-10	6.8E-08	6.1E-09	4.0E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.2E-07	4.0E-07	3.0E-08	1.0E-08	1.1E-07
	R2052	300962	6259597	1.8E-06	1.8E-06	1.6E-05	9.0E-07	1.8E-06	4.9E-05	2.2E-04	4.1E-05	3.6E-06	7.2E-09	1.6E-08	1.8E-09	1.3E-11	6.1E-10	6.6E-08	6.0E-09	4.0E-11	3.8E-09	4.5E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	2.9E-08	1.0E-08	1.1E-07
	R2053	301012	6259597	1.8E-06	1.8E-06	1.6E-05	8.8E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.5E-06	7.1E-09	1.6E-08	1.8E-09	1.2E-11	6.0E-10	6.5E-08	5.9E-09	3.9E-11	3.7E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.9E-07	2.9E-08	9.9E-09	1.1E-07
	R2054	301062	6259597	1.7E-06	1.7E-06	1.6E-05	8.7E-07	1.7E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	6.9E-09	1.6E-08	1.7E-09	1.2E-11	5.9E-10	6.4E-08	5.8E-09	3.8E-11	3.7E-09	4.3E-08	2.6E-08	1.6E-07	3.0E-07	3.8E-07	2.8E-08	9.7E-09	1.0E-07
	R2055	301112	6259597	1.7E-06	1.7E-06	1.5E-05	8.5E-07	1.7E-06	4.6E-05	2.0E-04	3.9E-05	3.4E-06	6.8E-09	1.5E-08	1.7E-09	1.2E-11	5.8E-10	6.3E-08	5.7E-09	3.7E-11	3.6E-09	4.3E-08	2.5E-08	1.6E-07	2.9E-07	3.7E-07	2.8E-08	9.5E-09	1.0E-07
	R2056	301162	6259597	1.7E-06	1.7E-06	1.5E-05	8.3E-07	1.7E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.7E-09	1.5E-08	1.7E-09	1.2E-11	5.7E-10	6.2E-08	5.6E-09	3.7E-11	3.5E-09	4.2E-08	2.5E-08	1.5E-07	2.9E-07	3.7E-07	2.7E-08	9.3E-09	1.0E-07
	R2057	301212	6259597	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.4E-05	2.0E-04	3.8E-05	3.3E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.6E-10	6.0E-08	5.4E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.2E-09	9.8E-08
	R2058	301262	6259597	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.5E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.6E-08
	R2059	301312	6259597	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.6E-05	3.2E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.8E-08	5.3E-09	3.5E-11	3.3E-09	3.9E-08	2.3E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.8E-09	9.5E-08
	R2060	297912	6259647	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.2E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.6E-09	1.9E-11	9.0E-10	9.8E-08	8.8E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.6E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R2061	297962	6259647	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.3E-05	3.2E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.1E-10	1.0E-07	9.0E-09	5.9E-11	5.7E-09	6.7E-08	4.0E-08	2.5E-07	4.6E-07	5.9E-07	4.4E-08	1.5E-08	1.6E-07
	R2062	298012	6259647	2.7E-06	2.7E-06	2.5E-05	1.4E-06	2.7E-06	7.4E-05	3.3E-04	6.3E-05	5.5E-06	1.1E-08	2.5E-08	2.7E-09	1.9E-11	9.3E-10	1.0E-07	9.1E-09	6.0E-11	5.8E-09	6.8E-08	4.1E-08	2.5E-07	4.7E-07	6.0E-07	4.5E-08	1.5E-08	1.6E-07
	R2063	298062	6259647	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.5E-05	3.3E-04	6.4E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	1.9E-11	9.5E-10	1.0E-07	9.3E-09	6.1E-11	5.9E-09	7.0E-08	4.1E-08	2.6E-07	4.8E-07	6.1E-07	4.5E-08	1.6E-08	1.7E-07
	R2064	298112	6259647	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.6E-05	3.4E-04	6.5E-05	5.7E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.6E-10	1.0E-07	9.4E-09	6.2E-11	6.0E-09	7.1E-08	4.2E-08	2.6E-07	4.9E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R2065	298162	6259647	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.8E-05	3.5E-04	6.6E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.8E-10	1.1E-07	9.6E-09	6.3E-11	6.1E-09	7.2E-08	4.3E-08	2.6E-07	4.9E-07	6.3E-07	4.7E-08	1.6E-08	1.7E-07
	R2066	298212	6259647	2.9E-06	2.9E-06	2.6E-05	1.5E-06	2.9E-06	7.9E-05	3.5E-04	6.7E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.9E-10	1.1E-07	9.7E-09	6.4E-11	6.2E-09	7.3E-08	4.3E-08	2.7E-07	5.0E-07	6.4E-07	4.8E-08	1.6E-08	1.8E-07
	R2067	298262	6259647	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.0E-05	3.6E-04	6.8E-05	5.9E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	9.9E-09	6.5E-11	6.3E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.7E-08	1.8E-07
	R2068	298312	6259647	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.1E-05	3.6E-04	6.9E-05	6.0E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.6E-11	6.4E-09	7.5E-08	4.5E-08	2.8E-07	5.2E-07	6.6E-07	4.9E-08	1.7E-08	1.8E-07
	R2069	298362	6259647	3.1E-06	3.1E-06	2.8E-05	1.5E-06	3.1E-06	8.3E-05	3.7E-04	7.0E-05	6.1E-06	1.2E-08	2.8E-08	3.1E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.5E-09	7.6E-08	4.5E-08	2.8E-07	5.3E-07	6.7E-07	5.0E-08	1.7E-08	1.8E-07
	R2070	298412	6259647	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.4E-05	3.7E-04	7.1E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.1E-07	1.0E-08	6.8E-11	6.6E-09	7.8E-08	4.6E-08	2.9E-07	5.3E-07	6.8E-07	5.1E-08	1.7E-08	1.9E-07
	R2071	298462	6259647	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.5E-05	3.8E-04	7.2E-05	6.3E-06	1.3E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.2E-07	1.0E-08	6.9E-11	6.7E-09	7.9E-08	4.7E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.8E-08	1.9E-07
	R2072	298512	6259647	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.6E-05	3.8E-04	7.3E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.8E-09	8.0E-08	4.7E-08	2.9E-07	5.5E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R2073	298562	6259647	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.7E-05	3.9E-04	7.4E-05	6.5E-06	1.3E-08	2.9E-08	3.2E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.9E-09	8.1E-08	4.8E-08	3.0E-07	5.6E-07	7.1E-07	5.3E-08	1.8E-08	1.9E-07
	R2074	298612	6259647	3.3E-06	3.3E-06	2.9E-05	1.6E-06	3.3E-06	8.8E-05	3.9E-04	7.5E-05	6.5E-06	1.3E-08	2.9E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.2E-11	6.9E-09	8.2E-08	4.8E-08	3.0E-07	5.6E-07	7.2E-07	5.3E-08	1.8E-08	2.0E-07

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																									
													Metal									Heavy Metal							
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm ³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R2075	298662	6259647	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	8.9E-05	4.0E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.0E-09	8.3E-08	4.9E-08	3.0E-07	5.7E-07	7.3E-07	5.4E-08	1.8E-08	2.0E-07
	R2076	298712	6259647	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	9.0E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.1E-09	8.3E-08	4.9E-08	3.1E-07	5.7E-07	7.3E-07	5.4E-08	1.9E-08	2.0E-07
	R2077	298762	6259647	3.4E-06	3.4E-06	3.0E-05	1.7E-06	3.4E-06	9.1E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.4E-09	2.4E-11	1.1E-09	1.2E-07	1.1E-08	7.4E-11	7.1E-09	8.4E-08	5.0E-08	3.1E-07	5.8E-07	7.4E-07	5.5E-08	1.9E-08	2.0E-07
	R2078	298812	6259647	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.2E-05	4.1E-04	7.8E-05	6.8E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.5E-11	7.2E-09	8.5E-08	5.0E-08	3.1E-07	5.9E-07	7.5E-07	5.5E-08	1.9E-08	2.0E-07
	R2079	298862	6259647	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.3E-05	4.1E-04	7.9E-05	6.9E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.6E-11	7.3E-09	8.6E-08	5.1E-08	3.2E-07	5.9E-07	7.6E-07	5.6E-08	1.9E-08	2.1E-07
	R2080	298912	6259647	3.5E-06	3.5E-06	3.1E-05	1.7E-06	3.5E-06	9.3E-05	4.1E-04	7.9E-05	6.9E-06	1.4E-08	3.1E-08	3.5E-09	2.4E-11	1.2E-09	1.3E-07	1.2E-08	7.6E-11	7.3E-09	8.6E-08	5.1E-08	3.2E-07	5.9E-07	7.6E-07	5.6E-08	1.9E-08	2.1E-07
	R2081	298962	6259647	3.5E-06	3.5E-06	3.1E-05	1.7E-06	3.5E-06	9.4E-05	4.2E-04	8.0E-05	6.9E-06	1.4E-08	3.1E-08	3.5E-09	2.4E-11	1.2E-09	1.3E-07	1.2E-08	7.6E-11	7.4E-09	8.7E-08	5.1E-08	3.2E-07	6.0E-07	7.6E-07	5.7E-08	1.9E-08	2.1E-07
	R2082	299012	6259647	3.5E-06	3.5E-06	3.1E-05	1.7E-06	3.5E-06	9.4E-05	4.2E-04	8.0E-05	7.0E-06	1.4E-08	3.1E-08	3.5E-09	2.4E-11	1.2E-09	1.3E-07	1.2E-08	7.7E-11	7.4E-09	8.7E-08	5.2E-08	3.2E-07	6.0E-07	7.7E-07	5.7E-08	2.0E-08	2.1E-07
	R2083	299062	6259647	3.5E-06	3.5E-06	3.1E-05	1.7E-06	3.5E-06	9.4E-05	4.2E-04	8.0E-05	7.0E-06	1.4E-08	3.1E-08	3.5E-09	2.4E-11	1.2E-09	1.3E-07	1.2E-08	7.7E-11	7.4E-09	8.7E-08	5.2E-08	3.2E-07	6.0E-07	7.7E-07	5.7E-08	2.0E-08	2.1E-07
	R2084	299112	6259647	3.5E-06	3.5E-06	3.1E-05	1.7E-06	3.5E-06	9.4E-05	4.2E-04	8.0E-05	6.9E-06	1.4E-08	3.1E-08	3.5E-09	2.4E-11	1.2E-09	1.3E-07	1.2E-08	7.6E-11	7.4E-09	8.7E-08	5.1E-08	3.2E-07	6.0E-07	7.6E-07	5.7E-08	1.9E-08	2.1E-07
	R2085	299162	6259647	3.5E-06	3.5E-06	3.1E-05	1.7E-06	3.5E-06	9.3E-05	4.1E-04	7.9E-05	6.9E-06	1.4E-08	3.1E-08	3.5E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.6E-11	7.3E-09	8.6E-08	5.1E-08	3.2E-07	5.9E-07	7.6E-07	5.6E-08	1.9E-08	2.1E-07
	R2086	299212	6259647	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.3E-05	4.1E-04	7.9E-05	6.9E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.6E-11	7.3E-09	8.6E-08	5.1E-08	3.2E-07	5.9E-07	7.6E-07	5.6E-08	1.9E-08	2.1E-07
	R2087	299262	6259647	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.3E-05	4.1E-04	7.9E-05	6.9E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.5E-11	7.3E-09	8.6E-08	5.1E-08	3.2E-07	5.9E-07	7.5E-07	5.6E-08	1.9E-08	2.1E-07
	R2088	299312	6259647	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.2E-05	4.1E-04	7.8E-05	6.8E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.5E-11	7.2E-09	8.5E-08	5.0E-08	3.1E-07	5.9E-07	7.5E-07	5.6E-08	1.9E-08	2.0E-07
	R2089	299362	6259647	3.4E-06	3.4E-06	3.0E-05	1.7E-06	3.4E-06	9.1E-05	4.1E-04	7.8E-05	6.8E-06	1.4E-08	3.0E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.5E-11	7.2E-09	8.5E-08	5.0E-08	3.1E-07	5.8E-07	7.5E-07	5.5E-08	1.9E-08	2.0E-07
	R2090	299412	6259647	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	9.0E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.1E-09	8.3E-08	4.9E-08	3.1E-07	5.7E-07	7.3E-07	5.4E-08	1.9E-08	2.0E-07
	R2091	299462	6259647	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	8.9E-05	4.0E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.0E-09	8.3E-08	4.9E-08	3.0E-07	5.7E-07	7.3E-07	5.4E-08	1.9E-08	2.0E-07
	R2092	299512	6259647	3.3E-06	3.3E-06	2.9E-05	1.6E-06	3.3E-06	8.8E-05	3.9E-04	7.5E-05	6.5E-06	1.3E-08	2.9E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.2E-11	6.9E-09	8.2E-08	4.8E-08	3.0E-07	5.6E-07	7.2E-07	5.3E-08	1.8E-08	2.0E-07
	R2093	299562	6259647	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.8E-05	3.9E-04	7.5E-05	6.5E-06	1.3E-08	2.9E-08	3.2E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.9E-09	8.1E-08	4.8E-08	3.0E-07	5.6E-07	7.1E-07	5.3E-08	1.8E-08	1.9E-07
	R2094	299612	6259647	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.6E-05	3.8E-04	7.3E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.7E-09	8.0E-08	4.7E-08	2.9E-07	5.5E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R2095	299662	6259647	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.4E-05	3.7E-04	7.2E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.2E-07	1.0E-08	6.9E-11	6.6E-09	7.8E-08	4.6E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.7E-08	1.9E-07
	R2096	299712	6259647	3.1E-06	3.1E-06	2.8E-05	1.5E-06	3.1E-06	8.3E-05	3.7E-04	7.0E-05	6.1E-06	1.2E-08	2.8E-08	3.1E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.5E-09	7.6E-08	4.5E-08	2.8E-07	5.3E-07	6.7E-07	5.0E-08	1.7E-08	1.8E-07
	R2097	299762	6259647	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.1E-05	3.6E-04	6.9E-05	6.0E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.6E-11	6.4E-09	7.5E-08	4.4E-08	2.8E-07	5.2E-07	6.6E-07	4.9E-08	1.7E-08	1.8E-07
	R2098	299812	6259647	2.9E-06	2.9E-06	2.7E-05	1.5E-06	2.9E-06	8.0E-05	3.5E-04	6.8E-05	5.9E-06	1.2E-08	2.7E-08	2.9E-09	2.1E-11	1.0E-09	1.1E-07	9.8E-09	6.5E-11	6.2E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.6E-08	1.8E-07
	R2099	299862	6259647	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.7E-05	3.4E-04	6.6E-05	5.7E-06	1.1E-08	2.6E-08	2.9E-09	2.0E-11	9.7E-10	1.1E-07	9.5E-09	6.3E-11	6.1E-09	7.2E-08	4.2E-08	2.6E-07	4.9E-07	6.3E-07	4.7E-08	1.6E-08	1.7E-07
	R2100	299912	6259647	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.5E-05	3.3E-04	6.4E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.5E-10	1.0E-07	9.3E-09	6.1E-11	5.9E-09	7.0E-08	4.1E-08	2.6E-07	4.8E-07	6.1E-07	4.5E-08	1.6E-08	1.7E-07
	R2101	299962	6259647	2.7E-06	2.7E-06	2.4E-05	1.4E-06	2.7E-06	7.3E-05	3.3E-04	6.3E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.3E-10	1.0E-07	9.1E-09	6.0E-11	5.8E-09	6.8E-08	4.0E-08	2.5E-07	4.7E-07	6.0E-07	4.4E-08	1.5E-08	1.6E-07
	R2102	300012	6259647	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.2E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.1E-10	9.9E-08	8.9E-09	5.9E-11	5.6E-09	6.7E-08	3.9E-08	2.5E-07	4.6E-07	5.9E-07	4.3E-08	1.5E-08	1.6E-07
	R2103	300062	6259647	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	7.0E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.8E-10	9.6E-08	8.7E-09	5.7E-11	5.5E-09	6.5E-08	3.8E-08	2.4E-07	4.5E-07	5.7E-07	4.2E-08	1.5E-08	1.6E-07
	R2104	300112	6259647	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.1E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.6E-10	9.4E-08	8.4E-09	5.6E-11	5.4E-09	6.3E-08	3.7E-08	2.3E-07	4.4E-07	5.6E-07	4.1E-08	1.4E-08	1.5E-07
	R2105	300162	6259647	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.7E-05	3.0E-04	5.7E-05	5.0E-06	9.9E-09	2.2E-08	2.5E-09	1.7E-11	8.4E-10	9.2E-08	8.3E-09	5.5E-11	5.3E-09	6.2E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.0E-08	1.4E-08	1.5E-07
	R2106	300212	6259647	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.7E-09	2.2E-08	2.4E-09	1.7E-11	8.3E-10	9.0E-08	8.1E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.2E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R2107	300262	6259647	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.9E-04	5.5E-05	4.8E-06	9.5E-09	2.1E-08	2.4E-09	1.7E-11	8.1E-10	8.8E-08	7.9E-09	5.2E-11	5.0E-09	6.0E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.9E-08	1.3E-08	1.4E-07
	R2108	300312	6259647	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.8E-09	5.1E-11	5.0E-09	5.8E-08	3.5E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R2109	300362	6259647	2.3E-06	2.3E-06	2.1E-05	1.1E-06	2.3E-06	6.2E-05	2.7E-04	5.3E-05	4.6E-06	9.1E-09	2.1E-08	2.3E-09	1.6E-11	7.8E-10	8.5E-08	7.6E-09	5.0E-11	4.8E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R2110	300412	6259647	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.5E-06	8.9E-09	2.0E-08	2.2E-09	1.6E-11	7.6E-10	8.3E-08	7.4E-09	4.9E-11	4.7E-09	5.6E-08	3.3E-08	2.1E-07	3.8E-07	4.9E-07	3.6E-08	1.3E-08	1.3E-07
	R2111	300462	6259647	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	5.9E-05	2.6E-04	5.0E-05	4.4E-06	8.8E-09	2.0E-08	2.2E-09	1.5E-11	7.4E-10	8.1E-08	7.3E-09	4.8E-11	4.6E-09	5.5E-08	3.2E-08	2.0E-07	3.8E-07	4.8E-07	3.6E-08	1.2E-08	1.3E-07
	R2112	300512	6259647	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.8E-05	2.6E-04	4.9E-05	4.3E-06	8.6E-09	1.9E-08	2.1E-09	1.5E-11	7.3E-10	7.9E-08	7.1E-09	4.7E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
	R2113	300562	6259647	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.5E-04	4.8E-05	4.2E-06	8.4E-09	1.9E-08	2.1E-09	1.5E-11	7.2E-10	7.8E-08	7.0E-09	4.6E-11	4.5E-09	5.3E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.3E-07
	R2114	300612	6259647	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.8E-05	4.2E-06	8.3E-09	1.9E-08	2.1E-09	1.5E-11	7.1E-10	7.7E-08	6.9E-09	4.6E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.2E-07
	R2115	300662	6259647	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.5E-05	2.4E-04	4.7E-05	4.1E-06	8.1E-09	1.8E-08	2.0E-09	1.4E-11	6.9E-10	7.5E-08	6.8E-09	4.5E-11	4.3E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.3E-08	1.1E-08	1.2E-07
	R2116	300712	6259647	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	8.0E-09	1.8E-08	2.0E-09	1.4E-11	6.8E-10	7.4E-08	6.6E-09	4.4E-11	4.2E-09	5.0E-08	2.9E-08	1.8E-07	3.4E-07	4.4E-07	3.2E-08	1.1E-08	1.2E-07
	R2117	300762	6259647	1.9E-06	1.9E-06	1.8E-05	9.7E-07	1.9E-06	5.3E-05	2.3E-04	4.5E-05	3.9E-06	7.8E-09	1.8E-08	1.9E-09	1.4E-11	6.6E-10	7.2E-08	6.5E-09	4.3E-11	4.1E-09	4.9E-08	2.9E-08	1.8E-07	3.3E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R2118	300812	6259647	1.9E-06	1.9E-06	1.7E-05	9.5E-07	1.9E-06	5.1E-05	2.3E-04	4.4E-05	3.8E-06	7.6E-09	1.7E-08	1.9E-09	1.3E-11	6.5E-10	7.0E-08	6.3E-09	4.2E-11	4.0E-09	4.8E-08	2.8E-08	1.8E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.1E-07
	R2119	300862	6259647	1.9E-06	1.9E-06	1.7E-05	9.3E-07	1.9E-06	5.0E-05	2.2E-04	4.3E-05	3.7E-06	7.5E-09	1.7E-08	1.9E-09	1.3E-11	6.4E-10	6.9E-08	6.2E-09	4.1E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.2E-07	4.1E-07	3.0E-08	1.0E-08	1.1E-07
	R2120	300912	6259647	1.8E-06	1.8E-06	1.6E-05	9.2E-07	1.8E-06	4.9E-05	2.2E-04	4.2E-05	3.7E-06	7.3E-09	1.6E-08	1.8E-09	1.3E-11	6.2E-10	6.8E-08	6.1E-09	4.0E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.2E-07	4.0E-07	3.0E-08	1.0E-08	1.1E-07
	R2121	300962	6259647	1.8E-06	1.8E-06	1.6E-05	9.0E-07	1.8E-06	4.9E-05	2.2E-04	4.1E-05	3.6E-06	7.2E-09	1.6E-08	1.8E-09	1.3E-11	6.1E-10	6.6E-08	6.0E-09	4.0E-11	3.8E-09	4.5E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	2.9E-08	1.0E-08	1.1E-07
	R2122	301012	6259647	1.8E-06	1.8E-06	1.6E-05	8.8E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.5E-06	7.1E-09	1.6E-08	1.8E-09	1.2E-11	6.0E-10	6.5E-08	5.9E-09	3.9E-11	3.7E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.9E-07	2.9E-08	9.9E-09	1.1E-07
	R2123	301062	6259647	1.7E-06	1.7E-06	1.6E-05	8.7E-07	1.7E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	6.9E-09	1.6E-08	1.7E-09	1.2E-11	5.9E-10	6.4E-08	5.8E-09	3.8E-11	3.7E-09	4.3E-08	2.6E-08	1.6E-07	3.0E-07	3.8E-07	2.8E-08	9.7E-09	1.0E-07
	R2124	301112	6259647	1.7E-06	1.7E-06	1.5E-05	8.5E-07	1.7E-06	4.6E-05	2.0E-04	3.9E-05	3.4E-06	6.8E-09	1.5E-08	1.7E-09	1.2E-11	5.8E-10	6.3E-08	5.7E-09	3.7E-11	3.6E-09	4.2E-08	2.5E-08	1.6E-07	2.9E-07	3.7E-07	2.8E-08	9.5E-09	1.0E-07
	R2125	301162	6259647	1.7E-06	1.7E-06	1.5E-05	8.3E-07	1.7E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.7E-09	1.5E-08	1.7E-09	1.2E-11	5.7E-10	6.2E-08	5.5E-09	3.7E-11	3.5E-09	4.2E-08	2.5E-08	1.5E-07	2.9E-07	3.7E-07	2.7E-08	9.3E-09	1.0E-07
	R2126	301212	6259647	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.4E-05	2.0E-04	3.8E-05	3.3E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.6E-10	6.0E-08	5.4E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.1E-09	9.8E-08
	R2127	301262	6259647	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.5E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.6E-08
	R2128	301312	6259647	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.6E-05	3.2E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.8E-08	5.3E-09	3.5E-11	3.3E-09	3.9E-08	2.3E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.8E-09	9.5E-08
	R2129	297912	6259697	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	7.0E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.8E-10	9.6E-08	8.7E-09	5.7E-11	5.5E-09	6.5E-08	3.8E-08	2.4E-07	4.5E-07	5.7E-07	4.2E-08	1.5E-08	1.6E-07
	R2130	297962	6259697	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.6E-09	1.8E-11	9.0E-10	9.8E-08	8.8E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.5E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R2131	298012	6259697	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.3E-05	3.2E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.1E-10	9.9E-08	9.0E-09	5.9E-11	5.7E-09	6.7E-08	4.0E-08	2.5E-07	4.6E-07	5.9E-07	4.4E-08	1.5E-08	1.6E-07
	R2132	298062	6259697	2.7E-06	2.7E-06	2.5E-05	1.4E-06	2.7E-06	7.4E-05	3.3E-04	6.3E-05	5.5E-06	1.1E-08	2.5E-08	2.7E-09	1.9E-11	9.3E-10	1.0E-07	9.1E-09	6.0E-11	5.8E-09	6.8E-08	4.1E-08	2.5E-07	4.7E-07	6.0E-07	4.5E-08	1.5E-08	1.6E-07
	R2133	298112	6259697	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.5E-05	3.3E-04	6.4E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	1.9E-11	9.5E-10	1.0E-07	9.3E-09	6.1E-11	5.9E-09	7.0E-08	4.1E-08	2.6E-07	4.8E-07	6.1E-07	4.5E-08	1.6E-08	1.7E-07
	R2134	298162	6259697	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.6E-05	3.4E-04	6.5E-05	5.7E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.6E-10	1.0E-07	9.4E-09	6.2E-11	6.0E-09	7.1E-08	4.2E-08	2.6E-07	4.9E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R2135	298212	6259697	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.8E-05	3.4E-04	6.6E-05	5.7E-06	1.1E-08	2.6E-08	2.9E-09	2.0E-11	9.8E-10	1.1E-07	9.6E-09	6.3E-11	6.1E-09	7.2E-08	4.2E-08	2.6E-07	4.9E-07	6.3E-07	4.7E-08	1.6E-08	1.7E-07

Scenario 1 and Scenario 3 Weighted Average
Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs									Metal										Heavy Metal						
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm ³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R2136	298262	6259697	2.9E-06	2.9E-06	2.6E-05	1.5E-06	2.9E-06	7.9E-05	3.5E-04	6.7E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.9E-10	1.1E-07	9.7E-09	6.4E-11	6.2E-09	7.3E-08	4.3E-08	2.7E-07	5.0E-07	6.4E-07	4.8E-08	1.6E-08	1.8E-07
	R2137	298312	6259697	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.0E-05	3.6E-04	6.8E-05	5.9E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	9.9E-09	6.5E-11	6.3E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.7E-08	1.8E-07
	R2138	298362	6259697	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.1E-05	3.6E-04	6.9E-05	6.0E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.6E-11	6.4E-09	7.5E-08	4.4E-08	2.8E-07	5.2E-07	6.6E-07	4.9E-08	1.7E-08	1.8E-07
	R2139	298412	6259697	3.1E-06	3.1E-06	2.7E-05	1.5E-06	3.1E-06	8.2E-05	3.7E-04	7.0E-05	6.1E-06	1.2E-08	2.7E-08	3.1E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.5E-09	7.6E-08	4.5E-08	2.8E-07	5.3E-07	6.7E-07	5.0E-08	1.7E-08	1.8E-07
	R2140	298462	6259697	3.1E-06	3.1E-06	2.8E-05	1.5E-06	3.1E-06	8.4E-05	3.7E-04	7.1E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.1E-07	1.0E-08	6.8E-11	6.6E-09	7.7E-08	4.6E-08	2.8E-07	5.3E-07	6.8E-07	5.0E-08	1.7E-08	1.9E-07
	R2141	298512	6259697	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.5E-05	3.8E-04	7.2E-05	6.3E-06	1.3E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.2E-07	1.0E-08	6.9E-11	6.7E-09	7.8E-08	4.6E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.8E-08	1.9E-07
	R2142	298562	6259697	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.6E-05	3.8E-04	7.3E-05	6.3E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.7E-09	7.9E-08	4.7E-08	2.9E-07	5.5E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R2143	298612	6259697	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.6E-05	3.8E-04	7.4E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.8E-09	8.0E-08	4.7E-08	2.9E-07	5.5E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R2144	298662	6259697	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.7E-05	3.9E-04	7.4E-05	6.5E-06	1.3E-08	2.9E-08	3.2E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.8E-09	8.1E-08	4.8E-08	3.0E-07	5.6E-07	7.1E-07	5.3E-08	1.8E-08	1.9E-07
	R2145	298712	6259697	3.3E-06	3.3E-06	2.9E-05	1.6E-06	3.3E-06	8.8E-05	3.9E-04	7.5E-05	6.5E-06	1.3E-08	2.9E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.2E-11	6.9E-09	8.2E-08	4.8E-08	3.0E-07	5.6E-07	7.2E-07	5.3E-08	1.8E-08	2.0E-07
	R2146	298762	6259697	3.3E-06	3.3E-06	3.0E-05	1.6E-06	3.3E-06	8.9E-05	4.0E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.0E-09	8.2E-08	4.9E-08	3.0E-07	5.7E-07	7.3E-07	5.4E-08	1.8E-08	2.0E-07
	R2147	298812	6259697	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	9.0E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.1E-09	8.3E-08	4.9E-08	3.1E-07	5.7E-07	7.3E-07	5.4E-08	1.9E-08	2.0E-07
	R2148	298862	6259697	3.4E-06	3.4E-06	3.0E-05	1.7E-06	3.4E-06	9.1E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.4E-09	2.4E-11	1.1E-09	1.2E-07	1.1E-08	7.4E-11	7.1E-09	8.4E-08	5.0E-08	3.1E-07	5.8E-07	7.4E-07	5.5E-08	1.9E-08	2.0E-07
	R2149	298912	6259697	3.4E-06	3.4E-06	3.0E-05	1.7E-06	3.4E-06	9.1E-05	4.1E-04	7.8E-05	6.8E-06	1.4E-08	3.0E-08	3.4E-09	2.4E-11	1.1E-09	1.2E-07	1.1E-08	7.4E-11	7.2E-09	8.4E-08	5.0E-08	3.1E-07	5.8E-07	7.4E-07	5.5E-08	1.9E-08	2.0E-07
	R2150	298962	6259697	3.4E-06	3.4E-06	3.0E-05	1.7E-06	3.4E-06	9.1E-05	4.1E-04	7.8E-05	6.8E-06	1.4E-08	3.0E-08	3.4E-09	2.4E-11	1.1E-09	1.2E-07	1.1E-08	7.4E-11	7.2E-09	8.4E-08	5.0E-08	3.1E-07	5.8E-07	7.4E-07	5.5E-08	1.9E-08	2.0E-07
	R2151	299012	6259697	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.2E-05	4.1E-04	7.8E-05	6.8E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.5E-11	7.2E-09	8.5E-08	5.0E-08	3.1E-07	5.8E-07	7.5E-07	5.5E-08	1.9E-08	2.0E-07
	R2152	299062	6259697	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.2E-05	4.1E-04	7.8E-05	6.8E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.5E-11	7.2E-09	8.5E-08	5.0E-08	3.1E-07	5.9E-07	7.5E-07	5.5E-08	1.9E-08	2.0E-07
	R2153	299112	6259697	3.4E-06	3.4E-06	3.1E-05	1.7E-06	3.4E-06	9.2E-05	4.1E-04	7.8E-05	6.8E-06	1.4E-08	3.1E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.5E-11	7.2E-09	8.5E-08	5.0E-08	3.1E-07	5.8E-07	7.5E-07	5.5E-08	1.9E-08	2.0E-07
	R2154	299162	6259697	3.4E-06	3.4E-06	3.0E-05	1.7E-06	3.4E-06	9.1E-05	4.1E-04	7.8E-05	6.8E-06	1.4E-08	3.0E-08	3.4E-09	2.4E-11	1.2E-09	1.3E-07	1.1E-08	7.4E-11	7.2E-09	8.5E-08	5.0E-08	3.1E-07	5.8E-07	7.4E-07	5.5E-08	1.9E-08	2.0E-07
	R2155	299212	6259697	3.4E-06	3.4E-06	3.0E-05	1.7E-06	3.4E-06	9.1E-05	4.1E-04	7.8E-05	6.8E-06	1.4E-08	3.0E-08	3.4E-09	2.4E-11	1.1E-09	1.3E-07	1.1E-08	7.4E-11	7.2E-09	8.5E-08	5.0E-08	3.1E-07	5.8E-07	7.4E-07	5.5E-08	1.9E-08	2.0E-07
	R2156	299262	6259697	3.4E-06	3.4E-06	3.0E-05	1.7E-06	3.4E-06	9.1E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.4E-09	2.4E-11	1.1E-09	1.2E-07	1.1E-08	7.4E-11	7.1E-09	8.4E-08	5.0E-08	3.1E-07	5.8E-07	7.4E-07	5.5E-08	1.9E-08	2.0E-07
	R2157	299312	6259697	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	9.0E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.4E-11	7.1E-09	8.4E-08	5.0E-08	3.1E-07	5.8E-07	7.4E-07	5.5E-08	1.9E-08	2.0E-07
	R2158	299362	6259697	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	9.0E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.1E-09	8.3E-08	4.9E-08	3.1E-07	5.7E-07	7.3E-07	5.4E-08	1.9E-08	2.0E-07
	R2159	299412	6259697	3.3E-06	3.3E-06	3.0E-05	1.6E-06	3.3E-06	8.9E-05	3.9E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.2E-11	7.0E-09	8.2E-08	4.9E-08	3.0E-07	5.7E-07	7.2E-07	5.4E-08	1.8E-08	2.0E-07
	R2160	299462	6259697	3.3E-06	3.3E-06	2.9E-05	1.6E-06	3.3E-06	8.8E-05	3.9E-04	7.5E-05	6.5E-06	1.3E-08	2.9E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.2E-11	6.9E-09	8.1E-08	4.8E-08	3.0E-07	5.6E-07	7.2E-07	5.3E-08	1.8E-08	2.0E-07
	R2161	299512	6259697	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.7E-05	3.9E-04	7.4E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.8E-09	8.0E-08	4.7E-08	3.0E-07	5.5E-07	7.1E-07	5.2E-08	1.8E-08	1.9E-07
	R2162	299562	6259697	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.6E-05	3.8E-04	7.3E-05	6.3E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.7E-09	7.9E-08	4.7E-08	2.9E-07	5.5E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R2163	299612	6259697	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.5E-05	3.8E-04	7.2E-05	6.3E-06	1.3E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.2E-07	1.0E-08	6.9E-11	6.7E-09	7.9E-08	4.7E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.8E-08	1.9E-07
	R2164	299662	6259697	3.1E-06	3.1E-06	2.8E-05	1.5E-06	3.1E-06	8.3E-05	3.7E-04	7.1E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.0E-09	1.1E-07	1.0E-08	6.8E-11	6.5E-09	7.7E-08	4.6E-08	2.8E-07	5.3E-07	6.8E-07	5.0E-08	1.7E-08	1.9E-07
	R2165	299712	6259697	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.2E-05	3.6E-04	7.0E-05	6.1E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.4E-09	7.6E-08	4.5E-08	2.8E-07	5.2E-07	6.7E-07	4.9E-08	1.7E-08	1.8E-07
	R2166	299762	6259697	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.0E-05	3.6E-04	6.8E-05	5.9E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	9.9E-09	6.5E-11	6.3E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.7E-08	1.8E-07
	R2167	299812	6259697	2.9E-06	2.9E-06	2.6E-05	1.5E-06	2.9E-06	7.9E-05	3.5E-04	6.7E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.9E-10	1.1E-07	9.7E-09	6.4E-11	6.2E-09	7.3E-08	4.3E-08	2.7E-07	5.0E-07	6.4E-07	4.8E-08	1.6E-08	1.8E-07
	R2168	299862	6259697	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.6E-05	3.4E-04	6.5E-05	5.7E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.6E-10	1.0E-07	9.4E-09	6.2E-11	6.0E-09	7.1E-08	4.2E-08	2.6E-07	4.9E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R2169	299912	6259697	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.5E-05	3.3E-04	6.4E-05	5.5E-06	1.1E-08	2.5E-08	2.8E-09	1.9E-11	9.4E-10	1.0E-07	9.2E-09	6.1E-11	5.9E-09	6.9E-08	4.1E-08	2.5E-07	4.8E-07	6.1E-07	4.5E-08	1.5E-08	1.7E-07
	R2170	299962	6259697	2.7E-06	2.7E-06	2.4E-05	1.4E-06	2.7E-06	7.3E-05	3.2E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.2E-10	1.0E-07	9.0E-09	5.9E-11	5.7E-09	6.8E-08	4.0E-08	2.5E-07	4.6E-07	5.9E-07	4.4E-08	1.5E-08	1.6E-07
	R2171	300012	6259697	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.6E-09	1.9E-11	9.0E-10	9.8E-08	8.8E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.6E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R2172	300062	6259697	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	7.0E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.8E-10	9.6E-08	8.6E-09	5.7E-11	5.5E-09	6.5E-08	3.8E-08	2.4E-07	4.5E-07	5.7E-07	4.2E-08	1.5E-08	1.6E-07
	R2173	300112	6259697	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.1E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.6E-10	9.4E-08	8.4E-09	5.6E-11	5.4E-09	6.3E-08	3.8E-08	2.3E-07	4.4E-07	5.6E-07	4.1E-08	1.4E-08	1.5E-07
	R2174	300162	6259697	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.7E-05	3.0E-04	5.7E-05	5.0E-06	9.9E-09	2.2E-08	2.5E-09	1.7E-11	8.4E-10	9.2E-08	8.2E-09	5.4E-11	5.3E-09	6.2E-08	3.7E-08	2.3E-07	4.3E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R2175	300212	6259697	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.6E-05	4.8E-06	9.7E-09	2.2E-08	2.4E-09	1.7E-11	8.2E-10	9.0E-08	8.1E-09	5.3E-11	5.1E-09	6.1E-08	3.6E-08	2.2E-07	4.2E-07	5.3E-07	4.0E-08	1.4E-08	1.5E-07
	R2176	300262	6259697	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.9E-04	5.5E-05	4.8E-06	9.5E-09	2.1E-08	2.4E-09	1.7E-11	8.1E-10	8.8E-08	7.9E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.9E-08	1.3E-08	1.4E-07
	R2177	300312	6259697	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.8E-09	5.1E-11	4.9E-09	5.8E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R2178	300362	6259697	2.3E-06	2.3E-06	2.1E-05	1.1E-06	2.3E-06	6.2E-05	2.7E-04	5.2E-05	4.6E-06	9.1E-09	2.1E-08	2.3E-09	1.6E-11	7.7E-10	8.4E-08	7.6E-09	5.0E-11	4.8E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R2179	300412	6259697	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.5E-06	8.9E-09	2.0E-08	2.2E-09	1.6E-11	7.6E-10	8.2E-08	7.4E-09	4.9E-11	4.7E-09	5.6E-08	3.3E-08	2.1E-07	3.8E-07	4.9E-07	3.6E-08	1.2E-08	1.3E-07
	R2180	300462	6259697	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	5.9E-05	2.6E-04	5.0E-05	4.4E-06	8.7E-09	2.0E-08	2.2E-09	1.5E-11	7.4E-10	8.1E-08	7.3E-09	4.8E-11	4.6E-09	5.5E-08	3.2E-08	2.0E-07	3.8E-07	4.8E-07	3.6E-08	1.2E-08	1.3E-07
	R2181	300512	6259697	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.8E-05	2.6E-04	4.9E-05	4.3E-06	8.6E-09	1.9E-08	2.1E-09	1.5E-11	7.3E-10	7.9E-08	7.1E-09	4.7E-11	4.5E-09	5.3E-08	3.2E-08	2.0E-07	3.7E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
	R2182	300562	6259697	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.5E-04	4.8E-05	4.2E-06	8.4E-09	1.9E-08	2.1E-09	1.5E-11	7.1E-10	7.8E-08	7.0E-09	4.6E-11	4.5E-09	5.3E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.3E-07
	R2183	300612	6259697	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.8E-05	4.1E-06	8.3E-09	1.9E-08	2.1E-09	1.4E-11	7.0E-10	7.7E-08	6.9E-09	4.6E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.2E-07
	R2184	300662	6259697	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.5E-05	2.4E-04	4.7E-05	4.1E-06	8.1E-09	1.8E-08	2.0E-09	1.4E-11	6.9E-10	7.5E-08	6.7E-09	4.5E-11	4.3E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.3E-08	1.1E-08	1.2E-07
	R2185	300712	6259697	2.0E-06	2.0E-06	1.8E-05	9.9E-07	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	7.9E-09	1.8E-08	2.0E-09	1.4E-11	6.7E-10	7.3E-08	6.6E-09	4.4E-11	4.2E-09	5.0E-08	2.9E-08	1.8E-07	3.4E-07	4.4E-07	3.2E-08	1.1E-08	1.2E-07
	R2186	300762	6259697	1.9E-06	1.9E-06	1.7E-05	9.7E-07	1.9E-06	5.2E-05	2.3E-04	4.5E-05	3.9E-06	7.8E-09	1.7E-08	1.9E-09	1.4E-11	6.6E-10	7.2E-08	6.5E-09	4.3E-11	4.1E-09	4.9E-08	2.9E-08	1.8E-07	3.3E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R2187	300812	6259697	1.9E-06	1.9E-06	1.7E-05	9.5E-07	1.9E-06	5.2E-05	2.3E-04	4.4E-05	3.8E-06	7.6E-09	1.7E-08	1.9E-09	1.3E-11	6.5E-10	7.1E-08	6.4E-09	4.2E-11	4.0E-09	4.8E-08	2.8E-08	1.8E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.1E-07
	R2188	300862	6259697	1.9E-06	1.9E-06	1.7E-05	9.4E-07	1.9E-06	5.1E-05	2.2E-04	4.3E-05	3.7E-06	7.5E-09	1.7E-08	1.9E-09	1.3E-11	6.4E-10	6.9E-08	6.2E-09	4.1E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.2E-07	4.1E-07	3.0E-08	1.0E-08	1.1E-07
	R2189	300912	6259697	1.8E-06	1.8E-06	1.7E-05	9.2E-07	1.8E-06	5.0E-05	2.2E-04	4.2E-05	3.7E-06	7.3E-09	1.7E-08	1.8E-09	1.3E-11	6.2E-10	6.8E-08	6.1E-09	4.0E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.2E-07	4.0E-07	3.0E-08	1.0E-08	1.1E-07
	R2190	300962	6259697	1.8E-06	1.8E-06	1.6E-05	9.0E-07	1.8E-06	4.9E-05	2.2E-04	4.1E-05	3.6E-06	7.2E-09	1.6E-08	1.8E-09	1.3E-11	6.1E-10	6.7E-08	6.0E-09	4.0E-11	3.8E-09	4.5E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	2.9E-08	1.0E-08	1.1E-07
	R2191	301012	6259697	1.8E-06	1.8E-06	1.6E-05	8.8E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.5E-06	7.1E-09	1.6E-08	1.8E-09	1.2E-11	6.0E-10	6.5E-08	5.9E-09	3.9E-11	3.7E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.9E-07	2.9E-08	9.9E-09	1.1E-07
	R2192	301062	6259697	1.7E-06	1.7E-06	1.6E-05	8.6E-07	1.7E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	6.9E-09	1.6E-08	1.7E-09	1.2E-11	5.9E-10	6.4E-08	5.8E-09	3.8E-11	3.7E-09	4.3E-08	2.6E-08	1.6E-07	3.0E-07	3.8E-07	2.8E-08	9.7E-09	1.0E-07
	R2193	301112	6259697	1.7E-06	1.7E-06	1.5E-05	8.5E-07	1.7E-06	4.6E-05	2.0E-04	3.9E-05	3.4E-06	6.8E-09	1.5E-08	1.7E-09	1.2E-11	5.8E-10	6.3E-08	5.6E-09	3.7E-11	3.6E-09	4.2E-08	2.5E-08	1.6E-07	2.9E-07	3.7E-07	2.8E-08	9.5E-09	1.0E-07
	R2194	301162	6259697	1.7E-06	1.7E-06	1.5E-05	8.3E-07	1.7E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.7E-09	1.2E-11	5.7E-10	6.2E-08	5.5E-09	3.7E-11	3.5E-09	4.2E-08	2.5E-08	1.5E-07	2.9E-07	3.7E-07	2.7E-08	9.3E-09	1.0E-07
	R2195	301212	6259697	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.4E-05	2.0E-04	3.8E-05	3.3E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.6E-10	6.0E-08	5.4E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.2E-09	9.8E-08
	R2196	301262	6259697	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.5E-10	5.9E-08	5.4E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.6E-08

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																										
													Metal									Heavy Metal								
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm ³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R2197	301312	6259697	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.6E-05	3.2E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.8E-08	5.3E-09	3.5E-11	3.3E-09	3.9E-08	2.3E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.8E-09	9.5E-08
	R2198	297912	6259747	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.7E-10	9.4E-08	8.5E-09	5.6E-11	5.4E-09	6.4E-08	3.8E-08	2.3E-07	4.4E-07	5.6E-07	4.2E-08	1.4E-08	1.5E-07
	R2199	297962	6259747	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	7.0E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.8E-10	9.6E-08	8.6E-09	5.7E-11	5.5E-09	6.5E-08	3.8E-08	2.4E-07	4.5E-07	5.7E-07	4.2E-08	1.5E-08	1.6E-07
	R2200	298012	6259747	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.6E-09	1.8E-11	9.0E-10	9.8E-08	8.8E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.5E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R2201	298062	6259747	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.2E-05	3.2E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.1E-10	9.9E-08	8.9E-09	5.9E-11	5.7E-09	6.7E-08	4.0E-08	2.5E-07	4.6E-07	5.9E-07	4.4E-08	1.5E-08	1.6E-07
	R2202	298112	6259747	2.7E-06	2.7E-06	2.5E-05	1.4E-06	2.7E-06	7.4E-05	3.3E-04	6.3E-05	5.5E-06	1.1E-08	2.5E-08	2.7E-09	1.9E-11	9.3E-10	1.0E-07	9.1E-09	6.0E-11	5.8E-09	6.8E-08	4.0E-08	2.5E-07	4.7E-07	6.0E-07	4.4E-08	1.5E-08	1.6E-07
	R2203	298162	6259747	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.5E-05	3.3E-04	6.4E-05	5.5E-06	1.1E-08	2.5E-08	2.8E-09	1.9E-11	9.4E-10	1.0E-07	9.2E-09	6.1E-11	5.9E-09	6.9E-08	4.1E-08	2.6E-07	4.8E-07	6.1E-07	4.5E-08	1.6E-08	1.7E-07
	R2204	298212	6259747	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.6E-05	3.4E-04	6.5E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.6E-10	1.0E-07	9.4E-09	6.2E-11	6.0E-09	7.0E-08	4.2E-08	2.6E-07	4.8E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R2205	298262	6259747	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.7E-05	3.4E-04	6.6E-05	5.7E-06	1.1E-08	2.6E-08	2.9E-09	2.0E-11	9.7E-10	1.1E-07	9.5E-09	6.3E-11	6.1E-09	7.1E-08	4.2E-08	2.6E-07	4.9E-07	6.3E-07	4.7E-08	1.6E-08	1.7E-07
	R2206	298312	6259747	2.9E-06	2.9E-06	2.6E-05	1.5E-06	2.9E-06	7.8E-05	3.5E-04	6.7E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.9E-10	1.1E-07	9.7E-09	6.4E-11	6.2E-09	7.3E-08	4.3E-08	2.7E-07	5.0E-07	6.4E-07	4.7E-08	1.6E-08	1.7E-07
	R2207	298362	6259747	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.0E-05	3.5E-04	6.8E-05	5.9E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	9.8E-09	6.5E-11	6.3E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.7E-08	1.8E-07
	R2208	298412	6259747	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.1E-05	3.6E-04	6.9E-05	6.0E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.6E-11	6.3E-09	7.5E-08	4.4E-08	2.7E-07	5.1E-07	6.6E-07	4.9E-08	1.7E-08	1.8E-07
	R2209	298462	6259747	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.2E-05	3.6E-04	7.0E-05	6.1E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.4E-09	7.6E-08	4.5E-08	2.8E-07	5.2E-07	6.7E-07	4.9E-08	1.7E-08	1.8E-07
	R2210	298512	6259747	3.1E-06	3.1E-06	2.8E-05	1.5E-06	3.1E-06	8.3E-05	3.7E-04	7.1E-05	6.1E-06	1.2E-08	2.8E-08	3.1E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.5E-09	7.7E-08	4.5E-08	2.8E-07	5.3E-07	6.7E-07	5.0E-08	1.7E-08	1.8E-07
	R2211	298562	6259747	3.1E-06	3.1E-06	2.8E-05	1.5E-06	3.1E-06	8.4E-05	3.7E-04	7.1E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.1E-07	1.0E-08	6.8E-11	6.6E-09	7.7E-08	4.6E-08	2.8E-07	5.3E-07	6.8E-07	5.0E-08	1.7E-08	1.9E-07
	R2212	298612	6259747	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.4E-05	3.8E-04	7.2E-05	6.3E-06	1.3E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.2E-07	1.0E-08	6.9E-11	6.6E-09	7.8E-08	4.6E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.8E-08	1.9E-07
	R2213	298662	6259747	3.2E-06	3.2E-06	2.8E-05	1.6E-06	3.2E-06	8.5E-05	3.8E-04	7.3E-05	6.3E-06	1.3E-08	2.8E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	6.9E-11	6.7E-09	7.9E-08	4.7E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.8E-08	1.9E-07
	R2214	298712	6259747	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.6E-05	3.8E-04	7.3E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.8E-09	8.0E-08	4.7E-08	2.9E-07	5.5E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R2215	298762	6259747	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.7E-05	3.9E-04	7.4E-05	6.5E-06	1.3E-08	2.9E-08	3.2E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.8E-09	8.1E-08	4.8E-08	3.0E-07	5.6E-07	7.1E-07	5.3E-08	1.8E-08	1.9E-07
	R2216	298812	6259747	3.3E-06	3.3E-06	2.9E-05	1.6E-06	3.3E-06	8.8E-05	3.9E-04	7.5E-05	6.5E-06	1.3E-08	2.9E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.2E-11	6.9E-09	8.2E-08	4.8E-08	3.0E-07	5.6E-07	7.2E-07	5.3E-08	1.8E-08	2.0E-07
	R2217	298862	6259747	3.3E-06	3.3E-06	3.0E-05	1.6E-06	3.3E-06	8.9E-05	3.9E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.2E-11	7.0E-09	8.2E-08	4.9E-08	3.0E-07	5.6E-07	7.2E-07	5.4E-08	1.8E-08	2.0E-07
	R2218	298912	6259747	3.3E-06	3.3E-06	3.0E-05	1.6E-06	3.3E-06	8.9E-05	4.0E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.0E-09	8.2E-08	4.9E-08	3.0E-07	5.7E-07	7.3E-07	5.4E-08	1.8E-08	2.0E-07
	R2219	298962	6259747	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	8.9E-05	4.0E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.0E-09	8.3E-08	4.9E-08	3.0E-07	5.7E-07	7.3E-07	5.4E-08	1.9E-08	2.0E-07
	R2220	299012	6259747	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	9.0E-05	4.0E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.0E-09	8.3E-08	4.9E-08	3.1E-07	5.7E-07	7.3E-07	5.4E-08	1.9E-08	2.0E-07
	R2221	299062	6259747	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	9.0E-05	4.0E-04	7.7E-05	6.7E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.1E-09	8.3E-08	4.9E-08	3.1E-07	5.7E-07	7.3E-07	5.4E-08	1.9E-08	2.0E-07
	R2222	299112	6259747	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	8.9E-05	4.0E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.0E-09	8.3E-08	4.9E-08	3.0E-07	5.7E-07	7.3E-07	5.4E-08	1.9E-08	2.0E-07
	R2223	299162	6259747	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	8.9E-05	4.0E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.0E-09	8.3E-08	4.9E-08	3.0E-07	5.7E-07	7.3E-07	5.4E-08	1.9E-08	2.0E-07
	R2224	299212	6259747	3.3E-06	3.3E-06	3.0E-05	1.7E-06	3.3E-06	9.0E-05	4.0E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.0E-09	8.3E-08	4.9E-08	3.1E-07	5.7E-07	7.3E-07	5.4E-08	1.9E-08	2.0E-07
	R2225	299262	6259747	3.3E-06	3.3E-06	3.0E-05	1.6E-06	3.3E-06	8.9E-05	4.0E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.3E-11	7.0E-09	8.2E-08	4.9E-08	3.0E-07	5.7E-07	7.3E-07	5.4E-08	1.8E-08	2.0E-07
	R2226	299312	6259747	3.3E-06	3.3E-06	3.0E-05	1.6E-06	3.3E-06	8.9E-05	3.9E-04	7.6E-05	6.6E-06	1.3E-08	3.0E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.2E-11	7.0E-09	8.2E-08	4.9E-08	3.0E-07	5.7E-07	7.2E-07	5.4E-08	1.8E-08	2.0E-07
	R2227	299362	6259747	3.3E-06	3.3E-06	2.9E-05	1.6E-06	3.3E-06	8.8E-05	3.9E-04	7.5E-05	6.5E-06	1.3E-08	2.9E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.2E-11	6.9E-09	8.2E-08	4.8E-08	3.0E-07	5.6E-07	7.2E-07	5.3E-08	1.8E-08	2.0E-07
	R2228	299412	6259747	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.7E-05	3.9E-04	7.4E-05	6.5E-06	1.3E-08	2.9E-08	3.2E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.9E-09	8.1E-08	4.8E-08	3.0E-07	5.6E-07	7.1E-07	5.3E-08	1.8E-08	1.9E-07
	R2229	299462	6259747	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.6E-05	3.8E-04	7.4E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.8E-09	8.0E-08	4.7E-08	2.9E-07	5.5E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R2230	299512	6259747	3.2E-06	3.2E-06	2.8E-05	1.6E-06	3.2E-06	8.5E-05	3.8E-04	7.3E-05	6.3E-06	1.3E-08	2.8E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.7E-09	7.9E-08	4.7E-08	2.9E-07	5.4E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R2231	299562	6259747	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.4E-05	3.8E-04	7.2E-05	6.3E-06	1.3E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.2E-07	1.0E-08	6.9E-11	6.6E-09	7.8E-08	4.6E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.8E-08	1.9E-07
	R2232	299612	6259747	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.4E-05	3.7E-04	7.1E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.1E-07	1.0E-08	6.8E-11	6.6E-09	7.8E-08	4.6E-08	2.9E-07	5.3E-07	6.8E-07	5.1E-08	1.7E-08	1.9E-07
	R2233	299662	6259747	3.1E-06	3.1E-06	2.7E-05	1.5E-06	3.1E-06	8.2E-05	3.7E-04	7.0E-05	6.1E-06	1.2E-08	2.7E-08	3.1E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.5E-09	7.6E-08	4.5E-08	2.8E-07	5.2E-07	6.7E-07	5.0E-08	1.7E-08	1.8E-07
	R2234	299712	6259747	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.1E-05	3.6E-04	6.9E-05	6.0E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.6E-11	6.3E-09	7.5E-08	4.4E-08	2.8E-07	5.2E-07	6.6E-07	4.9E-08	1.7E-08	1.8E-07
	R2235	299762	6259747	2.9E-06	2.9E-06	2.6E-05	1.5E-06	2.9E-06	7.9E-05	3.5E-04	6.8E-05	5.9E-06	1.2E-08	2.6E-08	2.9E-09	2.1E-11	1.0E-09	1.1E-07	9.8E-09	6.5E-11	6.2E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.6E-08	1.8E-07
	R2236	299812	6259747	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.8E-05	3.5E-04	6.6E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.8E-10	1.1E-07	9.6E-09	6.3E-11	6.1E-09	7.2E-08	4.3E-08	2.6E-07	4.9E-07	6.3E-07	4.7E-08	1.6E-08	1.7E-07
	R2237	299862	6259747	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.6E-05	3.4E-04	6.5E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.6E-10	1.0E-07	9.4E-09	6.2E-11	6.0E-09	7.0E-08	4.2E-08	2.6E-07	4.8E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R2238	299912	6259747	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.4E-05	3.3E-04	6.3E-05	5.5E-06	1.1E-08	2.5E-08	2.8E-09	1.9E-11	9.4E-10	1.0E-07	9.2E-09	6.1E-11	5.8E-09	6.9E-08	4.1E-08	2.5E-07	4.7E-07	6.1E-07	4.5E-08	1.5E-08	1.7E-07
	R2239	299962	6259747	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.3E-05	3.2E-04	6.2E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.1E-10	9.9E-08	8.9E-09	5.9E-11	5.7E-09	6.7E-08	4.0E-08	2.5E-07	4.6E-07	5.9E-07	4.4E-08	1.5E-08	1.6E-07
	R2240	300012	6259747	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.4E-08	2.6E-09	1.8E-11	8.9E-10	9.7E-08	8.7E-09	5.8E-11	5.5E-09	6.5E-08	3.9E-08	2.4E-07	4.5E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R2241	300062	6259747	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.7E-10	9.5E-08	8.5E-09	5.6E-11	5.4E-09	6.4E-08	3.8E-08	2.4E-07	4.4E-07	5.6E-07	4.2E-08	1.4E-08	1.5E-07
	R2242	300112	6259747	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.0E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.6E-10	9.3E-08	8.4E-09	5.5E-11	5.3E-09	6.3E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R2243	300162	6259747	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.6E-05	3.0E-04	5.7E-05	4.9E-06	9.9E-09	2.2E-08	2.5E-09	1.7E-11	8.4E-10	9.1E-08	8.2E-09	5.4E-11	5.2E-09	6.2E-08	3.6E-08	2.3E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R2244	300212	6259747	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.5E-05	4.8E-06	9.6E-09	2.2E-08	2.4E-09	1.7E-11	8.2E-10	8.9E-08	8.0E-09	5.3E-11	5.1E-09	6.0E-08	3.6E-08	2.2E-07	4.1E-07	5.3E-07	3.9E-08	1.3E-08	1.4E-07
	R2245	300262	6259747	2.4E-06	2.4E-06	2.1E-05	1.2E-06	2.4E-06	6.4E-05	2.8E-04	5.4E-05	4.7E-06	9.4E-09	2.1E-08	2.4E-09	1.7E-11	8.0E-10	8.7E-08	7.9E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.1E-07	5.2E-07	3.9E-08	1.3E-08	1.4E-07
	R2246	300312	6259747	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.3E-05	4.6E-06	9.3E-09	2.1E-08	2.3E-09	1.6E-11	7.9E-10	8.6E-08	7.7E-09	5.1E-11	4.9E-09	5.8E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R2247	300362	6259747	2.3E-06	2.3E-06	2.0E-05	1.1E-06	2.3E-06	6.1E-05	2.7E-04	5.2E-05	4.5E-06	9.1E-09	2.0E-08	2.3E-09	1.6E-11	7.7E-10	8.4E-08	7.6E-09	5.0E-11	4.8E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R2248	300412	6259747	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.4E-06	8.9E-09	2.0E-08	2.2E-09	1.6E-11	7.6E-10	8.2E-08	7.4E-09	4.9E-11	4.7E-09	5.6E-08	3.3E-08	2.0E-07	3.8E-07	4.9E-07	3.6E-08	1.2E-08	1.3E-07
	R2249	300462	6259747	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	5.9E-05	2.6E-04	5.0E-05	4.3E-06	8.7E-09	2.0E-08	2.2E-09	1.5E-11	7.4E-10	8.0E-08	7.2E-09	4.8E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.8E-07	3.5E-08	1.2E-08	1.3E-07
	R2250	300512	6259747	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.8E-05	2.6E-04	4.9E-05	4.3E-06	8.5E-09	1.9E-08	2.1E-09	1.5E-11	7.2E-10	7.9E-08	7.1E-09	4.7E-11	4.5E-09	5.3E-08	3.2E-08	2.0E-07	3.7E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
	R2251	300562	6259747	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.7E-05	2.5E-04	4.8E-05	4.2E-06	8.4E-09	1.9E-08	2.1E-09	1.5E-11	7.1E-10	7.7E-08	7.0E-09	4.6E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.3E-07
	R2252	300612	6259747	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.7E-05	4.1E-06	8.2E-09	1.9E-08	2.1E-09	1.4E-11	7.0E-10	7.6E-08	6.9E-09	4.5E-11	4.4E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.4E-08	1.2E-08	1.2E-07
	R2253	300662	6259747	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.5E-05	2.4E-04	4.6E-05	4.0E-06	8.1E-09	1.8E-08	2.0E-09	1.4E-11	6.9E-10	7.5E-08	6.7E-09	4.4E-11	4.3E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.4E-07	3.3E-08	1.1E-08	1.2E-07
	R2254	300712	6259747	2.0E-06	2.0E-06	1.8E-05	9.9E-07	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	7.9E-09	1.8E-08	2.0E-09	1.4E-11	6.8E-10	7.3E-08	6.6E-09	4.4E-11	4.2E-09	5.0E-08	2.9E-08	1.8E-07	3.4E-07	4.4E-07	3.2E-08	1.1E-08	1.2E-07
	R2255	300762	6259747	1.9E-06	1.9E-06	1.8E-05	9.7E-07	1.9E-06	5.3E-05	2.3E-04	4.5E-05	3.9E-06	7.8E-09	1.8E-08	1.9E-09	1.4E-11	6.6E-10	7.2E-08	6.5E-09	4.3E-11	4.1E-09	4.9E-08	2.9E-08	1.8E-07	3.3E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R2256	300812	6259747	1.9E-06	1.9E-06	1.7E-05	9.5E-07	1.9E-06	5.2E-05	2.3E-04	4.4E-05	3.8E-06	7.6E-09	1.7E-08	1.9E-09	1.3E-11	6.5E-10	7.1E-08	6.4E-09	4.2E-11	4.0E-09	4.8E-08	2.8E-08	1.8E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.1E-07
	R2257	300862	6259747	1.9E-06	1.9E-06	1.7E-05	9.4E-07	1.9E-06	5.1E-05	2.2E-04	4.3E-05	3.7E-06	7.5E-09	1.7E-08	1.9E-09	1.3E-11	6.4E-10	6.9E-08	6.2E-09	4.1E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.2E-07	4.1E-07	3.0E-08	1.0E-08	1.1E-07

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																									
													Metal										Heavy Metal						
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R2258	300912	6259747	1.8E-06	1.8E-06	1.7E-05	9.2E-07	1.8E-06	5.0E-05	2.2E-04	4.2E-05	3.7E-06	7.3E-09	1.7E-08	1.8E-09	1.3E-11	6.2E-10	6.8E-08	6.1E-09	4.0E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.2E-07	4.0E-07	3.0E-08	1.0E-08	1.1E-07
	R2259	300962	6259747	1.8E-06	1.8E-06	1.6E-05	9.0E-07	1.8E-06	4.9E-05	2.2E-04	4.1E-05	3.6E-06	7.2E-09	1.6E-08	1.8E-09	1.3E-11	6.1E-10	6.6E-08	6.0E-09	4.0E-11	3.8E-09	4.5E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	2.9E-08	1.0E-08	1.1E-07
	R2260	301012	6259747	1.8E-06	1.8E-06	1.6E-05	8.8E-07	1.8E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	7.0E-09	1.6E-08	1.8E-09	1.2E-11	6.0E-10	6.5E-08	5.9E-09	3.9E-11	3.7E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.9E-07	2.9E-08	9.9E-09	1.1E-07
	R2261	301062	6259747	1.7E-06	1.7E-06	1.6E-05	8.6E-07	1.7E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	6.9E-09	1.6E-08	1.7E-09	1.2E-11	5.9E-10	6.4E-08	5.8E-09	3.8E-11	3.7E-09	4.3E-08	2.6E-08	1.6E-07	3.0E-07	3.8E-07	2.8E-08	9.7E-09	1.0E-07
	R2262	301112	6259747	1.7E-06	1.7E-06	1.5E-05	8.5E-07	1.7E-06	4.6E-05	2.0E-04	3.9E-05	3.4E-06	6.8E-09	1.5E-08	1.7E-09	1.2E-11	5.8E-10	6.3E-08	5.6E-09	3.7E-11	3.6E-09	4.2E-08	2.5E-08	1.6E-07	2.9E-07	3.7E-07	2.8E-08	9.5E-09	1.0E-07
	R2263	301162	6259747	1.7E-06	1.7E-06	1.5E-05	8.3E-07	1.7E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.7E-09	1.2E-11	5.6E-10	6.1E-08	5.5E-09	3.7E-11	3.5E-09	4.2E-08	2.5E-08	1.5E-07	2.9E-07	3.7E-07	2.7E-08	9.3E-09	1.0E-07
	R2264	301212	6259747	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.4E-05	2.0E-04	3.8E-05	3.3E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.1E-09	9.8E-08
	R2265	301262	6259747	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.6E-08
	R2266	301312	6259747	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.8E-08	5.2E-09	3.5E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.5E-07	2.6E-08	8.8E-09	9.4E-08
	R2267	297912	6259797	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.8E-05	3.0E-04	5.8E-05	5.0E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.5E-10	9.3E-08	8.4E-09	5.5E-11	5.3E-09	6.3E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R2268	297962	6259797	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.9E-05	3.1E-04	5.9E-05	5.1E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.7E-10	9.4E-08	8.5E-09	5.6E-11	5.4E-09	6.4E-08	3.8E-08	2.3E-07	4.4E-07	5.6E-07	4.2E-08	1.4E-08	1.5E-07
	R2269	298012	6259797	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	7.0E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.8E-10	9.6E-08	8.6E-09	5.7E-11	5.5E-09	6.5E-08	3.8E-08	2.4E-07	4.5E-07	5.7E-07	4.2E-08	1.4E-08	1.6E-07
	R2270	298062	6259797	2.6E-06	2.6E-06	2.4E-05	1.3E-06	2.6E-06	7.1E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.6E-09	1.8E-11	8.9E-10	9.7E-08	8.8E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.5E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R2271	298112	6259797	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.2E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.1E-10	9.9E-08	8.9E-09	5.9E-11	5.7E-09	6.7E-08	4.0E-08	2.5E-07	4.6E-07	5.9E-07	4.4E-08	1.5E-08	1.6E-07
	R2272	298162	6259797	2.7E-06	2.7E-06	2.4E-05	1.4E-06	2.7E-06	7.3E-05	3.3E-04	6.3E-05	5.4E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.2E-10	1.0E-07	9.1E-09	6.0E-11	5.8E-09	6.8E-08	4.0E-08	2.5E-07	4.7E-07	6.0E-07	4.4E-08	1.5E-08	1.6E-07
	R2273	298212	6259797	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.5E-05	3.3E-04	6.4E-05	5.5E-06	1.1E-08	2.5E-08	2.8E-09	1.9E-11	9.4E-10	1.0E-07	9.2E-09	6.1E-11	5.9E-09	6.9E-08	4.1E-08	2.5E-07	4.7E-07	6.1E-07	4.5E-08	1.5E-08	1.7E-07
	R2274	298262	6259797	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.5E-05	3.4E-04	6.4E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.5E-10	1.0E-07	9.3E-09	6.1E-11	5.9E-09	7.0E-08	4.1E-08	2.6E-07	4.8E-07	6.1E-07	4.6E-08	1.6E-08	1.7E-07
	R2275	298312	6259797	2.8E-06	2.8E-06	2.6E-05	1.4E-06	2.8E-06	7.7E-05	3.4E-04	6.5E-05	5.7E-06	1.1E-08	2.6E-08	2.8E-09	2.0E-11	9.6E-10	1.0E-07	9.4E-09	6.2E-11	6.0E-09	7.1E-08	4.2E-08	2.6E-07	4.9E-07	6.2E-07	4.6E-08	1.6E-08	1.7E-07
	R2276	298362	6259797	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.8E-05	3.5E-04	6.6E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.8E-10	1.1E-07	9.6E-09	6.3E-11	6.1E-09	7.2E-08	4.3E-08	2.7E-07	5.0E-07	6.3E-07	4.7E-08	1.6E-08	1.7E-07
	R2277	298412	6259797	2.9E-06	2.9E-06	2.6E-05	1.5E-06	2.9E-06	7.9E-05	3.5E-04	6.7E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.9E-10	1.1E-07	9.7E-09	6.4E-11	6.2E-09	7.3E-08	4.3E-08	2.7E-07	5.0E-07	6.4E-07	4.8E-08	1.6E-08	1.8E-07
	R2278	298462	6259797	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.0E-05	3.6E-04	6.8E-05	5.9E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	9.9E-09	6.5E-11	6.3E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.7E-08	1.8E-07
	R2279	298512	6259797	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.1E-05	3.6E-04	6.9E-05	6.0E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.6E-11	6.4E-09	7.5E-08	4.4E-08	2.8E-07	5.2E-07	6.6E-07	4.9E-08	1.7E-08	1.8E-07
	R2280	298562	6259797	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.2E-05	3.6E-04	7.0E-05	6.1E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.4E-09	7.6E-08	4.5E-08	2.8E-07	5.2E-07	6.7E-07	4.9E-08	1.7E-08	1.8E-07
	R2281	298612	6259797	3.1E-06	3.1E-06	2.8E-05	1.5E-06	3.1E-06	8.3E-05	3.7E-04	7.0E-05	6.1E-06	1.2E-08	2.8E-08	3.1E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.5E-09	7.7E-08	4.5E-08	2.8E-07	5.3E-07	6.7E-07	5.0E-08	1.7E-08	1.8E-07
	R2282	298662	6259797	3.1E-06	3.1E-06	2.8E-05	1.5E-06	3.1E-06	8.4E-05	3.7E-04	7.1E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.1E-07	1.0E-08	6.8E-11	6.6E-09	7.7E-08	4.6E-08	2.8E-07	5.3E-07	6.8E-07	5.0E-08	1.7E-08	1.9E-07
	R2283	298712	6259797	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.4E-05	3.7E-04	7.2E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.2E-07	1.0E-08	6.9E-11	6.6E-09	7.8E-08	4.6E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.7E-08	1.9E-07
	R2284	298762	6259797	3.2E-06	3.2E-06	2.8E-05	1.6E-06	3.2E-06	8.5E-05	3.8E-04	7.3E-05	6.3E-06	1.3E-08	2.8E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	6.9E-11	6.7E-09	7.9E-08	4.7E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.8E-08	1.9E-07
	R2285	298812	6259797	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.6E-05	3.8E-04	7.3E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.8E-09	8.0E-08	4.7E-08	2.9E-07	5.5E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R2286	298862	6259797	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.7E-05	3.8E-04	7.4E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.8E-09	8.0E-08	4.7E-08	2.9E-07	5.5E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R2287	298912	6259797	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.7E-05	3.9E-04	7.4E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.8E-09	8.1E-08	4.8E-08	3.0E-07	5.5E-07	7.1E-07	5.3E-08	1.8E-08	1.9E-07
	R2288	298962	6259797	3.3E-06	3.3E-06	2.9E-05	1.6E-06	3.3E-06	8.8E-05	3.9E-04	7.5E-05	6.5E-06	1.3E-08	2.9E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.2E-11	6.9E-09	8.1E-08	4.8E-08	3.0E-07	5.6E-07	7.2E-07	5.3E-08	1.8E-08	2.0E-07
	R2289	299012	6259797	3.3E-06	3.3E-06	2.9E-05	1.6E-06	3.3E-06	8.8E-05	3.9E-04	7.5E-05	6.5E-06	1.3E-08	2.9E-08	3.3E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.2E-11	6.9E-09	8.1E-08	4.8E-08	3.0E-07	5.6E-07	7.2E-07	5.3E-08	1.8E-08	2.0E-07
	R2290	299062	6259797	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.8E-05	3.9E-04	7.5E-05	6.5E-06	1.3E-08	2.9E-08	3.2E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.9E-09	8.1E-08	4.8E-08	3.0E-07	5.6E-07	7.1E-07	5.3E-08	1.8E-08	1.9E-07
	R2291	299112	6259797	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.8E-05	3.9E-04	7.5E-05	6.5E-06	1.3E-08	2.9E-08	3.2E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.9E-09	8.1E-08	4.8E-08	3.0E-07	5.6E-07	7.1E-07	5.3E-08	1.8E-08	1.9E-07
	R2292	299162	6259797	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.7E-05	3.9E-04	7.5E-05	6.5E-06	1.3E-08	2.9E-08	3.2E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.9E-09	8.1E-08	4.8E-08	3.0E-07	5.6E-07	7.1E-07	5.3E-08	1.8E-08	1.9E-07
	R2293	299212	6259797	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.7E-05	3.9E-04	7.4E-05	6.5E-06	1.3E-08	2.9E-08	3.2E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.9E-09	8.1E-08	4.8E-08	3.0E-07	5.6E-07	7.1E-07	5.3E-08	1.8E-08	1.9E-07
	R2294	299262	6259797	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.7E-05	3.9E-04	7.4E-05	6.5E-06	1.3E-08	2.9E-08	3.2E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.8E-09	8.1E-08	4.8E-08	3.0E-07	5.5E-07	7.1E-07	5.3E-08	1.8E-08	1.9E-07
	R2295	299312	6259797	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.7E-05	3.9E-04	7.4E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.3E-11	1.1E-09	1.2E-07	1.1E-08	7.1E-11	6.8E-09	8.0E-08	4.8E-08	3.0E-07	5.5E-07	7.1E-07	5.2E-08	1.8E-08	1.9E-07
	R2296	299362	6259797	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.6E-05	3.8E-04	7.4E-05	6.4E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.8E-09	8.0E-08	4.7E-08	2.9E-07	5.5E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R2297	299412	6259797	3.2E-06	3.2E-06	2.9E-05	1.6E-06	3.2E-06	8.6E-05	3.8E-04	7.3E-05	6.3E-06	1.3E-08	2.9E-08	3.2E-09	2.2E-11	1.1E-09	1.2E-07	1.1E-08	7.0E-11	6.7E-09	7.9E-08	4.7E-08	2.9E-07	5.5E-07	7.0E-07	5.2E-08	1.8E-08	1.9E-07
	R2298	299462	6259797	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.5E-05	3.8E-04	7.2E-05	6.3E-06	1.3E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.2E-07	1.0E-08	6.9E-11	6.7E-09	7.9E-08	4.7E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.8E-08	1.9E-07
	R2299	299512	6259797	3.1E-06	3.1E-06	2.8E-05	1.6E-06	3.1E-06	8.4E-05	3.7E-04	7.2E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.2E-07	1.0E-08	6.9E-11	6.6E-09	7.8E-08	4.6E-08	2.9E-07	5.4E-07	6.9E-07	5.1E-08	1.7E-08	1.9E-07
	R2300	299562	6259797	3.1E-06	3.1E-06	2.8E-05	1.5E-06	3.1E-06	8.4E-05	3.7E-04	7.1E-05	6.2E-06	1.2E-08	2.8E-08	3.1E-09	2.2E-11	1.1E-09	1.1E-07	1.0E-08	6.8E-11	6.6E-09	7.7E-08	4.6E-08	2.8E-07	5.3E-07	6.8E-07	5.0E-08	1.7E-08	1.9E-07
	R2301	299612	6259797	3.1E-06	3.1E-06	2.8E-05	1.5E-06	3.1E-06	8.3E-05	3.7E-04	7.0E-05	6.1E-06	1.2E-08	2.8E-08	3.1E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.5E-09	7.7E-08	4.5E-08	2.8E-07	5.3E-07	6.7E-07	5.0E-08	1.7E-08	1.8E-07
	R2302	299662	6259797	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.2E-05	3.6E-04	7.0E-05	6.1E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	1.0E-08	6.7E-11	6.4E-09	7.6E-08	4.5E-08	2.8E-07	5.2E-07	6.7E-07	4.9E-08	1.7E-08	1.8E-07
	R2303	299712	6259797	3.0E-06	3.0E-06	2.7E-05	1.5E-06	3.0E-06	8.0E-05	3.6E-04	6.8E-05	5.9E-06	1.2E-08	2.7E-08	3.0E-09	2.1E-11	1.0E-09	1.1E-07	9.9E-09	6.5E-11	6.3E-09	7.4E-08	4.4E-08	2.7E-07	5.1E-07	6.5E-07	4.8E-08	1.7E-08	1.8E-07
	R2304	299762	6259797	2.9E-06	2.9E-06	2.6E-05	1.5E-06	2.9E-06	7.9E-05	3.5E-04	6.7E-05	5.8E-06	1.2E-08	2.6E-08	2.9E-09	2.0E-11	9.9E-10	1.1E-07	9.7E-09	6.4E-11	6.2E-09	7.3E-08	4.3E-08	2.7E-07	5.0E-07	6.4E-07	4.8E-08	1.6E-08	1.7E-07
	R2305	299812	6259797	2.9E-06	2.9E-06	2.6E-05	1.4E-06	2.9E-06	7.7E-05	3.4E-04	6.6E-05	5.7E-06	1.1E-08	2.6E-08	2.9E-09	2.0E-11	9.7E-10	1.1E-07	9.5E-09	6.3E-11	6.1E-09	7.1E-08	4.2E-08	2.6E-07	4.9E-07	6.3E-07	4.7E-08	1.6E-08	1.7E-07
	R2306	299862	6259797	2.8E-06	2.8E-06	2.5E-05	1.4E-06	2.8E-06	7.5E-05	3.4E-04	6.4E-05	5.6E-06	1.1E-08	2.5E-08	2.8E-09	2.0E-11	9.5E-10	1.0E-07	9.3E-09	6.1E-11	5.9E-09	7.0E-08	4.1E-08	2.6E-07	4.8E-07	6.1E-07	4.6E-08	1.6E-08	1.7E-07
	R2307	299912	6259797	2.7E-06	2.7E-06	2.5E-05	1.4E-06	2.7E-06	7.4E-05	3.3E-04	6.3E-05	5.4E-06	1.1E-08	2.5E-08	2.7E-09	1.9E-11	9.3E-10	1.0E-07	9.1E-09	6.0E-11	5.8E-09	6.8E-08	4.0E-08	2.5E-07	4.7E-07	6.0E-07	4.4E-08	1.5E-08	1.6E-07
	R2308	299962	6259797	2.7E-06	2.7E-06	2.4E-05	1.3E-06	2.7E-06	7.2E-05	3.2E-04	6.1E-05	5.3E-06	1.1E-08	2.4E-08	2.7E-09	1.9E-11	9.0E-10	9.8E-08	8.8E-09	5.8E-11	5.6E-09	6.6E-08	3.9E-08	2.4E-07	4.6E-07	5.8E-07	4.3E-08	1.5E-08	1.6E-07
	R2309	300012	6259797	2.6E-06	2.6E-06	2.3E-05	1.3E-06	2.6E-06	7.0E-05	3.1E-04	6.0E-05	5.2E-06	1.0E-08	2.3E-08	2.6E-09	1.8E-11	8.8E-10	9.6E-08	8.6E-09	5.7E-11	5.5E-09	6.5E-08	3.8E-08	2.4E-07	4.5E-07	5.7E-07	4.2E-08	1.5E-08	1.6E-07
	R2310	300062	6259797	2.5E-06	2.5E-06	2.3E-05	1.3E-06	2.5E-06	6.9E-05	3.0E-04	5.8E-05	5.1E-06	1.0E-08	2.3E-08	2.5E-09	1.8E-11	8.6E-10	9.4E-08	8.5E-09	5.6E-11	5.4E-09	6.4E-08	3.8E-08	2.3E-07	4.4E-07	5.6E-07	4.1E-08	1.4E-08	1.5E-07
	R2311	300112	6259797	2.5E-06	2.5E-06	2.2E-05	1.2E-06	2.5E-06	6.7E-05	3.0E-04	5.7E-05	5.0E-06	1.0E-08	2.2E-08	2.5E-09	1.7E-11	8.5E-10	9.2E-08	8.3E-09	5.5E-11	5.3E-09	6.2E-08	3.7E-08	2.3E-07	4.3E-07	5.5E-07	4.1E-08	1.4E-08	1.5E-07
	R2312	300162	6259797	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.6E-05	2.9E-04	5.6E-05	4.9E-06	9.8E-09	2.2E-08	2.4E-09	1.7E-11	8.3E-10	9.0E-08	8.1E-09	5.4E-11	5.2E-09	6.1E-08	3.6E-08	2.2E-07	4.2E-07	5.4E-07	4.0E-08	1.4E-08	1.5E-07
	R2313	300212	6259797	2.4E-06	2.4E-06	2.2E-05	1.2E-06	2.4E-06	6.5E-05	2.9E-04	5.5E-05	4.8E-06	9.6E-09	2.2E-08	2.4E-09	1.7E-11	8.1E-10	8.8E-08	8.0E-09	5.3E-11	5.1E-09	6.0E-08	3.5E-08	2.2E-07	4.1E-07	5.3E-07	3.9E-08	1.3E-08	1.4E-07
	R2314	300262	6259797	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.3E-05	2.8E-04	5.4E-05	4.7E-06	9.4E-09	2.1E-08	2.3E-09	1.6E-11	8.0E-10	8.7E-08	7.8E-09	5.2E-11	5.0E-09	5.9E-08	3.5E-08	2.2E-07	4.0E-07	5.2E-07	3.8E-08	1.3E-08	1.4E-07
	R2315	300312	6259797	2.3E-06	2.3E-06	2.1E-05	1.2E-06	2.3E-06	6.2E-05	2.8E-04	5.3E-05	4.6E-06	9.2E-09	2.1E-08	2.3E-09	1.6E-11	7.8E-10	8.5E-08	7.7E-09	5.1E-11	4.9E-09	5.8E-08	3.4E-08	2.1E-07	4.0E-07	5.1E-07	3.8E-08	1.3E-08	1.4E-07
	R2316	300362	6259797	2.3E-06	2.3E-06	2.0E-05	1.1E-06	2.3E-06	6.1E-05	2.7E-04	5.2E-05	4.5E-06	9.1E-09	2.0E-08	2.3E-09	1.6E-11	7.7E-10	8.4E-08	7.5E-09	5.0E-11	4.8E-09	5.7E-08	3.4E-08	2.1E-07	3.9E-07	5.0E-07	3.7E-08	1.3E-08	1.4E-07
	R2317	300412	6259797	2.2E-06	2.2E-06	2.0E-05	1.1E-06	2.2E-06	6.0E-05	2.7E-04	5.1E-05	4.4E-06	8.9E-09	2.0E-08	2.2E-09	1.5E-11	7.5E-10	8.2E-08	7.4E-09	4.9E-11	4.7E-09	5.5E-08	3.3E-08	2.0E-07	3.8E-07	4.9E-07	3.6E-08	1.2E-08	1.3E-07
	R2318	300462	6259797	2.2E-06	2.2E-06	1.9E-05	1.1E-06	2.2E-06	5.8E-05	2.6E-04	5.0E-05	4.3E-06	8.7E-09	1.9E-08	2.2E-09	1.5E-11	7.4E-10	8.0E-08	7.2E-09	4.8E-11	4.6E-09	5.4E-08	3.2E-08	2.0E-07	3.7E-07	4.8E-07	3.5E-08	1.2E-08	1.3E-07

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs									Metal										Heavy Metal							
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R2319	300512	6259797	2.1E-06	2.1E-06	1.9E-05	1.1E-06	2.1E-06	5.7E-05	2.5E-04	4.9E-05	4.2E-06	8.5E-09	1.9E-08	2.1E-09	1.5E-11	7.2E-10	7.9E-08	7.1E-09	4.7E-11	4.5E-09	5.3E-08	3.1E-08	2.0E-07	3.7E-07	4.7E-07	3.5E-08	1.2E-08	1.3E-07
	R2320	300562	6259797	2.1E-06	2.1E-06	1.9E-05	1.0E-06	2.1E-06	5.6E-05	2.5E-04	4.8E-05	4.2E-06	8.3E-09	1.9E-08	2.1E-09	1.5E-11	7.1E-10	7.7E-08	6.9E-09	4.6E-11	4.4E-09	5.2E-08	3.1E-08	1.9E-07	3.6E-07	4.6E-07	3.4E-08	1.2E-08	1.2E-07
	R2321	300612	6259797	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.5E-05	2.4E-04	4.7E-05	4.1E-06	8.2E-09	1.8E-08	2.0E-09	1.4E-11	6.9E-10	7.6E-08	6.8E-09	4.5E-11	4.3E-09	5.1E-08	3.0E-08	1.9E-07	3.5E-07	4.5E-07	3.3E-08	1.1E-08	1.2E-07
	R2322	300662	6259797	2.0E-06	2.0E-06	1.8E-05	1.0E-06	2.0E-06	5.4E-05	2.4E-04	4.6E-05	4.0E-06	8.0E-09	1.8E-08	2.0E-09	1.4E-11	6.8E-10	7.4E-08	6.7E-09	4.4E-11	4.2E-09	5.0E-08	3.0E-08	1.8E-07	3.4E-07	4.4E-07	3.3E-08	1.1E-08	1.2E-07
	R2323	300712	6259797	2.0E-06	2.0E-06	1.8E-05	9.8E-07	2.0E-06	5.3E-05	2.4E-04	4.5E-05	3.9E-06	7.9E-09	1.8E-08	2.0E-09	1.4E-11	6.7E-10	7.3E-08	6.6E-09	4.3E-11	4.2E-09	4.9E-08	2.9E-08	1.8E-07	3.4E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R2324	300762	6259797	1.9E-06	1.9E-06	1.7E-05	9.7E-07	1.9E-06	5.2E-05	2.3E-04	4.5E-05	3.9E-06	7.7E-09	1.7E-08	1.9E-09	1.4E-11	6.6E-10	7.2E-08	6.4E-09	4.3E-11	4.1E-09	4.8E-08	2.9E-08	1.8E-07	3.3E-07	4.3E-07	3.2E-08	1.1E-08	1.2E-07
	R2325	300812	6259797	1.9E-06	1.9E-06	1.7E-05	9.5E-07	1.9E-06	5.2E-05	2.3E-04	4.4E-05	3.8E-06	7.6E-09	1.7E-08	1.9E-09	1.3E-11	6.5E-10	7.1E-08	6.4E-09	4.2E-11	4.0E-09	4.8E-08	2.8E-08	1.8E-07	3.3E-07	4.2E-07	3.1E-08	1.1E-08	1.1E-07
	R2326	300862	6259797	1.9E-06	1.9E-06	1.7E-05	9.4E-07	1.9E-06	5.1E-05	2.2E-04	4.3E-05	3.7E-06	7.5E-09	1.7E-08	1.9E-09	1.3E-11	6.4E-10	6.9E-08	6.2E-09	4.1E-11	4.0E-09	4.7E-08	2.8E-08	1.7E-07	3.2E-07	4.1E-07	3.1E-08	1.0E-08	1.1E-07
	R2327	300912	6259797	1.8E-06	1.8E-06	1.7E-05	9.2E-07	1.8E-06	5.0E-05	2.2E-04	4.2E-05	3.7E-06	7.3E-09	1.7E-08	1.8E-09	1.3E-11	6.2E-10	6.8E-08	6.1E-09	4.0E-11	3.9E-09	4.6E-08	2.7E-08	1.7E-07	3.2E-07	4.0E-07	3.0E-08	1.0E-08	1.1E-07
	R2328	300962	6259797	1.8E-06	1.8E-06	1.6E-05	9.0E-07	1.8E-06	4.9E-05	2.2E-04	4.1E-05	3.6E-06	7.2E-09	1.6E-08	1.8E-09	1.3E-11	6.1E-10	6.6E-08	6.0E-09	4.0E-11	3.8E-09	4.5E-08	2.7E-08	1.7E-07	3.1E-07	4.0E-07	2.9E-08	1.0E-08	1.1E-07
	R2329	301012	6259797	1.8E-06	1.8E-06	1.6E-05	8.8E-07	1.8E-06	4.8E-05	2.1E-04	4.1E-05	3.5E-06	7.0E-09	1.6E-08	1.8E-09	1.2E-11	6.0E-10	6.5E-08	5.9E-09	3.9E-11	3.7E-09	4.4E-08	2.6E-08	1.6E-07	3.0E-07	3.9E-07	2.9E-08	9.9E-09	1.1E-07
	R2330	301062	6259797	1.7E-06	1.7E-06	1.6E-05	8.6E-07	1.7E-06	4.7E-05	2.1E-04	4.0E-05	3.5E-06	6.9E-09	1.6E-08	1.7E-09	1.2E-11	5.9E-10	6.4E-08	5.7E-09	3.8E-11	3.7E-09	4.3E-08	2.6E-08	1.6E-07	3.0E-07	3.8E-07	2.8E-08	9.7E-09	1.0E-07
	R2331	301112	6259797	1.7E-06	1.7E-06	1.5E-05	8.5E-07	1.7E-06	4.6E-05	2.0E-04	3.9E-05	3.4E-06	6.8E-09	1.5E-08	1.7E-09	1.2E-11	5.8E-10	6.3E-08	5.6E-09	3.7E-11	3.6E-09	4.2E-08	2.5E-08	1.6E-07	2.9E-07	3.7E-07	2.8E-08	9.5E-09	1.0E-07
	R2332	301162	6259797	1.7E-06	1.7E-06	1.5E-05	8.3E-07	1.7E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.7E-09	1.2E-11	5.6E-10	6.1E-08	5.5E-09	3.7E-11	3.5E-09	4.2E-08	2.5E-08	1.5E-07	2.9E-07	3.7E-07	2.7E-08	9.3E-09	1.0E-07
	R2333	301212	6259797	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.4E-05	2.0E-04	3.8E-05	3.3E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.6E-10	6.0E-08	5.4E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.1E-09	9.8E-08
	R2334	301262	6259797	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.6E-08
	R2335	301312	6259797	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.6E-05	3.1E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.8E-08	5.2E-09	3.5E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.5E-07	2.6E-08	8.8E-09	9.4E-08
	R2336	298771	6252921	1.3E-06	1.3E-06	1.2E-05	6.6E-07	1.3E-06	3.6E-05	1.6E-04	3.0E-05	2.6E-06	5.3E-09	1.2E-08	1.3E-09	9.2E-12	4.5E-10	4.9E-08	4.4E-09	2.9E-11	2.8E-09	3.3E-08	1.9E-08	1.2E-07	2.3E-07	2.9E-07	2.1E-08	7.4E-09	7.9E-08
	R2337	298821	6252921	1.3E-06	1.3E-06	1.2E-05	6.7E-07	1.3E-06	3.6E-05	1.6E-04	3.1E-05	2.7E-06	5.3E-09	1.2E-08	1.3E-09	9.4E-12	4.5E-10	4.9E-08	4.5E-09	2.9E-11	2.8E-09	3.3E-08	2.0E-08	1.2E-07	2.3E-07	2.9E-07	2.2E-08	7.5E-09	8.0E-08
	R2338	298871	6252921	1.3E-06	1.3E-06	1.2E-05	6.7E-07	1.3E-06	3.6E-05	1.6E-04	3.1E-05	2.7E-06	5.4E-09	1.2E-08	1.3E-09	9.4E-12	4.6E-10	5.0E-08	4.5E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.2E-07	2.3E-07	3.0E-07	2.2E-08	7.6E-09	8.1E-08
	R2339	298921	6252921	1.4E-06	1.4E-06	1.2E-05	6.8E-07	1.4E-06	3.7E-05	1.6E-04	3.1E-05	2.7E-06	5.5E-09	1.2E-08	1.4E-09	9.5E-12	4.6E-10	5.0E-08	4.5E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.3E-07	2.3E-07	3.0E-07	2.2E-08	7.6E-09	8.2E-08
	R2340	298971	6252921	1.4E-06	1.4E-06	1.2E-05	6.9E-07	1.4E-06	3.7E-05	1.6E-04	3.2E-05	2.7E-06	5.5E-09	1.2E-08	1.4E-09	9.6E-12	4.7E-10	5.1E-08	4.6E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.3E-07	2.4E-07	3.0E-07	2.2E-08	7.7E-09	8.2E-08
	R2341	299021	6252921	1.4E-06	1.4E-06	1.2E-05	6.9E-07	1.4E-06	3.7E-05	1.7E-04	3.2E-05	2.8E-06	5.5E-09	1.2E-08	1.4E-09	9.7E-12	4.7E-10	5.1E-08	4.6E-09	3.0E-11	2.9E-09	3.5E-08	2.0E-08	1.3E-07	2.4E-07	3.0E-07	2.3E-08	7.7E-09	8.3E-08
	R2342	299071	6252921	1.4E-06	1.4E-06	1.2E-05	6.9E-07	1.4E-06	3.7E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.2E-08	1.4E-09	9.7E-12	4.7E-10	5.1E-08	4.6E-09	3.1E-11	2.9E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.8E-09	8.3E-08
	R2343	299121	6252921	1.4E-06	1.4E-06	1.3E-05	7.0E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.8E-12	4.7E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.8E-09	8.4E-08
	R2344	299171	6252921	1.4E-06	1.4E-06	1.3E-05	7.0E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.9E-12	4.8E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.9E-09	8.5E-08
	R2345	299221	6252921	1.4E-06	1.4E-06	1.3E-05	7.1E-07	1.4E-06	3.8E-05	1.7E-04	3.3E-05	2.8E-06	5.7E-09	1.3E-08	1.4E-09	9.9E-12	4.8E-10	5.3E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	8.0E-09	8.5E-08
	R2346	299271	6252921	1.4E-06	1.4E-06	1.3E-05	7.1E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.7E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.1E-11	3.0E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.1E-07	2.3E-08	8.0E-09	8.6E-08
	R2347	299321	6252921	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.7E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.2E-11	3.0E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.3E-08	8.0E-09	8.6E-08
	R2348	299371	6252921	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.1E-09	8.7E-08
	R2349	299421	6252921	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	3.9E-05	1.8E-04	3.4E-05	2.9E-06	5.8E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.4E-08	4.9E-09	3.2E-11	3.1E-09	3.6E-08	2.2E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.8E-08
	R2350	299471	6252921	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	2.9E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.4E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.8E-08
	R2351	299521	6252921	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.1E-10	5.5E-08	5.0E-09	3.3E-11	3.2E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.3E-09	8.9E-08
	R2352	299571	6252921	1.5E-06	1.5E-06	1.4E-05	7.5E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.0E-09	1.4E-08	1.5E-09	1.1E-11	5.1E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.4E-09	9.0E-08
	R2353	299621	6252921	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.6E-08	5.1E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.5E-09	9.1E-08
	R2354	299671	6252921	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.2E-05	1.8E-04	3.5E-05	3.1E-06	6.2E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.3E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2355	299721	6252921	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.5E-09	1.1E-11	5.3E-10	5.7E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.3E-08
	R2356	299771	6252921	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.3E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2357	299821	6252921	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.6E-08	5.1E-09	3.4E-11	3.2E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.5E-09	9.2E-08
	R2358	299871	6252921	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.6E-08	5.1E-09	3.3E-11	3.2E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.5E-09	9.1E-08
	R2359	299921	6252921	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.6E-08	5.1E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.5E-09	9.1E-08
	R2360	299971	6252921	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.5E-09	9.1E-08
	R2361	300021	6252921	1.5E-06	1.5E-06	1.4E-05	7.5E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.0E-09	1.4E-08	1.5E-09	1.1E-11	5.1E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.4E-09	9.0E-08
	R2362	300071	6252921	1.5E-06	1.5E-06	1.3E-05	7.5E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	6.0E-09	1.3E-08	1.5E-09	1.0E-11	5.1E-10	5.5E-08	5.0E-09	3.3E-11	3.2E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.4E-09	9.0E-08
	R2363	300121	6252921	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.5E-08	4.9E-09	3.3E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.3E-09	8.9E-08
	R2364	300171	6252921	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	2.9E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.4E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.8E-08
	R2365	300221	6252921	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	3.9E-05	1.8E-04	3.4E-05	2.9E-06	5.8E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.4E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.8E-08
	R2366	300271	6252921	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.5E-09	1.0E-11	4.9E-10	5.4E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.1E-09	8.7E-08
	R2367	300321	6252921	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.1E-09	8.7E-08
	R2368	300371	6252921	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.3E-08	8.1E-09	8.6E-08
	R2369	300421	6252921	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.7E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.2E-11	3.0E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.3E-08	8.0E-09	8.6E-08
	R2370	300471	6252921	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.7E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.2E-11	3.0E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.3E-08	8.0E-09	8.6E-08
	R2371	300521	6252921	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.7E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.1E-11	3.0E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.1E-07	2.3E-08	8.0E-09	8.6E-08
	R2372	300571	6252921	1.4E-06	1.4E-06	1.3E-05	7.1E-07	1.4E-06	3.8E-05	1.7E-04	3.3E-05	2.8E-06	5.7E-09	1.3E-08	1.4E-09	1.0E-11	4.8E-10	5.3E-08	4.7E-09	3.1E-11	3.0E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.1E-07	2.3E-08	8.0E-09	8.5E-08
	R2373	300621	6252921	1.4E-06	1.4E-06	1.3E-05	7.0E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.9E-12	4.8E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.9E-09	8.5E-08
	R2374	300671	6252921	1.4E-06	1.4E-06	1.3E-05	7.0E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.8E-12	4.7E-10	5.2E-08	4.6E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.8E-09	8.4E-08
	R2375	300721	6252921	1.4E-06	1.4E-06	1.2E-05	6.9E-07	1.4E-06	3.7E-05	1.7E-04	3.2E-05	2.8E-06	5.5E-09	1.2E-08	1.4E-09	9.7E-12	4.7E-10	5.1E-08	4.6E-09	3.0E-11	2.9E-09	3.5E-08	2.0E-08	1.3E-07	2.4E-07	3.0E-07	2.3E-08	7.8E-09	8.3E-08
	R2376	300771	6252921	1.4E-06	1.4E-06	1.2E-05	6.9E-07	1.4E-06	3.7E-05	1.6E-04	3.2E-05	2.7E-06	5.5E-09	1.2E-08	1.4E-09	9.6E-12	4.7E-10	5.1E-08	4.6E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.3E-07	2.4E-07	3.0E-07	2.2E-08	7.7E-09	8.2E-08
	R2377	300821	6252921	1.4E-06	1.4E-06	1.2E-05	6.8E-07	1.4E-06	3.7E-05	1.6E-04	3.1E-05	2.7E-06	5.5E-09	1.2E-08	1.4E-09	9.5E-12	4.6E-10	5.0E-08	4.5E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.3E-07	2.3E-07	3.0E-07	2.2E-08	7.6E-09	8.2E-08
	R2378	300871	6252921	1.4E-06	1.4E-06	1.2E-05	6.8E-07	1.4E-06	3.7E-05	1.6E-04	3.1E-05	2.7E-06	5.4E-09	1.2E-08	1.4E-09	9.5E-12	4.6E-10	5.0E-08	4.5E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.2E-07	2.3E-07	3.0E-07	2.2E-08	7.6E-09	8.1E-08
	R2379	300921	6252921	1.3E-06	1.3E-06	1.2E-05	6.7E-07	1.3E-06	3.6E-05	1.6E-04	3.1E-05	2.7E-06	5.4E-09	1.2E-08	1.3E-09	9.4E-12	4.6E-10	5.0E-08	4.5E-09	3.0E-11	2.8E-09	3.4E-08	2.0E-08	1.2E-07	2.3E-07	3.0E-07	2.2E-08	7.5E-09	8.1E-08

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																										
													Metal									Heavy Metal								
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R2380	300971	6252921	1.3E-06	1.3E-06	1.2E-05	6.7E-07	1.3E-06	3.6E-05	1.6E-04	3.1E-05	2.7E-06	5.3E-09	1.2E-08	1.3E-09	9.3E-12	4.5E-10	4.9E-08	4.4E-09	2.9E-11	2.8E-09	3.3E-08	2.0E-08	1.2E-07	2.3E-07	2.9E-07	2.2E-08	7.5E-09	8.0E-08
	R2381	301021	6252921	1.3E-06	1.3E-06	1.2E-05	6.6E-07	1.3E-06	3.6E-05	1.6E-04	3.0E-05	2.6E-06	5.3E-09	1.2E-08	1.3E-09	9.3E-12	4.5E-10	4.9E-08	4.4E-09	2.9E-11	2.8E-09	3.3E-08	2.0E-08	1.2E-07	2.3E-07	2.9E-07	2.2E-08	7.4E-09	7.9E-08
	R2382	301071	6252921	1.3E-06	1.3E-06	1.2E-05	6.6E-07	1.3E-06	3.5E-05	1.6E-04	3.0E-05	2.6E-06	5.2E-09	1.2E-08	1.3E-09	9.2E-12	4.5E-10	4.9E-08	4.4E-09	2.9E-11	2.8E-09	3.3E-08	1.9E-08	1.2E-07	2.3E-07	2.9E-07	2.1E-08	7.3E-09	7.9E-08
	R2383	301121	6252921	1.3E-06	1.3E-06	1.2E-05	6.5E-07	1.3E-06	3.5E-05	1.6E-04	3.0E-05	2.6E-06	5.2E-09	1.2E-08	1.3E-09	9.1E-12	4.4E-10	4.8E-08	4.3E-09	2.9E-11	2.8E-09	3.3E-08	1.9E-08	1.2E-07	2.2E-07	2.9E-07	2.1E-08	7.3E-09	7.8E-08
	R2384	301171	6252921	1.3E-06	1.3E-06	1.2E-05	6.5E-07	1.3E-06	3.5E-05	1.5E-04	3.0E-05	2.6E-06	5.2E-09	1.2E-08	1.3E-09	9.0E-12	4.4E-10	4.8E-08	4.3E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.2E-09	7.7E-08
	R2385	301221	6252921	1.3E-06	1.3E-06	1.2E-05	6.4E-07	1.3E-06	3.5E-05	1.5E-04	2.9E-05	2.6E-06	5.1E-09	1.2E-08	1.3E-09	9.0E-12	4.4E-10	4.7E-08	4.3E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.2E-09	7.7E-08
	R2386	301271	6252921	1.3E-06	1.3E-06	1.1E-05	6.4E-07	1.3E-06	3.4E-05	1.5E-04	2.9E-05	2.5E-06	5.1E-09	1.1E-08	1.3E-09	8.9E-12	4.3E-10	4.7E-08	4.2E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.1E-09	7.6E-08
	R2387	301321	6252921	1.3E-06	1.3E-06	1.1E-05	6.3E-07	1.3E-06	3.4E-05	1.5E-04	2.9E-05	2.5E-06	5.0E-09	1.1E-08	1.3E-09	8.8E-12	4.3E-10	4.7E-08	4.2E-09	2.8E-11	2.7E-09	3.1E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.1E-09	7.6E-08
	R2388	301371	6252921	1.2E-06	1.2E-06	1.1E-05	6.2E-07	1.2E-06	3.4E-05	1.5E-04	2.9E-05	2.5E-06	5.0E-09	1.1E-08	1.2E-09	8.7E-12	4.2E-10	4.6E-08	4.2E-09	2.7E-11	2.6E-09	3.1E-08	1.8E-08	1.1E-07	2.1E-07	2.7E-07	2.0E-08	7.0E-09	7.5E-08
	R2389	301421	6252921	1.2E-06	1.2E-06	1.1E-05	6.2E-07	1.2E-06	3.3E-05	1.5E-04	2.9E-05	2.5E-06	5.0E-09	1.1E-08	1.2E-09	8.7E-12	4.2E-10	4.6E-08	4.1E-09	2.7E-11	2.6E-09	3.1E-08	1.8E-08	1.1E-07	2.1E-07	2.7E-07	2.0E-08	6.9E-09	7.4E-08
	R2390	301471	6252921	1.2E-06	1.2E-06	1.1E-05	6.1E-07	1.2E-06	3.3E-05	1.5E-04	2.8E-05	2.5E-06	4.9E-09	1.1E-08	1.2E-09	8.6E-12	4.2E-10	4.5E-08	4.1E-09	2.7E-11	2.6E-09	3.1E-08	1.8E-08	1.1E-07	2.1E-07	2.7E-07	2.0E-08	6.9E-09	7.4E-08
	R2391	301521	6252921	1.2E-06	1.2E-06	1.1E-05	6.1E-07	1.2E-06	3.3E-05	1.5E-04	2.8E-05	2.4E-06	4.9E-09	1.1E-08	1.2E-09	8.5E-12	4.1E-10	4.5E-08	4.1E-09	2.7E-11	2.6E-09	3.0E-08	1.8E-08	1.1E-07	2.1E-07	2.7E-07	2.0E-08	6.8E-09	7.3E-08
	R2392	301571	6252921	1.2E-06	1.2E-06	1.1E-05	6.1E-07	1.2E-06	3.3E-05	1.5E-04	2.8E-05	2.4E-06	4.8E-09	1.1E-08	1.2E-09	8.5E-12	4.1E-10	4.5E-08	4.0E-09	2.7E-11	2.6E-09	3.0E-08	1.8E-08	1.1E-07	2.1E-07	2.7E-07	2.0E-08	6.8E-09	7.3E-08
	R2393	301621	6252921	1.2E-06	1.2E-06	1.1E-05	6.0E-07	1.2E-06	3.2E-05	1.4E-04	2.8E-05	2.4E-06	4.8E-09	1.1E-08	1.2E-09	8.4E-12	4.1E-10	4.4E-08	4.0E-09	2.6E-11	2.5E-09	3.0E-08	1.8E-08	1.1E-07	2.1E-07	2.6E-07	2.0E-08	6.7E-09	7.2E-08
	R2394	298771	6252971	1.3E-06	1.3E-06	1.2E-05	6.6E-07	1.3E-06	3.6E-05	1.6E-04	3.1E-05	2.7E-06	5.3E-09	1.2E-08	1.3E-09	9.3E-12	4.5E-10	4.9E-08	4.4E-09	2.9E-11	2.8E-09	3.3E-08	2.0E-08	1.2E-07	2.3E-07	2.9E-07	2.2E-08	7.4E-09	8.0E-08
	R2395	298821	6252971	1.3E-06	1.3E-06	1.2E-05	6.7E-07	1.3E-06	3.6E-05	1.6E-04	3.1E-05	2.7E-06	5.4E-09	1.2E-08	1.3E-09	9.4E-12	4.6E-10	5.0E-08	4.5E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.2E-07	2.3E-07	3.0E-07	2.2E-08	7.5E-09	8.1E-08
	R2396	298871	6252971	1.4E-06	1.4E-06	1.2E-05	6.8E-07	1.4E-06	3.7E-05	1.6E-04	3.1E-05	2.7E-06	5.4E-09	1.2E-08	1.4E-09	9.5E-12	4.6E-10	5.0E-08	4.5E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.2E-07	2.3E-07	3.0E-07	2.2E-08	7.6E-09	8.1E-08
	R2397	298921	6252971	1.4E-06	1.4E-06	1.2E-05	6.8E-07	1.4E-06	3.7E-05	1.6E-04	3.1E-05	2.7E-06	5.5E-09	1.2E-08	1.4E-09	9.6E-12	4.7E-10	5.1E-08	4.6E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.3E-07	2.4E-07	3.0E-07	2.2E-08	7.7E-09	8.2E-08
	R2398	298971	6252971	1.4E-06	1.4E-06	1.2E-05	6.9E-07	1.4E-06	3.7E-05	1.7E-04	3.2E-05	2.8E-06	5.5E-09	1.2E-08	1.4E-09	9.7E-12	4.7E-10	5.1E-08	4.6E-09	3.0E-11	2.9E-09	3.5E-08	2.0E-08	1.3E-07	2.4E-07	3.0E-07	2.3E-08	7.7E-09	8.3E-08
	R2399	299021	6252971	1.4E-06	1.4E-06	1.3E-05	7.0E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.7E-12	4.7E-10	5.2E-08	4.6E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.8E-09	8.4E-08
	R2400	299071	6252971	1.4E-06	1.4E-06	1.3E-05	7.0E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.8E-12	4.8E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.8E-09	8.4E-08
	R2401	299121	6252971	1.4E-06	1.4E-06	1.3E-05	7.0E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.9E-12	4.8E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.9E-09	8.5E-08
	R2402	299171	6252971	1.4E-06	1.4E-06	1.3E-05	7.1E-07	1.4E-06	3.8E-05	1.7E-04	3.3E-05	2.8E-06	5.7E-09	1.3E-08	1.4E-09	9.9E-12	4.8E-10	5.3E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	8.0E-09	8.5E-08
	R2403	299221	6252971	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.7E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.1E-11	3.0E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.1E-07	2.3E-08	8.0E-09	8.6E-08
	R2404	299271	6252971	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.3E-08	8.1E-09	8.6E-08
	R2405	299321	6252971	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.5E-09	1.0E-11	4.9E-10	5.4E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.1E-09	8.7E-08
	R2406	299371	6252971	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	3.9E-05	1.8E-04	3.4E-05	2.9E-06	5.8E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.4E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.8E-08
	R2407	299421	6252971	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.5E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.5E-07	3.2E-07	2.4E-08	8.3E-09	8.9E-08
	R2408	299471	6252971	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.1E-10	5.5E-08	5.0E-09	3.3E-11	3.2E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.3E-09	8.9E-08
	R2409	299521	6252971	1.5E-06	1.5E-06	1.4E-05	7.5E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.0E-09	1.4E-08	1.5E-09	1.1E-11	5.1E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.4E-09	9.0E-08
	R2410	299571	6252971	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.6E-08	5.1E-09	3.3E-11	3.2E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.5E-09	9.1E-08
	R2411	299621	6252971	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.3E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2412	299671	6252971	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.2E-05	1.9E-04	3.5E-05	3.1E-06	6.2E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.6E-09	9.3E-08
	R2413	299721	6252971	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.2E-05	1.8E-04	3.5E-05	3.1E-06	6.2E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.3E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2414	299771	6252971	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.2E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2415	299821	6252971	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.6E-08	5.1E-09	3.4E-11	3.2E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.5E-09	9.2E-08
	R2416	299871	6252971	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.6E-08	5.1E-09	3.4E-11	3.2E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.5E-09	9.1E-08
	R2417	299921	6252971	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.6E-08	5.1E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.5E-09	9.1E-08
	R2418	299971	6252971	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.5E-09	9.1E-08
	R2419	300021	6252971	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.1E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.5E-09	9.1E-08
	R2420	300071	6252971	1.5E-06	1.5E-06	1.3E-05	7.5E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	6.0E-09	1.3E-08	1.5E-09	1.0E-11	5.1E-10	5.5E-08	5.0E-09	3.3E-11	3.2E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.4E-09	9.0E-08
	R2421	300121	6252971	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.5E-08	4.9E-09	3.3E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.3E-09	8.9E-08
	R2422	300171	6252971	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.5E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.5E-07	3.2E-07	2.4E-08	8.3E-09	8.9E-08
	R2423	300221	6252971	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	2.9E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.4E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.8E-08
	R2424	300271	6252971	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	3.9E-05	1.8E-04	3.4E-05	2.9E-06	5.8E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.4E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.8E-08
	R2425	300321	6252971	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.5E-09	1.0E-11	4.9E-10	5.4E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.2E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.1E-09	8.7E-08
	R2426	300371	6252971	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.4E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.1E-09	8.7E-08
	R2427	300421	6252971	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.4E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.1E-09	8.7E-08
	R2428	300471	6252971	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.1E-09	8.7E-08
	R2429	300521	6252971	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.3E-08	8.1E-09	8.6E-08
	R2430	300571	6252971	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.7E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.1E-11	3.0E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.1E-07	2.3E-08	8.0E-09	8.6E-08
	R2431	300621	6252971	1.4E-06	1.4E-06	1.3E-05	7.1E-07	1.4E-06	3.8E-05	1.7E-04	3.3E-05	2.8E-06	5.7E-09	1.3E-08	1.4E-09	9.9E-12	4.8E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.9E-09	8.5E-08
	R2432	300671	6252971	1.4E-06	1.4E-06	1.3E-05	7.0E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.8E-12	4.8E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.9E-09	8.4E-08
	R2433	300721	6252971	1.4E-06	1.4E-06	1.3E-05	7.0E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.7E-12	4.7E-10	5.2E-08	4.6E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.8E-09	8.4E-08
	R2434	300771	6252971	1.4E-06	1.4E-06	1.2E-05	6.9E-07	1.4E-06	3.7E-05	1.7E-04	3.2E-05	2.8E-06	5.5E-09	1.2E-08	1.4E-09	9.7E-12	4.7E-10	5.1E-08	4.6E-09	3.0E-11	2.9E-09	3.5E-08	2.0E-08	1.3E-07	2.4E-07	3.0E-07	2.3E-08	7.7E-09	8.3E-08
	R2435	300821	6252971	1.4E-06	1.4E-06	1.2E-05	6.9E-07	1.4E-06	3.7E-05	1.6E-04	3.2E-05	2.7E-06	5.5E-09	1.2E-08	1.4E-09	9.6E-12	4.7E-10	5.1E-08	4.6E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.3E-07	2.4E-07	3.0E-07	2.2E-08	7.7E-09	8.2E-08
	R2436	300871	6252971	1.4E-06	1.4E-06	1.2E-05	6.8E-07	1.4E-06	3.7E-05	1.6E-04	3.1E-05	2.7E-06	5.4E-09	1.2E-08	1.4E-09	9.5E-12	4.6E-10	5.0E-08	4.5E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.3E-07	2.3E-07	3.0E-07	2.2E-08	7.6E-09	8.2E-08
	R2437	300921	6252971	1.4E-06	1.4E-06	1.2E-05	6.8E-07	1.4E-06	3.6E-05	1.6E-04	3.1E-05	2.7E-06	5.4E-09	1.2E-08	1.4E-09	9.5E-12	4.6E-10	5.0E-08	4.5E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.2E-07	2.3E-07	3.0E-07	2.2E-08	7.6E-09	8.1E-08
	R2438	300971	6252971	1.3E-06	1.3E-06	1.2E-05	6.7E-07	1.3E-06	3.6E-05	1.6E-04	3.1E-05	2.7E-06	5.4E-09	1.2E-08	1.3E-09	9.4E-12	4.6E-10	5.0E-08	4.5E-09	2.9E-11	2.8E-09	3.3E-08	2.0E-08	1.2E-07	2.3E-07	2.9E-07	2.2E-08	7.5E-09	8.0E-08
	R2439	301021	6252971	1.3E-06	1.3E-06	1.2E-05	6.6E-07	1.3E-06	3.6E-05	1.6E-04	3.1E-05	2.7E-06	5.3E-09	1.2E-08	1.3E-09	9.3E-12	4.5E-10	4.9E-08	4.4E-09	2.9E-11	2.8E-09	3.3E-08	2.0E-08	1.2E-07	2.3E-07	2.9E-07	2.2E-08	7.4E-09	8.0E-08
	R2440	301071	6252971	1.3E-06	1.3E-06	1.2E-05	6.6E-07	1.3E-06	3.6E-05	1.6E-04	3.0E-05	2.6E-06	5.3E-09	1.2E-08	1.3E-09	9.2E-12	4.5E-10	4.9E-08	4.4E-09	2.9E-11	2.8E-09	3.3E-08	2.0E-08	1.2E-07	2.3E-07	2.9E-07	2.1E-08	7.4E-09	7.9E-08

Scenario 1 and Scenario 3 Weighted Average
Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																									
													Metal									Heavy Metal							
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3	mg/m^3
In-stack Concentration (mg/Nm^3)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R2441	301121	6252971	1.3E-06	1.3E-06	1.2E-05	6.5E-07	1.3E-06	3.5E-05	1.6E-04	3.0E-05	2.6E-06	5.2E-09	1.2E-08	1.3E-09	9.2E-12	4.4E-10	4.8E-08	4.4E-09	2.9E-11	2.8E-09	3.3E-08	1.9E-08	1.2E-07	2.2E-07	2.9E-07	2.1E-08	7.3E-09	7.8E-08
	R2442	301171	6252971	1.3E-06	1.3E-06	1.2E-05	6.5E-07	1.3E-06	3.5E-05	1.6E-04	3.0E-05	2.6E-06	5.2E-09	1.2E-08	1.3E-09	9.1E-12	4.4E-10	4.8E-08	4.3E-09	2.9E-11	2.8E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.9E-07	2.1E-08	7.3E-09	7.8E-08
	R2443	301221	6252971	1.3E-06	1.3E-06	1.2E-05	6.4E-07	1.3E-06	3.5E-05	1.5E-04	3.0E-05	2.6E-06	5.1E-09	1.2E-08	1.3E-09	9.0E-12	4.4E-10	4.8E-08	4.3E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.2E-09	7.7E-08
	R2444	301271	6252971	1.3E-06	1.3E-06	1.1E-05	6.4E-07	1.3E-06	3.4E-05	1.5E-04	2.9E-05	2.6E-06	5.1E-09	1.1E-08	1.3E-09	8.9E-12	4.3E-10	4.7E-08	4.3E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.1E-09	7.7E-08
	R2445	301321	6252971	1.3E-06	1.3E-06	1.1E-05	6.3E-07	1.3E-06	3.4E-05	1.5E-04	2.9E-05	2.5E-06	5.1E-09	1.1E-08	1.3E-09	8.9E-12	4.3E-10	4.7E-08	4.2E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.1E-09	7.6E-08
	R2446	301371	6252971	1.3E-06	1.3E-06	1.1E-05	6.3E-07	1.3E-06	3.4E-05	1.5E-04	2.9E-05	2.5E-06	5.0E-09	1.1E-08	1.3E-09	8.8E-12	4.3E-10	4.6E-08	4.2E-09	2.8E-11	2.7E-09	3.1E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.0E-08	7.0E-09	7.5E-08
	R2447	301421	6252971	1.2E-06	1.2E-06	1.1E-05	6.2E-07	1.2E-06	3.4E-05	1.5E-04	2.9E-05	2.5E-06	5.0E-09	1.1E-08	1.2E-09	8.7E-12	4.2E-10	4.6E-08	4.1E-09	2.7E-11	2.6E-09	3.1E-08	1.8E-08	1.1E-07	2.1E-07	2.7E-07	2.0E-08	7.0E-09	7.5E-08
	R2448	301471	6252971	1.2E-06	1.2E-06	1.1E-05	6.2E-07	1.2E-06	3.3E-05	1.5E-04	2.8E-05	2.5E-06	4.9E-09	1.1E-08	1.2E-09	8.6E-12	4.2E-10	4.6E-08	4.1E-09	2.7E-11	2.6E-09	3.1E-08	1.8E-08	1.1E-07	2.1E-07	2.7E-07	2.0E-08	6.9E-09	7.4E-08
	R2449	301521	6252971	1.2E-06	1.2E-06	1.1E-05	6.1E-07	1.2E-06	3.3E-05	1.5E-04	2.8E-05	2.4E-06	4.9E-09	1.1E-08	1.2E-09	8.6E-12	4.2E-10	4.5E-08	4.1E-09	2.7E-11	2.6E-09	3.1E-08	1.8E-08	1.1E-07	2.1E-07	2.7E-07	2.0E-08	6.9E-09	7.3E-08
	R2450	301571	6252971	1.2E-06	1.2E-06	1.1E-05	6.1E-07	1.2E-06	3.3E-05	1.5E-04	2.8E-05	2.4E-06	4.9E-09	1.1E-08	1.2E-09	8.5E-12	4.1E-10	4.5E-08	4.0E-09	2.7E-11	2.6E-09	3.0E-08	1.8E-08	1.1E-07	2.1E-07	2.7E-07	2.0E-08	6.8E-09	7.3E-08
	R2451	301621	6252971	1.2E-06	1.2E-06	1.1E-05	6.0E-07	1.2E-06	3.3E-05	1.4E-04	2.8E-05	2.4E-06	4.8E-09	1.1E-08	1.2E-09	8.4E-12	4.1E-10	4.5E-08	4.0E-09	2.7E-11	2.6E-09	3.0E-08	1.8E-08	1.1E-07	2.1E-07	2.7E-07	2.0E-08	6.7E-09	7.2E-08
	R2452	298771	6253021	1.3E-06	1.3E-06	1.2E-05	6.7E-07	1.3E-06	3.6E-05	1.6E-04	3.1E-05	2.7E-06	5.4E-09	1.2E-08	1.3E-09	9.4E-12	4.6E-10	5.0E-08	4.5E-09	3.0E-11	2.8E-09	3.4E-08	2.0E-08	1.2E-07	2.3E-07	3.0E-07	2.2E-08	7.5E-09	8.0E-08
	R2453	298821	6253021	1.4E-06	1.4E-06	1.2E-05	6.8E-07	1.4E-06	3.7E-05	1.6E-04	3.1E-05	2.7E-06	5.4E-09	1.2E-08	1.4E-09	9.5E-12	4.6E-10	5.0E-08	4.5E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.2E-07	2.3E-07	3.0E-07	2.2E-08	7.6E-09	8.1E-08
	R2454	298871	6253021	1.4E-06	1.4E-06	1.2E-05	6.8E-07	1.4E-06	3.7E-05	1.6E-04	3.1E-05	2.7E-06	5.5E-09	1.2E-08	1.4E-09	9.6E-12	4.7E-10	5.1E-08	4.6E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.3E-07	2.4E-07	3.0E-07	2.2E-08	7.7E-09	8.2E-08
	R2455	298921	6253021	1.4E-06	1.4E-06	1.2E-05	6.9E-07	1.4E-06	3.7E-05	1.7E-04	3.2E-05	2.8E-06	5.5E-09	1.2E-08	1.4E-09	9.7E-12	4.7E-10	5.1E-08	4.6E-09	3.0E-11	2.9E-09	3.5E-08	2.0E-08	1.3E-07	2.4E-07	3.0E-07	2.3E-08	7.7E-09	8.3E-08
	R2456	298971	6253021	1.4E-06	1.4E-06	1.3E-05	7.0E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.7E-12	4.7E-10	5.2E-08	4.6E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.8E-09	8.4E-08
	R2457	299021	6253021	1.4E-06	1.4E-06	1.3E-05	7.0E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.8E-12	4.8E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.9E-09	8.4E-08
	R2458	299071	6253021	1.4E-06	1.4E-06	1.3E-05	7.1E-07	1.4E-06	3.8E-05	1.7E-04	3.3E-05	2.8E-06	5.7E-09	1.3E-08	1.4E-09	9.9E-12	4.8E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.9E-09	8.5E-08
	R2459	299121	6253021	1.4E-06	1.4E-06	1.3E-05	7.1E-07	1.4E-06	3.8E-05	1.7E-04	3.3E-05	2.8E-06	5.7E-09	1.3E-08	1.4E-09	1.0E-11	4.8E-10	5.3E-08	4.7E-09	3.1E-11	3.0E-09	3.6E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	8.0E-09	8.5E-08
	R2460	299171	6253021	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.7E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.2E-11	3.0E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.3E-08	8.0E-09	8.6E-08
	R2461	299221	6253021	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.1E-09	8.7E-08
	R2462	299271	6253021	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.5E-09	1.0E-11	4.9E-10	5.4E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.2E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.7E-08
	R2463	299321	6253021	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	2.9E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.4E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.8E-08
	R2464	299371	6253021	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.5E-08	4.9E-09	3.3E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.5E-07	3.3E-07	2.4E-08	8.3E-09	8.9E-08
	R2465	299421	6253021	1.5E-06	1.5E-06	1.3E-05	7.5E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	6.0E-09	1.3E-08	1.5E-09	1.0E-11	5.1E-10	5.5E-08	5.0E-09	3.3E-11	3.2E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.3E-09	8.9E-08
	R2466	299471	6253021	1.5E-06	1.5E-06	1.4E-05	7.5E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.0E-09	1.4E-08	1.5E-09	1.1E-11	5.1E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.4E-09	9.0E-08
	R2467	299521	6253021	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.6E-08	5.1E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.5E-09	9.1E-08
	R2468	299571	6253021	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.6E-08	5.1E-09	3.4E-11	3.2E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.5E-09	9.2E-08
	R2469	299621	6253021	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.3E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2470	299671	6253021	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.3E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2471	299721	6253021	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.2E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2472	299771	6253021	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.2E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2473	299821	6253021	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.2E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2474	299871	6253021	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.2E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2475	299921	6253021	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.2E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2476	299971	6253021	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.3E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2477	300021	6253021	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.2E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2478	300071	6253021	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.5E-09	9.1E-08
	R2479	300121	6253021	1.5E-06	1.5E-06	1.3E-05	7.5E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	6.0E-09	1.3E-08	1.5E-09	1.0E-11	5.1E-10	5.5E-08	5.0E-09	3.3E-11	3.2E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.4E-09	9.0E-08
	R2480	300171	6253021	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.1E-10	5.5E-08	4.9E-09	3.3E-11	3.2E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.3E-09	8.9E-08
	R2481	300221	6253021	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.5E-08	4.9E-09	3.3E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.5E-07	3.3E-07	2.4E-08	8.3E-09	8.9E-08
	R2482	300271	6253021	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	2.9E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.4E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.8E-08
	R2483	300321	6253021	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	2.9E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.4E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.8E-08
	R2484	300371	6253021	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	3.9E-05	1.8E-04	3.4E-05	2.9E-06	5.8E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.4E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.8E-08
	R2485	300421	6253021	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.5E-09	1.0E-11	4.9E-10	5.4E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.2E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.7E-08
	R2486	300471	6253021	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.5E-09	1.0E-11	4.9E-10	5.4E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.1E-09	8.7E-08
	R2487	300521	6253021	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.1E-09	8.7E-08
	R2488	300571	6253021	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.7E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.2E-11	3.0E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.3E-08	8.0E-09	8.6E-08
	R2489	300621	6253021	1.4E-06	1.4E-06	1.3E-05	7.1E-07	1.4E-06	3.8E-05	1.7E-04	3.3E-05	2.8E-06	5.7E-09	1.3E-08	1.4E-09	1.0E-11	4.8E-10	5.3E-08	4.7E-09	3.1E-11	3.0E-09	3.6E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	8.0E-09	8.5E-08
	R2490	300671	6253021	1.4E-06	1.4E-06	1.3E-05	7.1E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.9E-12	4.8E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.9E-09	8.5E-08
	R2491	300721	6253021	1.4E-06	1.4E-06	1.3E-05	7.0E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.8E-12	4.8E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.8E-09	8.4E-08
	R2492	300771	6253021	1.4E-06	1.4E-06	1.2E-05	6.9E-07	1.4E-06	3.7E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.2E-08	1.4E-09	9.7E-12	4.7E-10	5.1E-08	4.6E-09	3.1E-11	2.9E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.8E-09	8.3E-08
	R2493	300821	6253021	1.4E-06	1.4E-06	1.2E-05	6.9E-07	1.4E-06	3.7E-05	1.7E-04	3.2E-05	2.8E-06	5.5E-09	1.2E-08	1.4E-09	9.6E-12	4.7E-10	5.1E-08	4.6E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.3E-07	2.4E-07	3.0E-07	2.2E-08	7.7E-09	8.3E-08
	R2494	300871	6253021	1.4E-06	1.4E-06	1.2E-05	6.8E-07	1.4E-06	3.7E-05	1.6E-04	3.1E-05	2.7E-06	5.5E-09	1.2E-08	1.4E-09	9.6E-12	4.7E-10	5.1E-08	4.6E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.3E-07	2.4E-07	3.0E-07	2.2E-08	7.7E-09	8.2E-08
	R2495	300921	6253021	1.4E-06	1.4E-06	1.2E-05	6.8E-07	1.4E-06	3.7E-05	1.6E-04	3.1E-05	2.7E-06	5.4E-09	1.2E-08	1.4E-09	9.5E-12	4.6E-10	5.0E-08	4.5E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.2E-07	2.3E-07	3.0E-07	2.2E-08	7.6E-09	8.1E-08
	R2496	300971	6253021	1.3E-06	1.3E-06	1.2E-05	6.7E-07	1.3E-06	3.6E-05	1.6E-04	3.1E-05	2.7E-06	5.4E-09	1.2E-08	1.3E-09	9.4E-12	4.6E-10	5.0E-08	4.5E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.2E-07	2.3E-07	3.0E-07	2.2E-08	7.5E-09	8.1E-08
	R2497	301021	6253021	1.3E-06	1.3E-06	1.2E-05	6.7E-07	1.3E-06	3.6E-05	1.6E-04	3.1E-05	2.7E-06	5.3E-09	1.2E-08	1.3E-09	9.4E-12	4.5E-10	4.9E-08	4.4E-09	2.9E-11	2.8E-09	3.3E-08	2.0E-08	1.2E-07	2.3E-07	2.9E-07	2.2E-08	7.5E-09	8.0E-08
	R2498	301071	6253021	1.3E-06	1.3E-06	1.2E-05	6.6E-07	1.3E-06	3.6E-05	1.6E-04	3.0E-05	2.7E-06	5.3E-09	1.2E-08	1.3E-09	9.3E-12	4.5E-10	4.9E-08	4.4E-09	2.9E-11	2.8E-09	3.3E-08	2.0E-08	1.2E-07	2.3E-07	2.9E-07	2.2E-08	7.4E-09	8.0E-08
	R2499	301121	6253021	1.3E-06	1.3E-06	1.2E-05	6.6E-07	1.3E-06	3.5E-05	1.6E-04	3.0E-05	2.6E-06	5.3E-09	1.2E-08	1.3E-09	9.2E-12	4.5E-10	4.8E-08	4.4E-09	2.9E-11	2.8E-09	3.3E-08	1.9E-08	1.2E-07	2.3E-07	2.9E-07	2.1E-08	7.4E-09	7.9E-08
	R2500	301171	6253021	1.3E-06	1.3E-06	1.2E-05	6.5E-07	1.3E-06	3.5E-05	1.6E-04	3.0E-05	2.6E-06	5.2E-09	1.2E-08	1.3E-09	9.1E-12	4.4E-10	4.8E-08	4.3E-09	2.9E-11	2.8E-09	3.3E-08	1.9E-08	1.2E-07	2.2E-07	2.9E-07	2.1E-08	7.3E-09	7.8E-08
	R2501	301221	6253021	1.3E-06	1.3E-06	1.2E-05	6.5E-07	1.3E-06	3.5E-05	1.6E-04	3.0E-05	2.6E-06	5.2E-09	1.2E-08	1.3E-09	9.1E-12	4.4E-10	4.8E-08	4.3E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.2E-09	7.8E-08

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor				Annual GLCs																								
													Metal									Heavy Metal						
	ID	X	Y	PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R2502	301271	6253021	1.3E-06	1.3E-06	1.2E-05	6.4E-07	1.3E-06	3.5E-05	1.5E-04	3.0E-05	2.6E-06	5.1E-09	1.2E-08	1.3E-09	9.0E-12	4.4E-10	4.7E-08	4.3E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.2E-09	7.7E-08
	R2503	301321	6253021	1.3E-06	1.3E-06	1.1E-05	6.4E-07	1.3E-06	3.4E-05	1.5E-04	2.9E-05	2.5E-06	5.1E-09	1.1E-08	1.3E-09	8.9E-12	4.3E-10	4.7E-08	4.2E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.1E-09	7.6E-08
	R2504	301371	6253021	1.3E-06	1.3E-06	1.1E-05	6.3E-07	1.3E-06	3.4E-05	1.5E-04	2.9E-05	2.5E-06	5.0E-09	1.1E-08	1.3E-09	8.8E-12	4.3E-10	4.7E-08	4.2E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.1E-09	7.6E-08
	R2505	301421	6253021	1.2E-06	1.2E-06	1.1E-05	6.2E-07	1.2E-06	3.4E-05	1.5E-04	2.9E-05	2.5E-06	5.0E-09	1.1E-08	1.2E-09	8.7E-12	4.2E-10	4.6E-08	4.2E-09	2.7E-11	2.6E-09	3.1E-08	1.8E-08	1.1E-07	2.1E-07	2.7E-07	2.0E-08	7.0E-09	7.5E-08
	R2506	301471	6253021	1.2E-06	1.2E-06	1.1E-05	6.2E-07	1.2E-06	3.3E-05	1.5E-04	2.9E-05	2.5E-06	5.0E-09	1.1E-08	1.2E-09	8.7E-12	4.2E-10	4.6E-08	4.1E-09	2.7E-11	2.6E-09	3.1E-08	1.8E-08	1.1E-07	2.1E-07	2.7E-07	2.0E-08	6.9E-09	7.4E-08
	R2507	301521	6253021	1.2E-06	1.2E-06	1.1E-05	6.1E-07	1.2E-06	3.3E-05	1.5E-04	2.8E-05	2.5E-06	4.9E-09	1.1E-08	1.2E-09	8.6E-12	4.2E-10	4.5E-08	4.1E-09	2.7E-11	2.6E-09	3.1E-08	1.8E-08	1.1E-07	2.1E-07	2.7E-07	2.0E-08	6.9E-09	7.4E-08
	R2508	301571	6253021	1.2E-06	1.2E-06	1.1E-05	6.1E-07	1.2E-06	3.3E-05	1.5E-04	2.8E-05	2.4E-06	4.9E-09	1.1E-08	1.2E-09	8.5E-12	4.1E-10	4.5E-08	4.1E-09	2.7E-11	2.6E-09	3.1E-08	1.8E-08	1.1E-07	2.1E-07	2.7E-07	2.0E-08	6.8E-09	7.3E-08
	R2509	301621	6253021	1.2E-06	1.2E-06	1.1E-05	6.1E-07	1.2E-06	3.3E-05	1.5E-04	2.8E-05	2.4E-06	4.8E-09	1.1E-08	1.2E-09	8.5E-12	4.1E-10	4.5E-08	4.0E-09	2.7E-11	2.6E-09	3.0E-08	1.8E-08	1.1E-07	2.1E-07	2.7E-07	2.0E-08	6.8E-09	7.3E-08
	R2510	298771	6253071	1.4E-06	1.4E-06	1.2E-05	6.8E-07	1.4E-06	3.7E-05	1.6E-04	3.1E-05	2.7E-06	5.4E-09	1.2E-08	1.4E-09	9.5E-12	4.6E-10	5.0E-08	4.5E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.2E-07	2.3E-07	3.0E-07	2.2E-08	7.6E-09	8.1E-08
	R2511	298821	6253071	1.4E-06	1.4E-06	1.2E-05	6.9E-07	1.4E-06	3.7E-05	1.6E-04	3.2E-05	2.7E-06	5.5E-09	1.2E-08	1.4E-09	9.6E-12	4.7E-10	5.1E-08	4.6E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.3E-07	2.4E-07	3.0E-07	2.2E-08	7.7E-09	8.2E-08
	R2512	298871	6253071	1.4E-06	1.4E-06	1.2E-05	6.9E-07	1.4E-06	3.7E-05	1.7E-04	3.2E-05	2.8E-06	5.5E-09	1.2E-08	1.4E-09	9.7E-12	4.7E-10	5.1E-08	4.6E-09	3.0E-11	2.9E-09	3.5E-08	2.0E-08	1.3E-07	2.4E-07	3.0E-07	2.3E-08	7.7E-09	8.3E-08
	R2513	298921	6253071	1.4E-06	1.4E-06	1.3E-05	7.0E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.8E-12	4.7E-10	5.2E-08	4.6E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.8E-09	8.4E-08
	R2514	298971	6253071	1.4E-06	1.4E-06	1.3E-05	7.0E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.8E-12	4.8E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.9E-09	8.4E-08
	R2515	299021	6253071	1.4E-06	1.4E-06	1.3E-05	7.1E-07	1.4E-06	3.8E-05	1.7E-04	3.3E-05	2.8E-06	5.7E-09	1.3E-08	1.4E-09	9.9E-12	4.8E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.9E-09	8.5E-08
	R2516	299071	6253071	1.4E-06	1.4E-06	1.3E-05	7.1E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.7E-09	1.3E-08	1.4E-09	1.0E-11	4.8E-10	5.3E-08	4.7E-09	3.1E-11	3.0E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.1E-07	2.3E-08	8.0E-09	8.6E-08
	R2517	299121	6253071	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.2E-11	3.0E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.3E-08	8.1E-09	8.6E-08
	R2518	299171	6253071	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.4E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.1E-09	8.7E-08
	R2519	299221	6253071	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	3.9E-05	1.7E-04	3.4E-05	2.9E-06	5.8E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.4E-08	4.9E-09	3.2E-11	3.1E-09	3.6E-08	2.2E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.7E-08
	R2520	299271	6253071	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	2.9E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.4E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.8E-08
	R2521	299321	6253071	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.5E-08	4.9E-09	3.3E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.5E-07	3.3E-07	2.4E-08	8.3E-09	8.9E-08
	R2522	299371	6253071	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.1E-10	5.5E-08	5.0E-09	3.3E-11	3.2E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.3E-09	8.9E-08
	R2523	299421	6253071	1.5E-06	1.5E-06	1.3E-05	7.5E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	6.0E-09	1.3E-08	1.5E-09	1.0E-11	5.1E-10	5.5E-08	5.0E-09	3.3E-11	3.2E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.4E-09	9.0E-08
	R2524	299471	6253071	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.1E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.5E-09	9.1E-08
	R2525	299521	6253071	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.6E-08	5.1E-09	3.4E-11	3.2E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.5E-09	9.2E-08
	R2526	299571	6253071	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.2E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2527	299621	6253071	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.2E-05	1.8E-04	3.5E-05	3.1E-06	6.2E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.3E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2528	299671	6253071	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.5E-09	1.1E-11	5.3E-10	5.7E-08	5.1E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.3E-08
	R2529	299721	6253071	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.5E-09	1.1E-11	5.3E-10	5.7E-08	5.1E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.3E-08
	R2530	299771	6253071	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.2E-05	1.9E-04	3.5E-05	3.1E-06	6.2E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.6E-09	9.3E-08
	R2531	299821	6253071	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.2E-05	1.8E-04	3.5E-05	3.1E-06	6.2E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.3E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2532	299871	6253071	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.3E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2533	299921	6253071	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.3E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2534	299971	6253071	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.5E-09	1.1E-11	5.3E-10	5.7E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.3E-08
	R2535	300021	6253071	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.5E-09	1.1E-11	5.3E-10	5.7E-08	5.1E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.6E-09	9.3E-08
	R2536	300071	6253071	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.2E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2537	300121	6253071	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.0E-09	1.4E-08	1.5E-09	1.1E-11	5.1E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.5E-09	9.1E-08
	R2538	300171	6253071	1.5E-06	1.5E-06	1.3E-05	7.5E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	6.0E-09	1.3E-08	1.5E-09	1.0E-11	5.1E-10	5.5E-08	5.0E-09	3.3E-11	3.2E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.4E-09	9.0E-08
	R2539	300221	6253071	1.5E-06	1.5E-06	1.3E-05	7.5E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	6.0E-09	1.3E-08	1.5E-09	1.0E-11	5.1E-10	5.5E-08	5.0E-09	3.3E-11	3.2E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.4E-09	9.0E-08
	R2540	300271	6253071	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.1E-10	5.5E-08	4.9E-09	3.3E-11	3.2E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.3E-09	8.9E-08
	R2541	300321	6253071	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.5E-08	4.9E-09	3.3E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.5E-07	3.3E-07	2.4E-08	8.3E-09	8.9E-08
	R2542	300371	6253071	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	2.9E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.4E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.8E-08
	R2543	300421	6253071	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	2.9E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.4E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.8E-08
	R2544	300471	6253071	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	3.9E-05	1.7E-04	3.4E-05	2.9E-06	5.8E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.4E-08	4.9E-09	3.2E-11	3.1E-09	3.6E-08	2.2E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.7E-08
	R2545	300521	6253071	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.4E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.1E-09	8.7E-08
	R2546	300571	6253071	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.3E-08	8.1E-09	8.6E-08
	R2547	300621	6253071	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.7E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.1E-11	3.0E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.1E-07	2.3E-08	8.0E-09	8.6E-08
	R2548	300671	6253071	1.4E-06	1.4E-06	1.3E-05	7.1E-07	1.4E-06	3.8E-05	1.7E-04	3.3E-05	2.8E-06	5.7E-09	1.3E-08	1.4E-09	9.9E-12	4.8E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.9E-09	8.5E-08
	R2549	300721	6253071	1.4E-06	1.4E-06	1.3E-05	7.0E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.9E-12	4.8E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.9E-09	8.4E-08
	R2550	300771	6253071	1.4E-06	1.4E-06	1.3E-05	7.0E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.8E-12	4.7E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.8E-09	8.4E-08
	R2551	300821	6253071	1.4E-06	1.4E-06	1.2E-05	6.9E-07	1.4E-06	3.7E-05	1.7E-04	3.2E-05	2.8E-06	5.5E-09	1.2E-08	1.4E-09	9.7E-12	4.7E-10	5.1E-08	4.6E-09	3.0E-11	2.9E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.0E-07	2.3E-08	7.8E-09	8.3E-08
	R2552	300871	6253071	1.4E-06	1.4E-06	1.2E-05	6.9E-07	1.4E-06	3.7E-05	1.7E-04	3.2E-05	2.8E-06	5.5E-09	1.2E-08	1.4E-09	9.6E-12	4.7E-10	5.1E-08	4.6E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.3E-07	2.4E-07	3.0E-07	2.2E-08	7.7E-09	8.3E-08
	R2553	300921	6253071	1.4E-06	1.4E-06	1.2E-05	6.8E-07	1.4E-06	3.7E-05	1.6E-04	3.1E-05	2.7E-06	5.5E-09	1.2E-08	1.4E-09	9.5E-12	4.6E-10	5.0E-08	4.5E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.3E-07	2.3E-07	3.0E-07	2.2E-08	7.6E-09	8.2E-08
	R2554	300971	6253071	1.4E-06	1.4E-06	1.2E-05	6.8E-07	1.4E-06	3.7E-05	1.6E-04	3.1E-05	2.7E-06	5.4E-09	1.2E-08	1.4E-09	9.5E-12	4.6E-10	5.0E-08	4.5E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.2E-07	2.3E-07	3.0E-07	2.2E-08	7.6E-09	8.1E-08
	R2555	301021	6253071	1.3E-06	1.3E-06	1.2E-05	6.7E-07	1.3E-06	3.6E-05	1.6E-04	3.1E-05	2.7E-06	5.4E-09	1.2E-08	1.3E-09	9.4E-12	4.6E-10	5.0E-08	4.5E-09	3.0E-11	2.8E-09	3.4E-08	2.0E-08	1.2E-07	2.3E-07	3.0E-07	2.2E-08	7.5E-09	8.1E-08
	R2556	301071	6253071	1.3E-06	1.3E-06	1.2E-05	6.7E-07	1.3E-06	3.6E-05	1.6E-04	3.1E-05	2.7E-06	5.3E-09	1.2E-08	1.3E-09	9.3E-12	4.5E-10	4.9E-08	4.4E-09	2.9E-11	2.8E-09	3.3E-08	2.0E-08	1.2E-07	2.3E-07	2.9E-07	2.2E-08	7.5E-09	8.0E-08
	R2557	301121	6253071	1.3E-06	1.3E-06	1.2E-05	6.6E-07	1.3E-06	3.6E-05	1.6E-04	3.0E-05	2.6E-06	5.3E-09	1.2E-08	1.3E-09	9.2E-12	4.5E-10	4.9E-08	4.4E-09	2.9E-11	2.8E-09	3.3E-08	2.0E-08	1.2E-07	2.3E-07	2.9E-07	2.2E-08	7.4E-09	7.9E-08
	R2558	301171	6253071	1.3E-06	1.3E-06	1.2E-05	6.6E-07	1.3E-06	3.5E-05	1.6E-04	3.0E-05	2.6E-06	5.2E-09	1.2E-08	1.3E-09	9.2E-12	4.5E-10	4.8E-08	4.4E-09	2.9E-11	2.8E-09	3.3E-08	1.9E-08	1.2E-07	2.3E-07	2.9E-07	2.1E-08	7.3E-09	7.9E-08
	R2559	301221	6253071	1.3E-06	1.3E-06	1.2E-05	6.5E-07	1.3E-06	3.5E-05	1.6E-04	3.0E-05	2.6E-06	5.2E-09	1.2E-08	1.3E-09	9.1E-12	4.4E-10	4.8E-08	4.3E-09	2.9E-11	2.8E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.9E-07	2.1E-08	7.3E-09	7.8E-08
	R2560	301271	6253071	1.3E-06	1.3E-06	1.2E-05	6.4E-07	1.3E-06	3.5E-05	1.5E-04	3.0E-05	2.6E-06	5.2E-09	1.2E-08	1.3E-09	9.0E-12	4.4E-10	4.8E-08	4.3E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.2E-09	7.7E-08
	R2561	301321	6253071	1.3E-06	1.3E-06	1.1E-05	6.4E-07	1.3E-06	3.4E-05	1.5E-04	2.9E-05	2.6E-06	5.1E-09	1.1E-08	1.3E-09	8.9E-12	4.3E-10	4.7E-08	4.3E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.2E-09	7.7E-08
	R2562	301371	6253071	1.3E-06	1.3E-06	1.1E-05	6.3E-07	1.3E-06	3.4E-05	1.5E-04	2.9E-05	2.5E-06	5.1E-09	1.1E-08	1.3E-09	8.9E-12	4.3E-10	4.7E-08	4.2E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.1E-09	7.6E-08

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																										
													Metal										Heavy Metal							
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R2563	301421	6253071	1.3E-06	1.3E-06	1.1E-05	6.3E-07	1.3E-06	3.4E-05	1.5E-04	2.9E-05	2.5E-06	5.0E-09	1.1E-08	1.3E-09	8.8E-12	4.3E-10	4.6E-08	4.2E-09	2.8E-11	2.7E-09	3.1E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.0E-08	7.0E-09	7.5E-08
	R2564	301471	6253071	1.2E-06	1.2E-06	1.1E-05	6.2E-07	1.2E-06	3.4E-05	1.5E-04	2.9E-05	2.5E-06	5.0E-09	1.1E-08	1.2E-09	8.7E-12	4.2E-10	4.6E-08	4.1E-09	2.7E-11	2.6E-09	3.1E-08	1.8E-08	1.1E-07	2.1E-07	2.7E-07	2.0E-08	7.0E-09	7.5E-08
	R2565	301521	6253071	1.2E-06	1.2E-06	1.1E-05	6.2E-07	1.2E-06	3.3E-05	1.5E-04	2.8E-05	2.5E-06	4.9E-09	1.1E-08	1.2E-09	8.6E-12	4.2E-10	4.6E-08	4.1E-09	2.7E-11	2.6E-09	3.1E-08	1.8E-08	1.1E-07	2.1E-07	2.7E-07	2.0E-08	6.9E-09	7.4E-08
	R2566	301571	6253071	1.2E-06	1.2E-06	1.1E-05	6.1E-07	1.2E-06	3.3E-05	1.5E-04	2.8E-05	2.5E-06	4.9E-09	1.1E-08	1.2E-09	8.6E-12	4.2E-10	4.5E-08	4.1E-09	2.7E-11	2.6E-09	3.1E-08	1.8E-08	1.1E-07	2.1E-07	2.7E-07	2.0E-08	6.9E-09	7.4E-08
	R2567	301621	6253071	1.2E-06	1.2E-06	1.1E-05	6.1E-07	1.2E-06	3.3E-05	1.5E-04	2.8E-05	2.4E-06	4.9E-09	1.1E-08	1.2E-09	8.5E-12	4.1E-10	4.5E-08	4.0E-09	2.7E-11	2.6E-09	3.0E-08	1.8E-08	1.1E-07	2.1E-07	2.7E-07	2.0E-08	6.8E-09	7.3E-08
	R2568	298771	6253121	1.4E-06	1.4E-06	1.2E-05	6.9E-07	1.4E-06	3.7E-05	1.7E-04	3.2E-05	2.8E-06	5.5E-09	1.2E-08	1.4E-09	9.6E-12	4.7E-10	5.1E-08	4.6E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.3E-07	2.4E-07	3.0E-07	2.2E-08	7.7E-09	8.3E-08
	R2569	298821	6253121	1.4E-06	1.4E-06	1.2E-05	6.9E-07	1.4E-06	3.7E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.2E-08	1.4E-09	9.7E-12	4.7E-10	5.1E-08	4.6E-09	3.1E-11	2.9E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.8E-09	8.3E-08
	R2570	298871	6253121	1.4E-06	1.4E-06	1.3E-05	7.0E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.8E-12	4.7E-10	5.2E-08	4.6E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.8E-09	8.4E-08
	R2571	298921	6253121	1.4E-06	1.4E-06	1.3E-05	7.0E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.9E-12	4.8E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.9E-09	8.5E-08
	R2572	298971	6253121	1.4E-06	1.4E-06	1.3E-05	7.1E-07	1.4E-06	3.8E-05	1.7E-04	3.3E-05	2.8E-06	5.7E-09	1.3E-08	1.4E-09	9.9E-12	4.8E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.9E-09	8.5E-08
	R2573	299021	6253121	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.7E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.1E-11	3.0E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.1E-07	2.3E-08	8.0E-09	8.6E-08
	R2574	299071	6253121	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.3E-08	8.1E-09	8.6E-08
	R2575	299121	6253121	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.5E-09	1.0E-11	4.9E-10	5.4E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.1E-09	8.7E-08
	R2576	299171	6253121	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	2.9E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.4E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.8E-08
	R2577	299221	6253121	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	2.9E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.5E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.8E-08
	R2578	299271	6253121	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.5E-08	4.9E-09	3.3E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.3E-09	8.9E-08
	R2579	299321	6253121	1.5E-06	1.5E-06	1.3E-05	7.5E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	6.0E-09	1.3E-08	1.5E-09	1.0E-11	5.1E-10	5.5E-08	5.0E-09	3.3E-11	3.2E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.4E-09	9.0E-08
	R2580	299371	6253121	1.5E-06	1.5E-06	1.4E-05	7.5E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.0E-09	1.4E-08	1.5E-09	1.1E-11	5.1E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.4E-09	9.0E-08
	R2581	299421	6253121	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.5E-09	9.1E-08
	R2582	299471	6253121	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.2E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2583	299521	6253121	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.3E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2584	299571	6253121	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.5E-09	1.1E-11	5.3E-10	5.7E-08	5.1E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.6E-09	9.3E-08
	R2585	299621	6253121	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.5E-09	1.1E-11	5.3E-10	5.7E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.3E-08
	R2586	299671	6253121	1.6E-06	1.6E-06	1.4E-05	7.8E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.7E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.3E-08
	R2587	299721	6253121	1.6E-06	1.6E-06	1.4E-05	7.8E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.7E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.3E-08
	R2588	299771	6253121	1.6E-06	1.6E-06	1.4E-05	7.8E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.7E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.3E-08
	R2589	299821	6253121	1.6E-06	1.6E-06	1.4E-05	7.8E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.7E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.3E-08
	R2590	299871	6253121	1.6E-06	1.6E-06	1.4E-05	7.8E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.7E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.3E-08
	R2591	299921	6253121	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.5E-09	1.1E-11	5.3E-10	5.7E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.3E-08
	R2592	299971	6253121	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.5E-09	1.1E-11	5.3E-10	5.7E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.3E-08
	R2593	300021	6253121	1.6E-06	1.6E-06	1.4E-05	7.8E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.7E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.3E-08
	R2594	300071	6253121	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.2E-05	1.8E-04	3.5E-05	3.1E-06	6.2E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.3E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2595	300121	6253121	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.6E-08	5.1E-09	3.4E-11	3.2E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.5E-09	9.1E-08
	R2596	300171	6253121	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.5E-09	9.1E-08
	R2597	300221	6253121	1.5E-06	1.5E-06	1.4E-05	7.5E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.0E-09	1.4E-08	1.5E-09	1.1E-11	5.1E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.4E-09	9.1E-08
	R2598	300271	6253121	1.5E-06	1.5E-06	1.3E-05	7.5E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	6.0E-09	1.3E-08	1.5E-09	1.0E-11	5.1E-10	5.5E-08	5.0E-09	3.3E-11	3.2E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.4E-09	9.0E-08
	R2599	300321	6253121	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	6.0E-09	1.3E-08	1.5E-09	1.0E-11	5.1E-10	5.5E-08	5.0E-09	3.3E-11	3.2E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.3E-09	8.9E-08
	R2600	300371	6253121	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.5E-08	4.9E-09	3.3E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.5E-07	3.3E-07	2.4E-08	8.3E-09	8.9E-08
	R2601	300421	6253121	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	2.9E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.5E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.8E-08
	R2602	300471	6253121	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	2.9E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.4E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.8E-08
	R2603	300521	6253121	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	3.9E-05	1.7E-04	3.4E-05	2.9E-06	5.8E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.4E-08	4.9E-09	3.2E-11	3.1E-09	3.6E-08	2.2E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.7E-08
	R2604	300571	6253121	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.4E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.1E-09	8.7E-08
	R2605	300621	6253121	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.3E-08	8.1E-09	8.6E-08
	R2606	300671	6253121	1.4E-06	1.4E-06	1.3E-05	7.1E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.7E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.1E-11	3.0E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.1E-07	2.3E-08	8.0E-09	8.6E-08
	R2607	300721	6253121	1.4E-06	1.4E-06	1.3E-05	7.1E-07	1.4E-06	3.8E-05	1.7E-04	3.3E-05	2.8E-06	5.7E-09	1.3E-08	1.4E-09	9.9E-12	4.8E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.9E-09	8.5E-08
	R2608	300771	6253121	1.4E-06	1.4E-06	1.3E-05	7.0E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.8E-12	4.8E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.9E-09	8.4E-08
	R2609	300821	6253121	1.4E-06	1.4E-06	1.3E-05	7.0E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.8E-12	4.7E-10	5.2E-08	4.6E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.8E-09	8.4E-08
	R2610	300871	6253121	1.4E-06	1.4E-06	1.2E-05	6.9E-07	1.4E-06	3.7E-05	1.7E-04	3.2E-05	2.8E-06	5.5E-09	1.2E-08	1.4E-09	9.7E-12	4.7E-10	5.1E-08	4.6E-09	3.0E-11	2.9E-09	3.5E-08	2.0E-08	1.3E-07	2.4E-07	3.0E-07	2.3E-08	7.7E-09	8.3E-08
	R2611	300921	6253121	1.4E-06	1.4E-06	1.2E-05	6.9E-07	1.4E-06	3.7E-05	1.6E-04	3.2E-05	2.7E-06	5.5E-09	1.2E-08	1.4E-09	9.6E-12	4.7E-10	5.1E-08	4.6E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.3E-07	2.4E-07	3.0E-07	2.2E-08	7.7E-09	8.2E-08
	R2612	300971	6253121	1.4E-06	1.4E-06	1.2E-05	6.8E-07	1.4E-06	3.7E-05	1.6E-04	3.1E-05	2.7E-06	5.4E-09	1.2E-08	1.4E-09	9.5E-12	4.6E-10	5.0E-08	4.5E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.3E-07	2.3E-07	3.0E-07	2.2E-08	7.6E-09	8.2E-08
	R2613	301021	6253121	1.4E-06	1.4E-06	1.2E-05	6.8E-07	1.4E-06	3.6E-05	1.6E-04	3.1E-05	2.7E-06	5.4E-09	1.2E-08	1.4E-09	9.5E-12	4.6E-10	5.0E-08	4.5E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.2E-07	2.3E-07	3.0E-07	2.2E-08	7.6E-09	8.1E-08
	R2614	301071	6253121	1.3E-06	1.3E-06	1.2E-05	6.7E-07	1.3E-06	3.6E-05	1.6E-04	3.1E-05	2.7E-06	5.4E-09	1.2E-08	1.3E-09	9.4E-12	4.6E-10	5.0E-08	4.5E-09	2.9E-11	2.8E-09	3.3E-08	2.0E-08	1.2E-07	2.3E-07	2.9E-07	2.2E-08	7.5E-09	8.0E-08
	R2615	301121	6253121	1.3E-06	1.3E-06	1.2E-05	6.6E-07	1.3E-06	3.6E-05	1.6E-04	3.1E-05	2.7E-06	5.3E-09	1.2E-08	1.3E-09	9.3E-12	4.5E-10	4.9E-08	4.4E-09	2.9E-11	2.8E-09	3.3E-08	2.0E-08	1.2E-07	2.3E-07	2.9E-07	2.2E-08	7.4E-09	8.0E-08
	R2616	301171	6253121	1.3E-06	1.3E-06	1.2E-05	6.6E-07	1.3E-06	3.6E-05	1.6E-04	3.0E-05	2.6E-06	5.3E-09	1.2E-08	1.3E-09	9.2E-12	4.5E-10	4.9E-08	4.4E-09	2.9E-11	2.8E-09	3.3E-08	1.9E-08	1.2E-07	2.3E-07	2.9E-07	2.1E-08	7.4E-09	7.9E-08
	R2617	301221	6253121	1.3E-06	1.3E-06	1.2E-05	6.5E-07	1.3E-06	3.5E-05	1.6E-04	3.0E-05	2.6E-06	5.2E-09	1.2E-08	1.3E-09	9.1E-12	4.4E-10	4.8E-08	4.3E-09	2.9E-11	2.8E-09	3.3E-08	1.9E-08	1.2E-07	2.2E-07	2.9E-07	2.1E-08	7.3E-09	7.8E-08
	R2618	301271	6253121	1.3E-06	1.3E-06	1.2E-05	6.5E-07	1.3E-06	3.5E-05	1.6E-04	3.0E-05	2.6E-06	5.2E-09	1.2E-08	1.3E-09	9.1E-12	4.4E-10	4.8E-08	4.3E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.3E-09	7.8E-08
	R2619	301321	6253121	1.3E-06	1.3E-06	1.2E-05	6.4E-07	1.3E-06	3.5E-05	1.5E-04	3.0E-05	2.6E-06	5.1E-09	1.2E-08	1.3E-09	9.0E-12	4.4E-10	4.8E-08	4.3E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.2E-09	7.7E-08
	R2620	301371	6253121	1.3E-06	1.3E-06	1.1E-05	6.4E-07	1.3E-06	3.4E-05	1.5E-04	2.9E-05	2.5E-06	5.1E-09	1.1E-08	1.3E-09	8.9E-12	4.3E-10	4.7E-08	4.2E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.1E-09	7.6E-08
	R2621	301421	6253121	1.3E-06	1.3E-06	1.1E-05	6.3E-07	1.3E-06	3.4E-05	1.5E-04	2.9E-05	2.5E-06	5.0E-09	1.1E-08	1.3E-09	8.8E-12	4.3E-10	4.7E-08	4.2E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.1E-09	7.6E-08
	R2622	301471	6253121	1.3E-06	1.3E-06	1.1E-05	6.3E-07	1.3E-06	3.4E-05	1.5E-04	2.9E-05	2.5E-06	5.0E-09	1.1E-08	1.3E-09	8.8E-12	4.3E-10	4.6E-08	4.2E-09	2.8E-11	2.7E-09	3.1E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.0E-08	7.0E-09	7.5E-08
	R2623	301521	6253121	1.2E-06	1.2E-06	1.1E-05	6.2E-07	1.2E-06	3.4E-05	1.5E-04	2.9E-05	2.5E-06	5.0E-09	1.1E-08	1.2E-09	8.7E-12	4.2E-10	4.6E-08	4.1E-09	2.7E-11	2.6E-09	3.1E-08	1.8E-08	1.1E-07	2.1E-07	2.7E-07	2.0E-08	6.9E-09	7.4E-08

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																									
													Metal									Heavy Metal							
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R2624	301571	6253121	1.2E-06	1.2E-06	1.1E-05	6.2E-07	1.2E-06	3.3E-05	1.5E-04	2.8E-05	2.5E-06	4.9E-09	1.1E-08	1.2E-09	8.6E-12	4.2E-10	4.6E-08	4.1E-09	2.7E-11	2.6E-09	3.1E-08	1.8E-08	1.1E-07	2.1E-07	2.7E-07	2.0E-08	6.9E-09	7.4E-08
	R2625	301621	6253121	1.2E-06	1.2E-06	1.1E-05	6.1E-07	1.2E-06	3.3E-05	1.5E-04	2.8E-05	2.4E-06	4.9E-09	1.1E-08	1.2E-09	8.5E-12	4.1E-10	4.5E-08	4.1E-09	2.7E-11	2.6E-09	3.1E-08	1.8E-08	1.1E-07	2.1E-07	2.7E-07	2.0E-08	6.8E-09	7.3E-08
	R2626	298771	6253171	1.4E-06	1.4E-06	1.3E-05	7.0E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.7E-12	4.7E-10	5.2E-08	4.6E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.8E-09	8.4E-08
	R2627	298821	6253171	1.4E-06	1.4E-06	1.3E-05	7.0E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.8E-12	4.8E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.8E-09	8.4E-08
	R2628	298871	6253171	1.4E-06	1.4E-06	1.3E-05	7.0E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.9E-12	4.8E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.9E-09	8.5E-08
	R2629	298921	6253171	1.4E-06	1.4E-06	1.3E-05	7.1E-07	1.4E-06	3.8E-05	1.7E-04	3.3E-05	2.8E-06	5.7E-09	1.3E-08	1.4E-09	9.9E-12	4.8E-10	5.3E-08	4.7E-09	3.1E-11	3.0E-09	3.6E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	8.0E-09	8.5E-08
	R2630	298971	6253171	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.7E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.2E-11	3.0E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.3E-08	8.0E-09	8.6E-08
	R2631	299021	6253171	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.4E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.1E-09	8.7E-08
	R2632	299071	6253171	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	3.9E-05	1.7E-04	3.4E-05	2.9E-06	5.8E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.4E-08	4.9E-09	3.2E-11	3.1E-09	3.6E-08	2.2E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.7E-08
	R2633	299121	6253171	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	2.9E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.4E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.8E-08
	R2634	299171	6253171	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.5E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.5E-07	3.2E-07	2.4E-08	8.3E-09	8.9E-08
	R2635	299221	6253171	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	6.0E-09	1.3E-08	1.5E-09	1.0E-11	5.1E-10	5.5E-08	5.0E-09	3.3E-11	3.2E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.3E-09	8.9E-08
	R2636	299271	6253171	1.5E-06	1.5E-06	1.3E-05	7.5E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	6.0E-09	1.3E-08	1.5E-09	1.0E-11	5.1E-10	5.5E-08	5.0E-09	3.3E-11	3.2E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.4E-09	9.0E-08
	R2637	299321	6253171	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.0E-09	1.4E-08	1.5E-09	1.1E-11	5.1E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.5E-09	9.1E-08
	R2638	299371	6253171	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.6E-08	5.1E-09	3.3E-11	3.2E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.5E-09	9.1E-08
	R2639	299421	6253171	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.2E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2640	299471	6253171	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.2E-05	1.8E-04	3.5E-05	3.1E-06	6.2E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2641	299521	6253171	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.5E-09	1.1E-11	5.3E-10	5.7E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.3E-08
	R2642	299571	6253171	1.6E-06	1.6E-06	1.4E-05	7.8E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.8E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.3E-08
	R2643	299621	6253171	1.6E-06	1.6E-06	1.4E-05	7.8E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.8E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.4E-08
	R2644	299671	6253171	1.6E-06	1.6E-06	1.4E-05	7.8E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.8E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.4E-08
	R2645	299721	6253171	1.6E-06	1.6E-06	1.4E-05	7.8E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.8E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.4E-08
	R2646	299771	6253171	1.6E-06	1.6E-06	1.4E-05	7.8E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.8E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.6E-08	8.8E-09	9.4E-08
	R2647	299821	6253171	1.6E-06	1.6E-06	1.4E-05	7.8E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.8E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.6E-08	8.8E-09	9.4E-08
	R2648	299871	6253171	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.8E-08	5.2E-09	3.5E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.5E-07	2.6E-08	8.8E-09	9.4E-08
	R2649	299921	6253171	1.6E-06	1.6E-06	1.4E-05	7.8E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.8E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.8E-09	9.4E-08
	R2650	299971	6253171	1.6E-06	1.6E-06	1.4E-05	7.8E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.8E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.4E-08
	R2651	300021	6253171	1.6E-06	1.6E-06	1.4E-05	7.8E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.8E-08	5.2E-09	3.5E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.5E-07	2.6E-08	8.8E-09	9.4E-08
	R2652	300071	6253171	1.6E-06	1.6E-06	1.4E-05	7.8E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.8E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.3E-08
	R2653	300121	6253171	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.5E-09	1.1E-11	5.3E-10	5.7E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.3E-08
	R2654	300171	6253171	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.2E-05	1.9E-04	3.5E-05	3.1E-06	6.2E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.6E-09	9.3E-08
	R2655	300221	6253171	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.2E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2656	300271	6253171	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.1E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.5E-09	9.1E-08
	R2657	300321	6253171	1.5E-06	1.5E-06	1.4E-05	7.5E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.0E-09	1.4E-08	1.5E-09	1.1E-11	5.1E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.4E-09	9.0E-08
	R2658	300371	6253171	1.5E-06	1.5E-06	1.3E-05	7.5E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	6.0E-09	1.3E-08	1.5E-09	1.0E-11	5.1E-10	5.5E-08	5.0E-09	3.3E-11	3.2E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.4E-09	9.0E-08
	R2659	300421	6253171	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.5E-08	4.9E-09	3.3E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.3E-09	8.9E-08
	R2660	300471	6253171	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	2.9E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.5E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.5E-07	3.2E-07	2.4E-08	8.3E-09	8.8E-08
	R2661	300521	6253171	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	2.9E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.4E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.8E-08
	R2662	300571	6253171	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	3.9E-05	1.7E-04	3.4E-05	2.9E-06	5.8E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.4E-08	4.9E-09	3.2E-11	3.1E-09	3.6E-08	2.2E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.7E-08
	R2663	300621	6253171	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.4E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.1E-09	8.7E-08
	R2664	300671	6253171	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.7E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.2E-11	3.0E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.3E-08	8.0E-09	8.6E-08
	R2665	300721	6253171	1.4E-06	1.4E-06	1.3E-05	7.1E-07	1.4E-06	3.8E-05	1.7E-04	3.3E-05	2.8E-06	5.7E-09	1.3E-08	1.4E-09	1.0E-11	4.8E-10	5.3E-08	4.7E-09	3.1E-11	3.0E-09	3.6E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	8.0E-09	8.5E-08
	R2666	300771	6253171	1.4E-06	1.4E-06	1.3E-05	7.1E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.9E-12	4.8E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.9E-09	8.5E-08
	R2667	300821	6253171	1.4E-06	1.4E-06	1.3E-05	7.0E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.8E-12	4.8E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.9E-09	8.4E-08
	R2668	300871	6253171	1.4E-06	1.4E-06	1.3E-05	7.0E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.7E-12	4.7E-10	5.1E-08	4.6E-09	3.1E-11	2.9E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.8E-09	8.3E-08
	R2669	300921	6253171	1.4E-06	1.4E-06	1.2E-05	6.9E-07	1.4E-06	3.7E-05	1.7E-04	3.2E-05	2.8E-06	5.5E-09	1.2E-08	1.4E-09	9.7E-12	4.7E-10	5.1E-08	4.6E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.3E-07	2.4E-07	3.0E-07	2.2E-08	7.7E-09	8.3E-08
	R2670	300971	6253171	1.4E-06	1.4E-06	1.2E-05	6.8E-07	1.4E-06	3.7E-05	1.6E-04	3.1E-05	2.7E-06	5.5E-09	1.2E-08	1.4E-09	9.6E-12	4.7E-10	5.1E-08	4.6E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.3E-07	2.4E-07	3.0E-07	2.2E-08	7.7E-09	8.2E-08
	R2671	301021	6253171	1.4E-06	1.4E-06	1.2E-05	6.8E-07	1.4E-06	3.7E-05	1.6E-04	3.1E-05	2.7E-06	5.4E-09	1.2E-08	1.4E-09	9.5E-12	4.6E-10	5.0E-08	4.5E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.2E-07	2.3E-07	3.0E-07	2.2E-08	7.6E-09	8.1E-08
	R2672	301071	6253171	1.3E-06	1.3E-06	1.2E-05	6.7E-07	1.3E-06	3.6E-05	1.6E-04	3.1E-05	2.7E-06	5.4E-09	1.2E-08	1.3E-09	9.4E-12	4.6E-10	5.0E-08	4.5E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.2E-07	2.3E-07	3.0E-07	2.2E-08	7.5E-09	8.1E-08
	R2673	301121	6253171	1.3E-06	1.3E-06	1.2E-05	6.7E-07	1.3E-06	3.6E-05	1.6E-04	3.1E-05	2.7E-06	5.3E-09	1.2E-08	1.3E-09	9.3E-12	4.5E-10	4.9E-08	4.4E-09	2.9E-11	2.8E-09	3.3E-08	2.0E-08	1.2E-07	2.3E-07	2.9E-07	2.2E-08	7.5E-09	8.0E-08
	R2674	301171	6253171	1.3E-06	1.3E-06	1.2E-05	6.6E-07	1.3E-06	3.6E-05	1.6E-04	3.0E-05	2.6E-06	5.3E-09	1.2E-08	1.3E-09	9.3E-12	4.5E-10	4.9E-08	4.4E-09	2.9E-11	2.8E-09	3.3E-08	2.0E-08	1.2E-07	2.3E-07	2.9E-07	2.2E-08	7.4E-09	7.9E-08
	R2675	301221	6253171	1.3E-06	1.3E-06	1.2E-05	6.6E-07	1.3E-06	3.5E-05	1.6E-04	3.0E-05	2.6E-06	5.2E-09	1.2E-08	1.3E-09	9.2E-12	4.5E-10	4.9E-08	4.4E-09	2.9E-11	2.8E-09	3.3E-08	1.9E-08	1.2E-07	2.3E-07	2.9E-07	2.1E-08	7.3E-09	7.9E-08
	R2676	301271	6253171	1.3E-06	1.3E-06	1.2E-05	6.5E-07	1.3E-06	3.5E-05	1.6E-04	3.0E-05	2.6E-06	5.2E-09	1.2E-08	1.3E-09	9.1E-12	4.4E-10	4.8E-08	4.3E-09	2.9E-11	2.8E-09	3.3E-08	1.9E-08	1.2E-07	2.2E-07	2.9E-07	2.1E-08	7.3E-09	7.8E-08
	R2677	301321	6253171	1.3E-06	1.3E-06	1.2E-05	6.4E-07	1.3E-06	3.5E-05	1.5E-04	3.0E-05	2.6E-06	5.2E-09	1.2E-08	1.3E-09	9.0E-12	4.4E-10	4.8E-08	4.3E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.2E-09	7.7E-08
	R2678	301371	6253171	1.3E-06	1.3E-06	1.1E-05	6.4E-07	1.3E-06	3.4E-05	1.5E-04	2.9E-05	2.6E-06	5.1E-09	1.1E-08	1.3E-09	8.9E-12	4.3E-10	4.7E-08	4.3E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.2E-09	7.7E-08
	R2679	301421	6253171	1.3E-06	1.3E-06	1.1E-05	6.3E-07	1.3E-06	3.4E-05	1.5E-04	2.9E-05	2.5E-06	5.1E-09	1.1E-08	1.3E-09	8.9E-12	4.3E-10	4.7E-08	4.2E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.1E-09	7.6E-08
	R2680	301471	6253171	1.3E-06	1.3E-06	1.1E-05	6.3E-07	1.3E-06	3.4E-05	1.5E-04	2.9E-05	2.5E-06	5.0E-09	1.1E-08	1.3E-09	8.8E-12	4.3E-10	4.7E-08	4.2E-09	2.8E-11	2.7E-09	3.1E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.0E-08	7.0E-09	7.5E-08
	R2681	301521	6253171	1.2E-06	1.2E-06	1.1E-05	6.2E-07	1.2E-06	3.4E-05	1.5E-04	2.9E-05	2.5E-06	5.0E-09	1.1E-08	1.2E-09	8.7E-12	4.2E-10	4.6E-08	4.2E-09	2.7E-11	2.6E-09	3.1E-08	1.8E-08	1.1E-07	2.1E-07	2.7E-07	2.0E-08	7.0E-09	7.5E-08
	R2682	301571	6253171	1.2E-06	1.2E-06	1.1E-05	6.2E-07	1.2E-06	3.3E-05	1.5E-04	2.8E-05	2.5E-06	4.9E-09	1.1E-08	1.2E-09	8.6E-12	4.2E-10	4.6E-08	4.1E-09	2.7E-11	2.6E-09	3.1E-08	1.8E-08	1.1E-07	2.1E-07	2.7E-07	2.0E-08	6.9E-09	7.4E-08
	R2683	301621	6253171	1.2E-06	1.2E-06	1.1E-05	6.1E-07	1.2E-06	3.3E-05	1.5E-04	2.8E-05	2.5E-06	4.9E-09	1.1E-08	1.2E-09	8.6E-12	4.2E-10	4.5E-08	4.1E-09	2.7E-11	2.6E-09	3.1E-08	1.8E-08	1.1E-07	2.1E-07	2.7E-07	2.0E-08	6.9E-09	7.4E-08
	R2684	298771	6253221	1.4E-06	1.4E-06	1.3E-05	7.0E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.8E-12	4.8E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.9E-09	8.4E-08

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																									
													Metal									Heavy Metal							
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R2685	298821	6253221	1.4E-06	1.4E-06	1.3E-05	7.1E-07	1.4E-06	3.8E-05	1.7E-04	3.3E-05	2.8E-06	5.7E-09	1.3E-08	1.4E-09	9.9E-12	4.8E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.9E-09	8.5E-08
	R2686	298871	6253221	1.4E-06	1.4E-06	1.3E-05	7.1E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.7E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.1E-11	3.0E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.1E-07	2.3E-08	8.0E-09	8.6E-08
	R2687	298921	6253221	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.2E-11	3.0E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.3E-08	8.1E-09	8.6E-08
	R2688	298971	6253221	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.4E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.1E-09	8.7E-08
	R2689	299021	6253221	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	3.9E-05	1.8E-04	3.4E-05	2.9E-06	5.8E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.4E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.8E-08
	R2690	299071	6253221	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	2.9E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.5E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.5E-07	3.2E-07	2.4E-08	8.3E-09	8.8E-08
	R2691	299121	6253221	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.5E-08	4.9E-09	3.3E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.3E-09	8.9E-08
	R2692	299171	6253221	1.5E-06	1.5E-06	1.3E-05	7.5E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	6.0E-09	1.3E-08	1.5E-09	1.0E-11	5.1E-10	5.5E-08	5.0E-09	3.3E-11	3.2E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.4E-09	9.0E-08
	R2693	299221	6253221	1.5E-06	1.5E-06	1.4E-05	7.5E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.0E-09	1.4E-08	1.5E-09	1.1E-11	5.1E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.4E-09	9.0E-08
	R2694	299271	6253221	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.1E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.5E-09	9.1E-08
	R2695	299321	6253221	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.6E-08	5.1E-09	3.4E-11	3.2E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.5E-09	9.2E-08
	R2696	299371	6253221	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.3E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2697	299421	6253221	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.5E-09	1.1E-11	5.3E-10	5.7E-08	5.1E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.3E-08
	R2698	299471	6253221	1.6E-06	1.6E-06	1.4E-05	7.8E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.8E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.3E-08
	R2699	299521	6253221	1.6E-06	1.6E-06	1.4E-05	7.8E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.8E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.8E-09	9.4E-08
	R2700	299571	6253221	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.8E-08	5.2E-09	3.5E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.5E-07	2.6E-08	8.8E-09	9.4E-08
	R2701	299621	6253221	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.6E-05	3.2E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.8E-08	5.3E-09	3.5E-11	3.3E-09	3.9E-08	2.3E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.8E-09	9.5E-08
	R2702	299671	6253221	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.6E-05	3.2E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.3E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.5E-08
	R2703	299721	6253221	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.6E-05	3.2E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.3E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.5E-08
	R2704	299771	6253221	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.5E-08
	R2705	299821	6253221	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.6E-08
	R2706	299871	6253221	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.6E-08
	R2707	299921	6253221	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.6E-08
	R2708	299971	6253221	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.5E-08
	R2709	300021	6253221	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.5E-08
	R2710	300071	6253221	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.6E-05	3.2E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.3E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.5E-08
	R2711	300121	6253221	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.8E-08	5.2E-09	3.5E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.5E-07	2.6E-08	8.8E-09	9.4E-08
	R2712	300171	6253221	1.6E-06	1.6E-06	1.4E-05	7.8E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.8E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.6E-08	8.8E-09	9.4E-08
	R2713	300221	6253221	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.2E-05	1.9E-04	3.5E-05	3.1E-06	6.2E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.6E-09	9.3E-08
	R2714	300271	6253221	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.2E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2715	300321	6253221	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.5E-09	9.1E-08
	R2716	300371	6253221	1.5E-06	1.5E-06	1.4E-05	7.5E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.0E-09	1.4E-08	1.5E-09	1.1E-11	5.1E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.4E-09	9.0E-08
	R2717	300421	6253221	1.5E-06	1.5E-06	1.3E-05	7.5E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	6.0E-09	1.3E-08	1.5E-09	1.0E-11	5.1E-10	5.5E-08	5.0E-09	3.3E-11	3.2E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.4E-09	9.0E-08
	R2718	300471	6253221	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.5E-08	4.9E-09	3.3E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.3E-09	8.9E-08
	R2719	300521	6253221	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.5E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.5E-07	3.2E-07	2.4E-08	8.3E-09	8.9E-08
	R2720	300571	6253221	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	2.9E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.4E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.8E-08
	R2721	300621	6253221	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.5E-09	1.0E-11	4.9E-10	5.4E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.2E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.7E-08
	R2722	300671	6253221	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.1E-09	8.7E-08
	R2723	300721	6253221	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.7E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.2E-11	3.0E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.3E-08	8.0E-09	8.6E-08
	R2724	300771	6253221	1.4E-06	1.4E-06	1.3E-05	7.1E-07	1.4E-06	3.8E-05	1.7E-04	3.3E-05	2.8E-06	5.7E-09	1.3E-08	1.4E-09	9.9E-12	4.8E-10	5.3E-08	4.7E-09	3.1E-11	3.0E-09	3.6E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	8.0E-09	8.5E-08
	R2725	300821	6253221	1.4E-06	1.4E-06	1.3E-05	7.0E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.9E-12	4.8E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.9E-09	8.5E-08
	R2726	300871	6253221	1.4E-06	1.4E-06	1.3E-05	7.0E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.8E-12	4.8E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.8E-09	8.4E-08
	R2727	300921	6253221	1.4E-06	1.4E-06	1.2E-05	6.9E-07	1.4E-06	3.7E-05	1.7E-04	3.2E-05	2.8E-06	5.5E-09	1.2E-08	1.4E-09	9.7E-12	4.7E-10	5.1E-08	4.6E-09	3.1E-11	2.9E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.8E-09	8.3E-08
	R2728	300971	6253221	1.4E-06	1.4E-06	1.2E-05	6.9E-07	1.4E-06	3.7E-05	1.7E-04	3.2E-05	2.8E-06	5.5E-09	1.2E-08	1.4E-09	9.6E-12	4.7E-10	5.1E-08	4.6E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.3E-07	2.4E-07	3.0E-07	2.2E-08	7.7E-09	8.3E-08
	R2729	301021	6253221	1.4E-06	1.4E-06	1.2E-05	6.8E-07	1.4E-06	3.7E-05	1.6E-04	3.1E-05	2.7E-06	5.5E-09	1.2E-08	1.4E-09	9.5E-12	4.6E-10	5.0E-08	4.5E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.3E-07	2.3E-07	3.0E-07	2.2E-08	7.6E-09	8.2E-08
	R2730	301071	6253221	1.4E-06	1.4E-06	1.2E-05	6.8E-07	1.4E-06	3.7E-05	1.6E-04	3.1E-05	2.7E-06	5.4E-09	1.2E-08	1.4E-09	9.5E-12	4.6E-10	5.0E-08	4.5E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.2E-07	2.3E-07	3.0E-07	2.2E-08	7.6E-09	8.1E-08
	R2731	301121	6253221	1.3E-06	1.3E-06	1.2E-05	6.7E-07	1.3E-06	3.6E-05	1.6E-04	3.1E-05	2.7E-06	5.4E-09	1.2E-08	1.3E-09	9.4E-12	4.6E-10	5.0E-08	4.5E-09	3.0E-11	2.8E-09	3.4E-08	2.0E-08	1.2E-07	2.3E-07	3.0E-07	2.2E-08	7.5E-09	8.0E-08
	R2732	301171	6253221	1.3E-06	1.3E-06	1.2E-05	6.6E-07	1.3E-06	3.6E-05	1.6E-04	3.1E-05	2.7E-06	5.3E-09	1.2E-08	1.3E-09	9.3E-12	4.5E-10	4.9E-08	4.4E-09	2.9E-11	2.8E-09	3.3E-08	2.0E-08	1.2E-07	2.3E-07	2.9E-07	2.2E-08	7.4E-09	8.0E-08
	R2733	301221	6253221	1.3E-06	1.3E-06	1.2E-05	6.6E-07	1.3E-06	3.6E-05	1.6E-04	3.0E-05	2.6E-06	5.3E-09	1.2E-08	1.3E-09	9.2E-12	4.5E-10	4.9E-08	4.4E-09	2.9E-11	2.8E-09	3.3E-08	2.0E-08	1.2E-07	2.3E-07	2.9E-07	2.1E-08	7.4E-09	7.9E-08
	R2734	301271	6253221	1.3E-06	1.3E-06	1.2E-05	6.5E-07	1.3E-06	3.5E-05	1.6E-04	3.0E-05	2.6E-06	5.2E-09	1.2E-08	1.3E-09	9.1E-12	4.4E-10	4.8E-08	4.4E-09	2.9E-11	2.8E-09	3.3E-08	1.9E-08	1.2E-07	2.2E-07	2.9E-07	2.1E-08	7.3E-09	7.8E-08
	R2735	301321	6253221	1.3E-06	1.3E-06	1.2E-05	6.5E-07	1.3E-06	3.5E-05	1.6E-04	3.0E-05	2.6E-06	5.2E-09	1.2E-08	1.3E-09	9.1E-12	4.4E-10	4.8E-08	4.3E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.3E-09	7.8E-08
	R2736	301371	6253221	1.3E-06	1.3E-06	1.2E-05	6.4E-07	1.3E-06	3.5E-05	1.5E-04	3.0E-05	2.6E-06	5.1E-09	1.2E-08	1.3E-09	9.0E-12	4.4E-10	4.8E-08	4.3E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.2E-09	7.7E-08
	R2737	301421	6253221	1.3E-06	1.3E-06	1.1E-05	6.4E-07	1.3E-06	3.4E-05	1.5E-04	2.9E-05	2.5E-06	5.1E-09	1.1E-08	1.3E-09	8.9E-12	4.3E-10	4.7E-08	4.2E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.1E-09	7.6E-08
	R2738	301471	6253221	1.3E-06	1.3E-06	1.1E-05	6.3E-07	1.3E-06	3.4E-05	1.5E-04	2.9E-05	2.5E-06	5.1E-09	1.1E-08	1.3E-09	8.8E-12	4.3E-10	4.7E-08	4.2E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.1E-09	7.6E-08
	R2739	301521	6253221	1.3E-06	1.3E-06	1.1E-05	6.3E-07	1.3E-06	3.4E-05	1.5E-04	2.9E-05	2.5E-06	5.0E-09	1.1E-08	1.3E-09	8.8E-12	4.3E-10	4.6E-08	4.2E-09	2.8E-11	2.7E-09	3.1E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.0E-08	7.0E-09	7.5E-08
	R2740	301571	6253221	1.2E-06	1.2E-06	1.1E-05	6.2E-07	1.2E-06	3.4E-05	1.5E-04	2.9E-05	2.5E-06	5.0E-09	1.1E-08	1.2E-09	8.7E-12	4.2E-10	4.6E-08	4.1E-09	2.7E-11	2.6E-09	3.1E-08	1.8E-08	1.1E-07	2.1E-07	2.7E-07	2.0E-08	7.0E-09	7.5E-08
	R2741	301621	6253221	1.2E-06	1.2E-06	1.1E-05	6.2E-07	1.2E-06	3.3E-05	1.5E-04	2.8E-05	2.5E-06	4.9E-09	1.1E-08	1.2E-09	8.6E-12	4.2E-10	4.6E-08	4.1E-09	2.7E-11	2.6E-09	3.1E-08	1.8E-08	1.1E-07	2.1E-07	2.7E-07	2.0E-08	6.9E-09	7.4E-08
	R2742	298771	6253271	1.4E-06	1.4E-06	1.3E-05	7.1E-07	1.4E-06	3.8E-05	1.7E-04	3.3E-05	2.8E-06	5.7E-09	1.3E-08	1.4E-09	9.9E-12	4.8E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.9E-09	8.5E-08
	R2743	298821	6253271	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.7E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.1E-11	3.0E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.1E-07	2.3E-08	8.0E-09	8.6E-08
	R2744	298871	6253271	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.3E-08	8.1E-09	8.6E-08
	R2745	298921	6253271	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.5E-09	1.0E-11	4.9E-10	5.4E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.1E-09	8.7E-08

Scenario 1 and Scenario 3 Weighted Average
Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																									
													Metal										Heavy Metal						
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R2746	298971	6253271	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	2.9E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.4E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.8E-08
	R2747	299021	6253271	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.5E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.5E-07	3.2E-07	2.4E-08	8.3E-09	8.9E-08
	R2748	299071	6253271	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	6.0E-09	1.3E-08	1.5E-09	1.0E-11	5.1E-10	5.5E-08	5.0E-09	3.3E-11	3.2E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.3E-09	8.9E-08
	R2749	299121	6253271	1.5E-06	1.5E-06	1.4E-05	7.5E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.0E-09	1.4E-08	1.5E-09	1.1E-11	5.1E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.4E-09	9.0E-08
	R2750	299171	6253271	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.0E-09	1.4E-08	1.5E-09	1.1E-11	5.1E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.5E-09	9.1E-08
	R2751	299221	6253271	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.6E-08	5.1E-09	3.4E-11	3.2E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.5E-09	9.1E-08
	R2752	299271	6253271	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.2E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2753	299321	6253271	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.5E-09	1.1E-11	5.3E-10	5.7E-08	5.1E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.6E-09	9.3E-08
	R2754	299371	6253271	1.6E-06	1.6E-06	1.4E-05	7.8E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.7E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.3E-08
	R2755	299421	6253271	1.6E-06	1.6E-06	1.4E-05	7.8E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.8E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.4E-08
	R2756	299471	6253271	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.8E-08	5.2E-09	3.5E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.5E-07	2.6E-08	8.8E-09	9.4E-08
	R2757	299521	6253271	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.6E-05	3.2E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.3E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.5E-08
	R2758	299571	6253271	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.5E-08
	R2759	299621	6253271	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.6E-08
	R2760	299671	6253271	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.6E-08
	R2761	299721	6253271	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.7E-08
	R2762	299771	6253271	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	1.9E-04	3.7E-05	3.2E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.4E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.6E-08	9.1E-09	9.7E-08
	R2763	299821	6253271	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.7E-08
	R2764	299871	6253271	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.5E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.6E-08
	R2765	299921	6253271	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.5E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.6E-08
	R2766	299971	6253271	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.5E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.6E-08
	R2767	300021	6253271	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.6E-08
	R2768	300071	6253271	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.5E-08
	R2769	300121	6253271	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.6E-05	3.2E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.8E-08	5.3E-09	3.5E-11	3.3E-09	3.9E-08	2.3E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.8E-09	9.5E-08
	R2770	300171	6253271	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.8E-08	5.2E-09	3.5E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.5E-07	2.6E-08	8.8E-09	9.4E-08
	R2771	300221	6253271	1.6E-06	1.6E-06	1.4E-05	7.8E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.8E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.4E-08
	R2772	300271	6253271	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.5E-09	1.1E-11	5.3E-10	5.7E-08	5.1E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.3E-08
	R2773	300321	6253271	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.2E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2774	300371	6253271	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.5E-09	9.1E-08
	R2775	300421	6253271	1.5E-06	1.5E-06	1.4E-05	7.5E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.0E-09	1.4E-08	1.5E-09	1.1E-11	5.1E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.4E-09	9.0E-08
	R2776	300471	6253271	1.5E-06	1.5E-06	1.3E-05	7.5E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	6.0E-09	1.3E-08	1.5E-09	1.0E-11	5.1E-10	5.5E-08	5.0E-09	3.3E-11	3.2E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.4E-09	9.0E-08
	R2777	300521	6253271	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.1E-10	5.5E-08	4.9E-09	3.3E-11	3.2E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.3E-09	8.9E-08
	R2778	300571	6253271	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	2.9E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.5E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.5E-07	3.2E-07	2.4E-08	8.3E-09	8.8E-08
	R2779	300621	6253271	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	2.9E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.4E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.8E-08
	R2780	300671	6253271	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.5E-09	1.0E-11	4.9E-10	5.4E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.2E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.1E-09	8.7E-08
	R2781	300721	6253271	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.3E-08	8.1E-09	8.6E-08
	R2782	300771	6253271	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.7E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.1E-11	3.0E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.1E-07	2.3E-08	8.0E-09	8.6E-08
	R2783	300821	6253271	1.4E-06	1.4E-06	1.3E-05	7.1E-07	1.4E-06	3.8E-05	1.7E-04	3.3E-05	2.8E-06	5.7E-09	1.3E-08	1.4E-09	9.9E-12	4.8E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.9E-09	8.5E-08
	R2784	300871	6253271	1.4E-06	1.4E-06	1.3E-05	7.0E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.8E-12	4.8E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.9E-09	8.4E-08
	R2785	300921	6253271	1.4E-06	1.4E-06	1.3E-05	7.0E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.8E-12	4.7E-10	5.2E-08	4.6E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.8E-09	8.4E-08
	R2786	300971	6253271	1.4E-06	1.4E-06	1.2E-05	6.9E-07	1.4E-06	3.7E-05	1.7E-04	3.2E-05	2.8E-06	5.5E-09	1.2E-08	1.4E-09	9.7E-12	4.7E-10	5.1E-08	4.6E-09	3.0E-11	2.9E-09	3.5E-08	2.0E-08	1.3E-07	2.4E-07	3.0E-07	2.3E-08	7.7E-09	8.3E-08
	R2787	301021	6253271	1.4E-06	1.4E-06	1.2E-05	6.9E-07	1.4E-06	3.7E-05	1.6E-04	3.2E-05	2.7E-06	5.5E-09	1.2E-08	1.4E-09	9.6E-12	4.7E-10	5.1E-08	4.6E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.3E-07	2.4E-07	3.0E-07	2.2E-08	7.7E-09	8.2E-08
	R2788	301071	6253271	1.4E-06	1.4E-06	1.2E-05	6.8E-07	1.4E-06	3.7E-05	1.6E-04	3.1E-05	2.7E-06	5.4E-09	1.2E-08	1.4E-09	9.5E-12	4.6E-10	5.0E-08	4.5E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.3E-07	2.3E-07	3.0E-07	2.2E-08	7.6E-09	8.2E-08
	R2789	301121	6253271	1.3E-06	1.3E-06	1.2E-05	6.7E-07	1.3E-06	3.6E-05	1.6E-04	3.1E-05	2.7E-06	5.4E-09	1.2E-08	1.3E-09	9.4E-12	4.6E-10	5.0E-08	4.5E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.2E-07	2.3E-07	3.0E-07	2.2E-08	7.5E-09	8.1E-08
	R2790	301171	6253271	1.3E-06	1.3E-06	1.2E-05	6.7E-07	1.3E-06	3.6E-05	1.6E-04	3.1E-05	2.7E-06	5.3E-09	1.2E-08	1.3E-09	9.4E-12	4.5E-10	4.9E-08	4.4E-09	2.9E-11	2.8E-09	3.3E-08	2.0E-08	1.2E-07	2.3E-07	2.9E-07	2.2E-08	7.5E-09	8.0E-08
	R2791	301221	6253271	1.3E-06	1.3E-06	1.2E-05	6.6E-07	1.3E-06	3.6E-05	1.6E-04	3.0E-05	2.6E-06	5.3E-09	1.2E-08	1.3E-09	9.3E-12	4.5E-10	4.9E-08	4.4E-09	2.9E-11	2.8E-09	3.3E-08	2.0E-08	1.2E-07	2.3E-07	2.9E-07	2.2E-08	7.4E-09	7.9E-08
	R2792	301271	6253271	1.3E-06	1.3E-06	1.2E-05	6.6E-07	1.3E-06	3.5E-05	1.6E-04	3.0E-05	2.6E-06	5.3E-09	1.2E-08	1.3E-09	9.2E-12	4.5E-10	4.9E-08	4.4E-09	2.9E-11	2.8E-09	3.3E-08	1.9E-08	1.2E-07	2.3E-07	2.9E-07	2.1E-08	7.4E-09	7.9E-08
	R2793	301321	6253271	1.3E-06	1.3E-06	1.2E-05	6.5E-07	1.3E-06	3.5E-05	1.6E-04	3.0E-05	2.6E-06	5.2E-09	1.2E-08	1.3E-09	9.1E-12	4.4E-10	4.8E-08	4.3E-09	2.9E-11	2.8E-09	3.3E-08	1.9E-08	1.2E-07	2.2E-07	2.9E-07	2.1E-08	7.3E-09	7.8E-08
	R2794	301371	6253271	1.3E-06	1.3E-06	1.2E-05	6.5E-07	1.3E-06	3.5E-05	1.5E-04	3.0E-05	2.6E-06	5.2E-09	1.2E-08	1.3E-09	9.0E-12	4.4E-10	4.8E-08	4.3E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.2E-09	7.7E-08
	R2795	301421	6253271	1.3E-06	1.3E-06	1.2E-05	6.4E-07	1.3E-06	3.5E-05	1.5E-04	2.9E-05	2.6E-06	5.1E-09	1.2E-08	1.3E-09	9.0E-12	4.4E-10	4.7E-08	4.3E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.2E-09	7.7E-08
	R2796	301471	6253271	1.3E-06	1.3E-06	1.1E-05	6.3E-07	1.3E-06	3.4E-05	1.5E-04	2.9E-05	2.5E-06	5.1E-09	1.1E-08	1.3E-09	8.9E-12	4.3E-10	4.7E-08	4.2E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.1E-09	7.6E-08
	R2797	301521	6253271	1.3E-06	1.3E-06	1.1E-05	6.3E-07	1.3E-06	3.4E-05	1.5E-04	2.9E-05	2.5E-06	5.0E-09	1.1E-08	1.3E-09	8.8E-12	4.3E-10	4.7E-08	4.2E-09	2.8E-11	2.7E-09	3.1E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.0E-09	7.6E-08
	R2798	301571	6253271	1.2E-06	1.2E-06	1.1E-05	6.2E-07	1.2E-06	3.4E-05	1.5E-04	2.9E-05	2.5E-06	5.0E-09	1.1E-08	1.2E-09	8.7E-12	4.2E-10	4.6E-08	4.2E-09	2.7E-11	2.6E-09	3.1E-08	1.8E-08	1.1E-07	2.1E-07	2.7E-07	2.0E-08	7.0E-09	7.5E-08
	R2799	301621	6253271	1.2E-06	1.2E-06	1.1E-05	6.2E-07	1.2E-06	3.3E-05	1.5E-04	2.8E-05	2.5E-06	4.9E-09	1.1E-08	1.2E-09	8.6E-12	4.2E-10	4.6E-08	4.1E-09	2.7E-11	2.6E-09	3.1E-08	1.8E-08	1.1E-07	2.1E-07	2.7E-07	2.0E-08	6.9E-09	7.4E-08
	R2800	298771	6253321	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.7E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.2E-11	3.0E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.3E-08	8.0E-09	8.6E-08
	R2801	298821	6253321	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.1E-09	8.7E-08
	R2802	298871	6253321	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.5E-09	1.0E-11	4.9E-10	5.4E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.2E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.1E-09	8.7E-08
	R2803	298921	6253321	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	2.9E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.4E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.8E-08
	R2804	298971	6253321	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.5E-08	4.9E-09	3.3E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.5E-07	3.3E-07	2.4E-08	8.3E-09	8.9E-08
	R2805	299021	6253321	1.5E-06	1.5E-06	1.3E-05	7.5E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	6.0E-09	1.3E-08	1.5E-09	1.0E-11	5.1E-10	5.5E-08	5.0E-09	3.3E-11	3.2E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.3E-09	8.9E-08
	R2806	299071	6253321	1.5E-06	1.5E-06	1.4E-05	7.5E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.0E-09	1.4E-08	1.5E-09	1.1E-11	5.1E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.4E-09	9.0E-08

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																									
													Metal									Heavy Metal							
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm ³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R2807	299121	6253321	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.5E-09	9.1E-08
	R2808	299171	6253321	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.2E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2809	299221	6253321	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.2E-05	1.8E-04	3.5E-05	3.1E-06	6.2E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.3E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2810	299271	6253321	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.5E-09	1.1E-11	5.3E-10	5.7E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.3E-08
	R2811	299321	6253321	1.6E-06	1.6E-06	1.4E-05	7.8E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.8E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.4E-08
	R2812	299371	6253321	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.8E-08	5.2E-09	3.5E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.5E-07	2.6E-08	8.8E-09	9.4E-08
	R2813	299421	6253321	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.6E-05	3.2E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.8E-08	5.3E-09	3.5E-11	3.3E-09	3.9E-08	2.3E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.8E-09	9.5E-08
	R2814	299471	6253321	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.5E-08
	R2815	299521	6253321	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.6E-08
	R2816	299571	6253321	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.7E-08
	R2817	299621	6253321	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	1.9E-04	3.7E-05	3.2E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.6E-08	9.0E-09	9.7E-08
	R2818	299671	6253321	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	1.9E-04	3.7E-05	3.2E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.6E-08	9.1E-09	9.7E-08
	R2819	299721	6253321	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	1.9E-04	3.7E-05	3.2E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.4E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.6E-08	9.1E-09	9.7E-08
	R2820	299771	6253321	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	2.0E-04	3.7E-05	3.3E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.4E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.1E-09	9.8E-08
	R2821	299821	6253321	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	2.0E-04	3.7E-05	3.3E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.4E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.1E-09	9.8E-08
	R2822	299871	6253321	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.7E-08
	R2823	299921	6253321	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.5E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.6E-08
	R2824	299971	6253321	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.6E-08
	R2825	300021	6253321	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.6E-08
	R2826	300071	6253321	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.6E-05	3.2E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.3E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.5E-08
	R2827	300121	6253321	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.6E-05	3.2E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.3E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.5E-08
	R2828	300171	6253321	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.6E-05	3.2E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.3E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.5E-08
	R2829	300221	6253321	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.6E-05	3.2E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.3E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.5E-08
	R2830	300271	6253321	1.6E-06	1.6E-06	1.4E-05	7.8E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.8E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.6E-08	8.8E-09	9.4E-08
	R2831	300321	6253321	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.5E-09	1.1E-11	5.3E-10	5.7E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.3E-08
	R2832	300371	6253321	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.2E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2833	300421	6253321	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.5E-09	9.1E-08
	R2834	300471	6253321	1.5E-06	1.5E-06	1.4E-05	7.5E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.0E-09	1.4E-08	1.5E-09	1.1E-11	5.1E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.4E-09	9.0E-08
	R2835	300521	6253321	1.5E-06	1.5E-06	1.3E-05	7.5E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	6.0E-09	1.3E-08	1.5E-09	1.0E-11	5.1E-10	5.5E-08	5.0E-09	3.3E-11	3.2E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.4E-09	9.0E-08
	R2836	300571	6253321	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.5E-08	4.9E-09	3.3E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.3E-09	8.9E-08
	R2837	300621	6253321	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	2.9E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.5E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.8E-08
	R2838	300671	6253321	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	3.9E-05	1.8E-04	3.4E-05	2.9E-06	5.8E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.4E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.8E-08
	R2839	300721	6253321	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.5E-09	1.0E-11	4.9E-10	5.4E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.1E-09	8.7E-08
	R2840	300771	6253321	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.2E-11	3.0E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.3E-08	8.1E-09	8.6E-08
	R2841	300821	6253321	1.4E-06	1.4E-06	1.3E-05	7.1E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.7E-09	1.3E-08	1.4E-09	1.0E-11	4.8E-10	5.3E-08	4.7E-09	3.1E-11	3.0E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.1E-07	2.3E-08	8.0E-09	8.6E-08
	R2842	300871	6253321	1.4E-06	1.4E-06	1.3E-05	7.1E-07	1.4E-06	3.8E-05	1.7E-04	3.3E-05	2.8E-06	5.7E-09	1.3E-08	1.4E-09	9.9E-12	4.8E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.9E-09	8.5E-08
	R2843	300921	6253321	1.4E-06	1.4E-06	1.3E-05	7.0E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.8E-12	4.8E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.9E-09	8.4E-08
	R2844	300971	6253321	1.4E-06	1.4E-06	1.3E-05	7.0E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.7E-12	4.7E-10	5.1E-08	4.6E-09	3.1E-11	2.9E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.8E-09	8.3E-08
	R2845	301021	6253321	1.4E-06	1.4E-06	1.2E-05	6.9E-07	1.4E-06	3.7E-05	1.7E-04	3.2E-05	2.8E-06	5.5E-09	1.2E-08	1.4E-09	9.7E-12	4.7E-10	5.1E-08	4.6E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.3E-07	2.4E-07	3.0E-07	2.2E-08	7.7E-09	8.3E-08
	R2846	301071	6253321	1.4E-06	1.4E-06	1.2E-05	6.8E-07	1.4E-06	3.7E-05	1.6E-04	3.1E-05	2.7E-06	5.5E-09	1.2E-08	1.4E-09	9.6E-12	4.6E-10	5.1E-08	4.6E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.3E-07	2.4E-07	3.0E-07	2.2E-08	7.7E-09	8.2E-08
	R2847	301121	6253321	1.4E-06	1.4E-06	1.2E-05	6.8E-07	1.4E-06	3.7E-05	1.6E-04	3.1E-05	2.7E-06	5.4E-09	1.2E-08	1.4E-09	9.5E-12	4.6E-10	5.0E-08	4.5E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.2E-07	2.3E-07	3.0E-07	2.2E-08	7.6E-09	8.1E-08
	R2848	301171	6253321	1.3E-06	1.3E-06	1.2E-05	6.7E-07	1.3E-06	3.6E-05	1.6E-04	3.1E-05	2.7E-06	5.4E-09	1.2E-08	1.3E-09	9.4E-12	4.6E-10	5.0E-08	4.5E-09	3.0E-11	2.8E-09	3.4E-08	2.0E-08	1.2E-07	2.3E-07	3.0E-07	2.2E-08	7.5E-09	8.1E-08
	R2849	301221	6253321	1.3E-06	1.3E-06	1.2E-05	6.7E-07	1.3E-06	3.6E-05	1.6E-04	3.1E-05	2.7E-06	5.3E-09	1.2E-08	1.3E-09	9.3E-12	4.5E-10	4.9E-08	4.4E-09	2.9E-11	2.8E-09	3.3E-08	2.0E-08	1.2E-07	2.3E-07	2.9E-07	2.2E-08	7.5E-09	8.0E-08
	R2850	301271	6253321	1.3E-06	1.3E-06	1.2E-05	6.6E-07	1.3E-06	3.6E-05	1.6E-04	3.0E-05	2.6E-06	5.3E-09	1.2E-08	1.3E-09	9.2E-12	4.5E-10	4.9E-08	4.4E-09	2.9E-11	2.8E-09	3.3E-08	2.0E-08	1.2E-07	2.3E-07	2.9E-07	2.2E-08	7.4E-09	7.9E-08
	R2851	301321	6253321	1.3E-06	1.3E-06	1.2E-05	6.5E-07	1.3E-06	3.5E-05	1.6E-04	3.0E-05	2.6E-06	5.2E-09	1.2E-08	1.3E-09	9.2E-12	4.4E-10	4.8E-08	4.4E-09	2.9E-11	2.8E-09	3.3E-08	1.9E-08	1.2E-07	2.2E-07	2.9E-07	2.1E-08	7.3E-09	7.8E-08
	R2852	301371	6253321	1.3E-06	1.3E-06	1.2E-05	6.5E-07	1.3E-06	3.5E-05	1.6E-04	3.0E-05	2.6E-06	5.2E-09	1.2E-08	1.3E-09	9.1E-12	4.4E-10	4.8E-08	4.3E-09	2.9E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.9E-07	2.1E-08	7.3E-09	7.8E-08
	R2853	301421	6253321	1.3E-06	1.3E-06	1.2E-05	6.4E-07	1.3E-06	3.5E-05	1.5E-04	3.0E-05	2.6E-06	5.1E-09	1.2E-08	1.3E-09	9.0E-12	4.4E-10	4.8E-08	4.3E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.2E-09	7.7E-08
	R2854	301471	6253321	1.3E-06	1.3E-06	1.1E-05	6.4E-07	1.3E-06	3.4E-05	1.5E-04	2.9E-05	2.6E-06	5.1E-09	1.1E-08	1.3E-09	8.9E-12	4.3E-10	4.7E-08	4.2E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.1E-09	7.7E-08
	R2855	301521	6253321	1.3E-06	1.3E-06	1.1E-05	6.3E-07	1.3E-06	3.4E-05	1.5E-04	2.9E-05	2.5E-06	5.1E-09	1.1E-08	1.3E-09	8.8E-12	4.3E-10	4.7E-08	4.2E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.1E-09	7.6E-08
	R2856	301571	6253321	1.3E-06	1.3E-06	1.1E-05	6.3E-07	1.3E-06	3.4E-05	1.5E-04	2.9E-05	2.5E-06	5.0E-09	1.1E-08	1.3E-09	8.8E-12	4.3E-10	4.6E-08	4.2E-09	2.8E-11	2.7E-09	3.1E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.0E-08	7.0E-09	7.5E-08
	R2857	301621	6253321	1.2E-06	1.2E-06	1.1E-05	6.2E-07	1.2E-06	3.4E-05	1.5E-04	2.9E-05	2.5E-06	5.0E-09	1.1E-08	1.2E-09	8.7E-12	4.2E-10	4.6E-08	4.1E-09	2.7E-11	2.6E-09	3.1E-08	1.8E-08	1.1E-07	2.1E-07	2.7E-07	2.0E-08	6.9E-09	7.4E-08
	R2858	298771	6253371	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.5E-09	1.0E-11	4.9E-10	5.4E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.1E-09	8.7E-08
	R2859	298821	6253371	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	3.9E-05	1.7E-04	3.4E-05	2.9E-06	5.8E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.4E-08	4.9E-09	3.2E-11	3.1E-09	3.6E-08	2.2E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.7E-08
	R2860	298871	6253371	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	2.9E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.4E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.8E-08
	R2861	298921	6253371	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.5E-08	4.9E-09	3.3E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.5E-07	3.3E-07	2.4E-08	8.3E-09	8.9E-08
	R2862	298971	6253371	1.5E-06	1.5E-06	1.3E-05	7.5E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	6.0E-09	1.3E-08	1.5E-09	1.0E-11	5.1E-10	5.5E-08	5.0E-09	3.3E-11	3.2E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.4E-09	9.0E-08
	R2863	299021	6253371	1.5E-06	1.5E-06	1.4E-05	7.5E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.0E-09	1.4E-08	1.5E-09	1.1E-11	5.1E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.4E-09	9.0E-08
	R2864	299071	6253371	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.6E-08	5.1E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.5E-09	9.1E-08
	R2865	299121	6253371	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.2E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2866	299171	6253371	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.2E-05	1.9E-04	3.5E-05	3.1E-06	6.2E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.6E-09	9.3E-08
	R2867	299221	6253371	1.6E-06	1.6E-06	1.4E-05	7.8E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.7E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.3E-08

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				Annual GLCs									Metal									Heavy Metal							
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm ³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R2868	299271	6253371	1.6E-06	1.6E-06	1.4E-05	7.8E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.8E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.6E-08	8.8E-09	9.4E-08
	R2869	299321	6253371	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.6E-05	3.2E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.8E-08	5.3E-09	3.5E-11	3.3E-09	3.9E-08	2.3E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.8E-09	9.5E-08
	R2870	299371	6253371	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.3E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.5E-08
	R2871	299421	6253371	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.6E-08
	R2872	299471	6253371	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.6E-08
	R2873	299521	6253371	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	1.9E-04	3.7E-05	3.2E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.7E-08
	R2874	299571	6253371	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	1.9E-04	3.7E-05	3.2E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.4E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.6E-08	9.1E-09	9.7E-08
	R2875	299621	6253371	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	2.0E-04	3.7E-05	3.3E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.1E-09	9.8E-08
	R2876	299671	6253371	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	2.0E-04	3.7E-05	3.3E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.4E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.6E-08	9.1E-09	9.8E-08
	R2877	299721	6253371	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	2.0E-04	3.7E-05	3.3E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.1E-09	9.8E-08
	R2878	299771	6253371	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	2.0E-04	3.7E-05	3.3E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.4E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.6E-08	9.1E-09	9.8E-08
	R2879	299821	6253371	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	1.9E-04	3.7E-05	3.2E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.4E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.6E-08	9.1E-09	9.7E-08
	R2880	299871	6253371	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	1.9E-04	3.7E-05	3.2E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.7E-08
	R2881	299921	6253371	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	1.9E-04	3.7E-05	3.2E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.7E-08
	R2882	299971	6253371	1.6E-06	1.6E-06	1.4E-05	8.1E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.7E-08
	R2883	300021	6253371	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.6E-08
	R2884	300071	6253371	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.3E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.5E-08
	R2885	300121	6253371	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.6E-05	3.2E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.3E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.5E-08
	R2886	300171	6253371	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.6E-05	3.2E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.8E-08	5.3E-09	3.5E-11	3.3E-09	3.9E-08	2.3E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.8E-09	9.5E-08
	R2887	300221	6253371	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.6E-05	3.1E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.8E-08	5.2E-09	3.5E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.5E-07	2.6E-08	8.8E-09	9.4E-08
	R2888	300271	6253371	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.8E-08	5.2E-09	3.5E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.5E-07	2.6E-08	8.8E-09	9.4E-08
	R2889	300321	6253371	1.6E-06	1.6E-06	1.4E-05	7.8E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.8E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.6E-08	8.8E-09	9.4E-08
	R2890	300371	6253371	1.6E-06	1.6E-06	1.4E-05	7.8E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.7E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.3E-08
	R2891	300421	6253371	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.3E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2892	300471	6253371	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.6E-08	5.1E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.5E-09	9.1E-08
	R2893	300521	6253371	1.5E-06	1.5E-06	1.4E-05	7.5E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.0E-09	1.4E-08	1.5E-09	1.1E-11	5.1E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.4E-09	9.0E-08
	R2894	300571	6253371	1.5E-06	1.5E-06	1.3E-05	7.5E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	6.0E-09	1.3E-08	1.5E-09	1.0E-11	5.1E-10	5.5E-08	5.0E-09	3.3E-11	3.2E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.4E-09	9.0E-08
	R2895	300621	6253371	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.5E-08	4.9E-09	3.3E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.5E-07	3.3E-07	2.4E-08	8.3E-09	8.9E-08
	R2896	300671	6253371	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	2.9E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.4E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.8E-08
	R2897	300721	6253371	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	3.9E-05	1.8E-04	3.4E-05	2.9E-06	5.8E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.4E-08	4.9E-09	3.2E-11	3.1E-09	3.6E-08	2.2E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.8E-08
	R2898	300771	6253371	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.4E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.1E-09	8.7E-08
	R2899	300821	6253371	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.7E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.2E-11	3.0E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.3E-08	8.0E-09	8.6E-08
	R2900	300871	6253371	1.4E-06	1.4E-06	1.3E-05	7.1E-07	1.4E-06	3.8E-05	1.7E-04	3.3E-05	2.8E-06	5.7E-09	1.3E-08	1.4E-09	1.0E-11	4.8E-10	5.3E-08	4.7E-09	3.1E-11	3.0E-09	3.6E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	8.0E-09	8.5E-08
	R2901	300921	6253371	1.4E-06	1.4E-06	1.3E-05	7.1E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.9E-12	4.8E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.9E-09	8.5E-08
	R2902	300971	6253371	1.4E-06	1.4E-06	1.3E-05	7.0E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.8E-12	4.8E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.8E-09	8.4E-08
	R2903	301021	6253371	1.4E-06	1.4E-06	1.2E-05	6.9E-07	1.4E-06	3.7E-05	1.7E-04	3.2E-05	2.8E-06	5.5E-09	1.2E-08	1.4E-09	9.7E-12	4.7E-10	5.1E-08	4.6E-09	3.1E-11	2.9E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.8E-09	8.3E-08
	R2904	301071	6253371	1.4E-06	1.4E-06	1.2E-05	6.9E-07	1.4E-06	3.7E-05	1.6E-04	3.2E-05	2.7E-06	5.5E-09	1.2E-08	1.4E-09	9.6E-12	4.7E-10	5.1E-08	4.6E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.3E-07	2.4E-07	3.0E-07	2.2E-08	7.7E-09	8.2E-08
	R2905	301121	6253371	1.4E-06	1.4E-06	1.2E-05	6.8E-07	1.4E-06	3.7E-05	1.6E-04	3.1E-05	2.7E-06	5.4E-09	1.2E-08	1.4E-09	9.5E-12	4.6E-10	5.0E-08	4.5E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.3E-07	2.3E-07	3.0E-07	2.2E-08	7.6E-09	8.2E-08
	R2906	301171	6253371	1.4E-06	1.4E-06	1.2E-05	6.8E-07	1.4E-06	3.6E-05	1.6E-04	3.1E-05	2.7E-06	5.4E-09	1.2E-08	1.4E-09	9.5E-12	4.6E-10	5.0E-08	4.5E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.2E-07	2.3E-07	3.0E-07	2.2E-08	7.6E-09	8.1E-08
	R2907	301221	6253371	1.3E-06	1.3E-06	1.2E-05	6.7E-07	1.3E-06	3.6E-05	1.6E-04	3.1E-05	2.7E-06	5.3E-09	1.2E-08	1.3E-09	9.4E-12	4.5E-10	4.9E-08	4.5E-09	2.9E-11	2.8E-09	3.3E-08	2.0E-08	1.2E-07	2.3E-07	2.9E-07	2.2E-08	7.5E-09	8.0E-08
	R2908	301271	6253371	1.3E-06	1.3E-06	1.2E-05	6.6E-07	1.3E-06	3.6E-05	1.6E-04	3.0E-05	2.7E-06	5.3E-09	1.2E-08	1.3E-09	9.3E-12	4.5E-10	4.9E-08	4.4E-09	2.9E-11	2.8E-09	3.3E-08	2.0E-08	1.2E-07	2.3E-07	2.9E-07	2.2E-08	7.4E-09	8.0E-08
	R2909	301321	6253371	1.3E-06	1.3E-06	1.2E-05	6.6E-07	1.3E-06	3.5E-05	1.6E-04	3.0E-05	2.6E-06	5.3E-09	1.2E-08	1.3E-09	9.2E-12	4.5E-10	4.9E-08	4.4E-09	2.9E-11	2.8E-09	3.3E-08	1.9E-08	1.2E-07	2.3E-07	2.9E-07	2.1E-08	7.4E-09	7.9E-08
	R2910	301371	6253371	1.3E-06	1.3E-06	1.2E-05	6.5E-07	1.3E-06	3.5E-05	1.6E-04	3.0E-05	2.6E-06	5.2E-09	1.2E-08	1.3E-09	9.1E-12	4.4E-10	4.8E-08	4.3E-09	2.9E-11	2.8E-09	3.3E-08	1.9E-08	1.2E-07	2.2E-07	2.9E-07	2.1E-08	7.3E-09	7.8E-08
	R2911	301421	6253371	1.3E-06	1.3E-06	1.2E-05	6.5E-07	1.3E-06	3.5E-05	1.5E-04	3.0E-05	2.6E-06	5.2E-09	1.2E-08	1.3E-09	9.0E-12	4.4E-10	4.8E-08	4.3E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.2E-09	7.7E-08
	R2912	301471	6253371	1.3E-06	1.3E-06	1.2E-05	6.4E-07	1.3E-06	3.5E-05	1.5E-04	2.9E-05	2.6E-06	5.1E-09	1.2E-08	1.3E-09	9.0E-12	4.4E-10	4.7E-08	4.3E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.2E-09	7.7E-08
	R2913	301521	6253371	1.3E-06	1.3E-06	1.1E-05	6.3E-07	1.3E-06	3.4E-05	1.5E-04	2.9E-05	2.5E-06	5.1E-09	1.1E-08	1.3E-09	8.9E-12	4.3E-10	4.7E-08	4.2E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.1E-09	7.6E-08
	R2914	301571	6253371	1.3E-06	1.3E-06	1.1E-05	6.3E-07	1.3E-06	3.4E-05	1.5E-04	2.9E-05	2.5E-06	5.0E-09	1.1E-08	1.3E-09	8.8E-12	4.3E-10	4.7E-08	4.2E-09	2.8E-11	2.7E-09	3.1E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.0E-08	7.0E-09	7.5E-08
	R2915	301621	6253371	1.2E-06	1.2E-06	1.1E-05	6.2E-07	1.2E-06	3.4E-05	1.5E-04	2.9E-05	2.5E-06	5.0E-09	1.1E-08	1.2E-09	8.7E-12	4.2E-10	4.6E-08	4.2E-09	2.7E-11	2.6E-09	3.1E-08	1.8E-08	1.1E-07	2.1E-07	2.7E-07	2.0E-08	7.0E-09	7.5E-08
	R2916	298771	6253421	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	3.9E-05	1.8E-04	3.4E-05	2.9E-06	5.8E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.4E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.8E-08
	R2917	298821	6253421	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	2.9E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.4E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.8E-08
	R2918	298871	6253421	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.5E-08	4.9E-09	3.3E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.3E-09	8.9E-08
	R2919	298921	6253421	1.5E-06	1.5E-06	1.3E-05	7.5E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	6.0E-09	1.3E-08	1.5E-09	1.0E-11	5.1E-10	5.5E-08	5.0E-09	3.3E-11	3.2E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.4E-09	9.0E-08
	R2920	298971	6253421	1.5E-06	1.5E-06	1.4E-05	7.5E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.0E-09	1.4E-08	1.5E-09	1.1E-11	5.1E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.4E-09	9.0E-08
	R2921	299021	6253421	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.6E-08	5.1E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.5E-09	9.1E-08
	R2922	299071	6253421	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.3E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2923	299121	6253421	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.5E-09	1.1E-11	5.3E-10	5.7E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.3E-08
	R2924	299171	6253421	1.6E-06	1.6E-06	1.4E-05	7.8E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.8E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.3E-08
	R2925	299221	6253421	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.8E-08	5.2E-09	3.5E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.5E-07	2.6E-08	8.8E-09	9.4E-08
	R2926	299271	6253421	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.6E-05	3.2E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.3E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.5E-08
	R2927	299321	6253421	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.6E-08
	R2928	299371	6253421	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.6E-08

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																									
													Metal									Heavy Metal							
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm ³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R2929	299421	6253421	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	1.9E-04	3.7E-05	3.2E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.7E-08
	R2930	299471	6253421	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	1.9E-04	3.7E-05	3.2E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.4E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.6E-08	9.1E-09	9.7E-08
	R2931	299521	6253421	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	2.0E-04	3.7E-05	3.3E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.1E-09	9.8E-08
	R2932	299571	6253421	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.4E-05	2.0E-04	3.8E-05	3.3E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.6E-10	6.1E-08	5.4E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.2E-09	9.8E-08
	R2933	299621	6253421	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.4E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.6E-09	1.1E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.2E-09	9.8E-08
	R2934	299671	6253421	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.4E-05	2.0E-04	3.8E-05	3.3E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.2E-09	9.8E-08
	R2935	299721	6253421	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.4E-05	2.0E-04	3.8E-05	3.3E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.2E-09	9.8E-08
	R2936	299771	6253421	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.4E-05	2.0E-04	3.8E-05	3.3E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.6E-10	6.0E-08	5.4E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.2E-09	9.8E-08
	R2937	299821	6253421	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.4E-05	2.0E-04	3.8E-05	3.3E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.1E-09	9.8E-08
	R2938	299871	6253421	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	1.9E-04	3.7E-05	3.2E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.4E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.6E-08	9.1E-09	9.7E-08
	R2939	299921	6253421	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	1.9E-04	3.7E-05	3.2E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.4E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.6E-08	9.1E-09	9.7E-08
	R2940	299971	6253421	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	1.9E-04	3.7E-05	3.2E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.4E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.6E-08	9.1E-09	9.7E-08
	R2941	300021	6253421	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	1.9E-04	3.7E-05	3.2E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.6E-08	9.0E-09	9.7E-08
	R2942	300071	6253421	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.6E-08
	R2943	300121	6253421	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.6E-08
	R2944	300171	6253421	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.3E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.5E-08
	R2945	300221	6253421	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.6E-05	3.2E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.8E-08	5.3E-09	3.5E-11	3.3E-09	3.9E-08	2.3E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.8E-09	9.5E-08
	R2946	300271	6253421	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.6E-05	3.2E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.8E-08	5.3E-09	3.5E-11	3.3E-09	3.9E-08	2.3E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.8E-09	9.5E-08
	R2947	300321	6253421	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.8E-08	5.2E-09	3.5E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.5E-07	2.6E-08	8.8E-09	9.4E-08
	R2948	300371	6253421	1.6E-06	1.6E-06	1.4E-05	7.8E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.8E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.4E-08
	R2949	300421	6253421	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.2E-05	1.9E-04	3.5E-05	3.1E-06	6.2E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.6E-09	9.3E-08
	R2950	300471	6253421	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.2E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2951	300521	6253421	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.5E-09	9.1E-08
	R2952	300571	6253421	1.5E-06	1.5E-06	1.4E-05	7.5E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.0E-09	1.4E-08	1.5E-09	1.1E-11	5.1E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.4E-09	9.0E-08
	R2953	300621	6253421	1.5E-06	1.5E-06	1.3E-05	7.5E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	6.0E-09	1.3E-08	1.5E-09	1.0E-11	5.1E-10	5.5E-08	5.0E-09	3.3E-11	3.2E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.4E-09	9.0E-08
	R2954	300671	6253421	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.5E-08	4.9E-09	3.3E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.5E-07	3.3E-07	2.4E-08	8.3E-09	8.9E-08
	R2955	300721	6253421	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	2.9E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.4E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.8E-08
	R2956	300771	6253421	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.5E-09	1.0E-11	4.9E-10	5.4E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.2E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.7E-08
	R2957	300821	6253421	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.1E-09	8.7E-08
	R2958	300871	6253421	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.7E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.1E-11	3.0E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.1E-07	2.3E-08	8.0E-09	8.6E-08
	R2959	300921	6253421	1.4E-06	1.4E-06	1.3E-05	7.1E-07	1.4E-06	3.8E-05	1.7E-04	3.3E-05	2.8E-06	5.7E-09	1.3E-08	1.4E-09	9.9E-12	4.8E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.9E-09	8.5E-08
	R2960	300971	6253421	1.4E-06	1.4E-06	1.3E-05	7.0E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.8E-12	4.8E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.9E-09	8.4E-08
	R2961	301021	6253421	1.4E-06	1.4E-06	1.3E-05	7.0E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.8E-12	4.7E-10	5.2E-08	4.6E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.8E-09	8.4E-08
	R2962	301071	6253421	1.4E-06	1.4E-06	1.2E-05	6.9E-07	1.4E-06	3.7E-05	1.7E-04	3.2E-05	2.8E-06	5.5E-09	1.2E-08	1.4E-09	9.7E-12	4.7E-10	5.1E-08	4.6E-09	3.0E-11	2.9E-09	3.5E-08	2.0E-08	1.3E-07	2.4E-07	3.0E-07	2.3E-08	7.7E-09	8.3E-08
	R2963	301121	6253421	1.4E-06	1.4E-06	1.2E-05	6.8E-07	1.4E-06	3.7E-05	1.6E-04	3.1E-05	2.7E-06	5.5E-09	1.2E-08	1.4E-09	9.6E-12	4.7E-10	5.1E-08	4.6E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.3E-07	2.4E-07	3.0E-07	2.2E-08	7.7E-09	8.2E-08
	R2964	301171	6253421	1.4E-06	1.4E-06	1.2E-05	6.8E-07	1.4E-06	3.7E-05	1.6E-04	3.1E-05	2.7E-06	5.4E-09	1.2E-08	1.4E-09	9.5E-12	4.6E-10	5.0E-08	4.5E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.2E-07	2.3E-07	3.0E-07	2.2E-08	7.6E-09	8.1E-08
	R2965	301221	6253421	1.3E-06	1.3E-06	1.2E-05	6.7E-07	1.3E-06	3.6E-05	1.6E-04	3.1E-05	2.7E-06	5.4E-09	1.2E-08	1.3E-09	9.4E-12	4.6E-10	5.0E-08	4.5E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.2E-07	2.3E-07	3.0E-07	2.2E-08	7.5E-09	8.1E-08
	R2966	301271	6253421	1.3E-06	1.3E-06	1.2E-05	6.7E-07	1.3E-06	3.6E-05	1.6E-04	3.1E-05	2.7E-06	5.3E-09	1.2E-08	1.3E-09	9.3E-12	4.5E-10	4.9E-08	4.4E-09	2.9E-11	2.8E-09	3.3E-08	2.0E-08	1.2E-07	2.3E-07	2.9E-07	2.2E-08	7.5E-09	8.0E-08
	R2967	301321	6253421	1.3E-06	1.3E-06	1.2E-05	6.6E-07	1.3E-06	3.6E-05	1.6E-04	3.0E-05	2.6E-06	5.3E-09	1.2E-08	1.3E-09	9.2E-12	4.5E-10	4.9E-08	4.4E-09	2.9E-11	2.8E-09	3.3E-08	2.0E-08	1.2E-07	2.3E-07	2.9E-07	2.2E-08	7.4E-09	7.9E-08
	R2968	301371	6253421	1.3E-06	1.3E-06	1.2E-05	6.5E-07	1.3E-06	3.5E-05	1.6E-04	3.0E-05	2.6E-06	5.2E-09	1.2E-08	1.3E-09	9.2E-12	4.5E-10	4.8E-08	4.4E-09	2.9E-11	2.8E-09	3.3E-08	1.9E-08	1.2E-07	2.3E-07	2.9E-07	2.1E-08	7.3E-09	7.9E-08
	R2969	301421	6253421	1.3E-06	1.3E-06	1.2E-05	6.5E-07	1.3E-06	3.5E-05	1.6E-04	3.0E-05	2.6E-06	5.2E-09	1.2E-08	1.3E-09	9.1E-12	4.4E-10	4.8E-08	4.3E-09	2.9E-11	2.8E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.9E-07	2.1E-08	7.3E-09	7.8E-08
	R2970	301471	6253421	1.3E-06	1.3E-06	1.2E-05	6.4E-07	1.3E-06	3.5E-05	1.5E-04	3.0E-05	2.6E-06	5.1E-09	1.2E-08	1.3E-09	9.0E-12	4.4E-10	4.8E-08	4.3E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.2E-09	7.7E-08
	R2971	301521	6253421	1.3E-06	1.3E-06	1.1E-05	6.4E-07	1.3E-06	3.4E-05	1.5E-04	2.9E-05	2.6E-06	5.1E-09	1.1E-08	1.3E-09	8.9E-12	4.3E-10	4.7E-08	4.2E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.1E-09	7.7E-08
	R2972	301571	6253421	1.3E-06	1.3E-06	1.1E-05	6.3E-07	1.3E-06	3.4E-05	1.5E-04	2.9E-05	2.5E-06	5.1E-09	1.1E-08	1.3E-09	8.8E-12	4.3E-10	4.7E-08	4.2E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.1E-09	7.6E-08
	R2973	301621	6253421	1.3E-06	1.3E-06	1.1E-05	6.3E-07	1.3E-06	3.4E-05	1.5E-04	2.9E-05	2.5E-06	5.0E-09	1.1E-08	1.3E-09	8.8E-12	4.3E-10	4.6E-08	4.2E-09	2.8E-11	2.7E-09	3.1E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.0E-08	7.0E-09	7.5E-08
	R2974	298771	6253471	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	2.9E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.5E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.5E-07	3.2E-07	2.4E-08	8.3E-09	8.8E-08
	R2975	298821	6253471	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.5E-08	4.9E-09	3.3E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.3E-09	8.9E-08
	R2976	298871	6253471	1.5E-06	1.5E-06	1.3E-05	7.5E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	6.0E-09	1.3E-08	1.5E-09	1.0E-11	5.1E-10	5.5E-08	5.0E-09	3.3E-11	3.2E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.4E-09	9.0E-08
	R2977	298921	6253471	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.1E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.5E-09	9.1E-08
	R2978	298971	6253471	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.6E-08	5.1E-09	3.4E-11	3.2E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.5E-09	9.2E-08
	R2979	299021	6253471	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.2E-05	1.8E-04	3.5E-05	3.1E-06	6.2E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.3E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R2980	299071	6253471	1.6E-06	1.6E-06	1.4E-05	7.8E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.7E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.3E-08
	R2981	299121	6253471	1.6E-06	1.6E-06	1.4E-05	7.8E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.8E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.6E-08	8.8E-09	9.4E-08
	R2982	299171	6253471	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.6E-05	3.1E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.8E-08	5.2E-09	3.5E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.5E-07	2.6E-08	8.8E-09	9.4E-08
	R2983	299221	6253471	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.6E-05	3.2E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.3E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.5E-08
	R2984	299271	6253471	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.6E-08
	R2985	299321	6253471	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.7E-08
	R2986	299371	6253471	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	1.9E-04	3.7E-05	3.2E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.4E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.6E-08	9.1E-09	9.7E-08
	R2987	299421	6253471	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.4E-05	2.0E-04	3.8E-05	3.3E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.1E-09	9.8E-08
	R2988	299471	6253471	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.4E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.6E-09	1.1E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.2E-09	9.9E-08
	R2989	299521	6253471	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.4E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.6E-09	1.2E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.2E-09	9.9E-08

Scenario 1 and Scenario 3 Weighted Average

Maximum Annual and 1-hour Average Air Concentrations (100th percentile)

Sensitive Receptor	ID	X	Y	Annual GLCs																									
													Metal									Heavy Metal							
				PM_{10}	$PM_{2.5}$	HCl	HF	H_2S	SO_2	NO_2	CO	NH_3	Hg	Cd	Tl	Be	Ag	Zn	Sn	Mo	Se	As	Sb	Cr (III)	Pb	Ni	Cu	Co	Mn
				mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³	mg/m³
In-stack Concentration (mg/Nm³)				1.00E+00	1.00E+00	9.00E+00	5.00E-01	1.00E+00	2.70E+01	1.88E+02	2.30E+01	2.00E+00	4.00E-03	9.00E-03	1.00E-03	7.00E-06	3.40E-04	3.70E-02	3.33E-03	2.20E-05	2.12E-03	2.50E-02	1.48E-02	9.20E-02	1.72E-01	2.20E-01	1.63E-02	5.60E-03	6.00E-02
	R2990	299571	6253471	1.7E-06	1.7E-06	1.5E-05	8.3E-07	1.7E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.7E-09	1.2E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.3E-09	9.9E-08
	R2991	299621	6253471	1.7E-06	1.7E-06	1.5E-05	8.3E-07	1.7E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.7E-09	1.2E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.5E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.3E-09	9.9E-08
	R2992	299671	6253471	1.7E-06	1.7E-06	1.5E-05	8.3E-07	1.7E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.7E-09	1.2E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.5E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.3E-09	9.9E-08
	R2993	299721	6253471	1.7E-06	1.7E-06	1.5E-05	8.3E-07	1.7E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.7E-09	1.2E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.3E-09	9.9E-08
	R2994	299771	6253471	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.6E-09	1.2E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.2E-09	9.9E-08
	R2995	299821	6253471	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.4E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.6E-09	1.2E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.2E-09	9.9E-08
	R2996	299871	6253471	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.4E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.6E-09	1.1E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.2E-09	9.9E-08
	R2997	299921	6253471	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.4E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.6E-09	1.1E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.2E-09	9.8E-08
	R2998	299971	6253471	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.4E-05	2.0E-04	3.8E-05	3.3E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.2E-09	9.8E-08
	R2999	300021	6253471	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	2.0E-04	3.7E-05	3.3E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.1E-09	9.8E-08
	R3000	300071	6253471	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	1.9E-04	3.7E-05	3.2E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.6E-08	9.1E-09	9.7E-08
	R3001	300121	6253471	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.5E-10	5.9E-08	5.4E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.6E-08
	R3002	300171	6253471	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.6E-08
	R3003	300221	6253471	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.5E-08
	R3004	300271	6253471	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.6E-05	3.2E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.3E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.5E-08
	R3005	300321	6253471	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.6E-05	3.2E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.3E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.5E-08
	R3006	300371	6253471	1.6E-06	1.6E-06	1.4E-05	7.8E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.8E-08	5.2E-09	3.5E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.5E-07	2.6E-08	8.8E-09	9.4E-08
	R3007	300421	6253471	1.6E-06	1.6E-06	1.4E-05	7.8E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.7E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.3E-08
	R3008	300471	6253471	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.2E-05	1.8E-04	3.5E-05	3.1E-06	6.2E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.3E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R3009	300521	6253471	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.6E-08	5.1E-09	3.4E-11	3.2E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.5E-09	9.2E-08
	R3010	300571	6253471	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.1E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.5E-09	9.1E-08
	R3011	300621	6253471	1.5E-06	1.5E-06	1.4E-05	7.5E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.0E-09	1.4E-08	1.5E-09	1.1E-11	5.1E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.4E-09	9.0E-08
	R3012	300671	6253471	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	6.0E-09	1.3E-08	1.5E-09	1.0E-11	5.1E-10	5.5E-08	5.0E-09	3.3E-11	3.2E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.3E-09	8.9E-08
	R3013	300721	6253471	1.5E-06	1.5E-06	1.3E-05	7.4E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.5E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.4E-07	2.5E-07	3.2E-07	2.4E-08	8.3E-09	8.9E-08
	R3014	300771	6253471	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	2.9E-06	5.9E-09	1.3E-08	1.5E-09	1.0E-11	5.0E-10	5.4E-08	4.9E-09	3.2E-11	3.1E-09	3.7E-08	2.2E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.2E-09	8.8E-08
	R3015	300821	6253471	1.5E-06	1.5E-06	1.3E-05	7.3E-07	1.5E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.5E-09	1.0E-11	4.9E-10	5.4E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.4E-08	8.1E-09	8.7E-08
	R3016	300871	6253471	1.4E-06	1.4E-06	1.3E-05	7.2E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.8E-09	1.3E-08	1.4E-09	1.0E-11	4.9E-10	5.3E-08	4.8E-09	3.2E-11	3.1E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.2E-07	2.3E-08	8.1E-09	8.6E-08
	R3017	300921	6253471	1.4E-06	1.4E-06	1.3E-05	7.1E-07	1.4E-06	3.9E-05	1.7E-04	3.3E-05	2.9E-06	5.7E-09	1.3E-08	1.4E-09	1.0E-11	4.8E-10	5.3E-08	4.7E-09	3.1E-11	3.0E-09	3.6E-08	2.1E-08	1.3E-07	2.5E-07	3.1E-07	2.3E-08	8.0E-09	8.6E-08
	R3018	300971	6253471	1.4E-06	1.4E-06	1.3E-05	7.1E-07	1.4E-06	3.8E-05	1.7E-04	3.3E-05	2.8E-06	5.7E-09	1.3E-08	1.4E-09	9.9E-12	4.8E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.9E-09	8.5E-08
	R3019	301021	6253471	1.4E-06	1.4E-06	1.3E-05	7.0E-07	1.4E-06	3.8E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.3E-08	1.4E-09	9.8E-12	4.8E-10	5.2E-08	4.7E-09	3.1E-11	3.0E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.8E-09	8.4E-08
	R3020	301071	6253471	1.4E-06	1.4E-06	1.2E-05	6.9E-07	1.4E-06	3.7E-05	1.7E-04	3.2E-05	2.8E-06	5.6E-09	1.2E-08	1.4E-09	9.7E-12	4.7E-10	5.1E-08	4.6E-09	3.1E-11	2.9E-09	3.5E-08	2.1E-08	1.3E-07	2.4E-07	3.1E-07	2.3E-08	7.8E-09	8.3E-08
	R3021	301121	6253471	1.4E-06	1.4E-06	1.2E-05	6.9E-07	1.4E-06	3.7E-05	1.7E-04	3.2E-05	2.8E-06	5.5E-09	1.2E-08	1.4E-09	9.6E-12	4.7E-10	5.1E-08	4.6E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.3E-07	2.4E-07	3.0E-07	2.2E-08	7.7E-09	8.3E-08
	R3022	301171	6253471	1.4E-06	1.4E-06	1.2E-05	6.8E-07	1.4E-06	3.7E-05	1.6E-04	3.1E-05	2.7E-06	5.5E-09	1.2E-08	1.4E-09	9.5E-12	4.6E-10	5.0E-08	4.5E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.3E-07	2.3E-07	3.0E-07	2.2E-08	7.6E-09	8.2E-08
	R3023	301221	6253471	1.4E-06	1.4E-06	1.2E-05	6.8E-07	1.4E-06	3.6E-05	1.6E-04	3.1E-05	2.7E-06	5.4E-09	1.2E-08	1.4E-09	9.5E-12	4.6E-10	5.0E-08	4.5E-09	3.0E-11	2.9E-09	3.4E-08	2.0E-08	1.2E-07	2.3E-07	3.0E-07	2.2E-08	7.6E-09	8.1E-08
	R3024	301271	6253471	1.3E-06	1.3E-06	1.2E-05	6.7E-07	1.3E-06	3.6E-05	1.6E-04	3.1E-05	2.7E-06	5.4E-09	1.2E-08	1.3E-09	9.4E-12	4.6E-10	5.0E-08	4.5E-09	2.9E-11	2.8E-09	3.3E-08	2.0E-08	1.2E-07	2.3E-07	2.9E-07	2.2E-08	7.5E-09	8.0E-08
	R3025	301321	6253471	1.3E-06	1.3E-06	1.2E-05	6.6E-07	1.3E-06	3.6E-05	1.6E-04	3.1E-05	2.7E-06	5.3E-09	1.2E-08	1.3E-09	9.3E-12	4.5E-10	4.9E-08	4.4E-09	2.9E-11	2.8E-09	3.3E-08	2.0E-08	1.2E-07	2.3E-07	2.9E-07	2.2E-08	7.4E-09	8.0E-08
	R3026	301371	6253471	1.3E-06	1.3E-06	1.2E-05	6.6E-07	1.3E-06	3.6E-05	1.6E-04	3.0E-05	2.6E-06	5.3E-09	1.2E-08	1.3E-09	9.2E-12	4.5E-10	4.9E-08	4.4E-09	2.9E-11	2.8E-09	3.3E-08	1.9E-08	1.2E-07	2.3E-07	2.9E-07	2.1E-08	7.4E-09	7.9E-08
	R3027	301421	6253471	1.3E-06	1.3E-06	1.2E-05	6.5E-07	1.3E-06	3.5E-05	1.6E-04	3.0E-05	2.6E-06	5.2E-09	1.2E-08	1.3E-09	9.1E-12	4.4E-10	4.8E-08	4.3E-09	2.9E-11	2.8E-09	3.3E-08	1.9E-08	1.2E-07	2.2E-07	2.9E-07	2.1E-08	7.3E-09	7.8E-08
	R3028	301471	6253471	1.3E-06	1.3E-06	1.2E-05	6.5E-07	1.3E-06	3.5E-05	1.6E-04	3.0E-05	2.6E-06	5.2E-09	1.2E-08	1.3E-09	9.1E-12	4.4E-10	4.8E-08	4.3E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.2E-09	7.8E-08
	R3029	301521	6253471	1.3E-06	1.3E-06	1.2E-05	6.4E-07	1.3E-06	3.5E-05	1.5E-04	2.9E-05	2.6E-06	5.1E-09	1.2E-08	1.3E-09	9.0E-12	4.4E-10	4.7E-08	4.3E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.2E-09	7.7E-08
	R3030	301571	6253471	1.3E-06	1.3E-06	1.1E-05	6.3E-07	1.3E-06	3.4E-05	1.5E-04	2.9E-05	2.5E-06	5.1E-09	1.1E-08	1.3E-09	8.9E-12	4.3E-10	4.7E-08	4.2E-09	2.8E-11	2.7E-09	3.2E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.1E-08	7.1E-09	7.6E-08
	R3031	301621	6253471	1.3E-06	1.3E-06	1.1E-05	6.3E-07	1.3E-06	3.4E-05	1.5E-04	2.9E-05	2.5E-06	5.0E-09	1.1E-08	1.3E-09	8.8E-12	4.3E-10	4.7E-08	4.2E-09	2.8E-11	2.7E-09	3.1E-08	1.9E-08	1.2E-07	2.2E-07	2.8E-07	2.0E-08	7.0E-09	7.5E-08
	R3032	298771	6253521	1.5E-06	1.5E-06	1.3E-05	7.5E-07	1.5E-06	4.0E-05	1.8E-04	3.4E-05	3.0E-06	6.0E-09	1.3E-08	1.5E-09	1.0E-11	5.1E-10	5.5E-08	5.0E-09	3.3E-11	3.2E-09	3.7E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.4E-08	8.3E-09	8.9E-08
	R3033	298821	6253521	1.5E-06	1.5E-06	1.4E-05	7.5E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.0E-09	1.4E-08	1.5E-09	1.1E-11	5.1E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.4E-09	9.0E-08
	R3034	298871	6253521	1.5E-06	1.5E-06	1.4E-05	7.6E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.0E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.6E-08	5.0E-09	3.3E-11	3.2E-09	3.8E-08	2.2E-08	1.4E-07	2.6E-07	3.3E-07	2.5E-08	8.5E-09	9.1E-08
	R3035	298921	6253521	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.1E-05	1.8E-04	3.5E-05	3.1E-06	6.1E-09	1.4E-08	1.5E-09	1.1E-11	5.2E-10	5.7E-08	5.1E-09	3.4E-11	3.2E-09	3.8E-08	2.3E-08	1.4E-07	2.6E-07	3.4E-07	2.5E-08	8.6E-09	9.2E-08
	R3036	298971	6253521	1.5E-06	1.5E-06	1.4E-05	7.7E-07	1.5E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.5E-09	1.1E-11	5.3E-10	5.7E-08	5.1E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.6E-09	9.3E-08
	R3037	299021	6253521	1.6E-06	1.6E-06	1.4E-05	7.8E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.2E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.8E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.5E-08	8.7E-09	9.3E-08
	R3038	299071	6253521	1.6E-06	1.6E-06	1.4E-05	7.8E-07	1.6E-06	4.2E-05	1.9E-04	3.6E-05	3.1E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.3E-10	5.8E-08	5.2E-09	3.4E-11	3.3E-09	3.9E-08	2.3E-08	1.4E-07	2.7E-07	3.4E-07	2.6E-08	8.8E-09	9.4E-08
	R3039	299121	6253521	1.6E-06	1.6E-06	1.4E-05	7.9E-07	1.6E-06	4.3E-05	1.9E-04	3.6E-05	3.2E-06	6.3E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.3E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.5E-08
	R3040	299171	6253521	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.4E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.7E-07	3.5E-07	2.6E-08	8.9E-09	9.6E-08
	R3041	299221	6253521	1.6E-06	1.6E-06	1.4E-05	8.0E-07	1.6E-06	4.3E-05	1.9E-04	3.7E-05	3.2E-06	6.4E-09	1.4E-08	1.6E-09	1.1E-11	5.5E-10	5.9E-08	5.3E-09	3.5E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.5E-07	2.6E-08	9.0E-09	9.6E-08
	R3042	299271	6253521	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	1.9E-04	3.7E-05	3.2E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.4E-09	4.0E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.6E-08	9.1E-09	9.7E-08
	R3043	299321	6253521	1.6E-06	1.6E-06	1.5E-05	8.1E-07	1.6E-06	4.4E-05	2.0E-04	3.7E-05	3.3E-06	6.5E-09	1.5E-08	1.6E-09	1.1E-11	5.5E-10	6.0E-08	5.4E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.1E-09	9.8E-08
	R3044	299371	6253521	1.6E-06	1.6E-06	1.5E-05	8.2E-07	1.6E-06	4.4E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.6E-09	1.1E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.2E-09	9.8E-08
	R3045	299421	6253521	1.7E-06	1.7E-06	1.5E-05	8.3E-07	1.7E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.7E-09	1.2E-11	5.6E-10	6.1E-08	5.5E-09	3.6E-11	3.5E-09	4.1E-08	2.4E-08	1.5E-07	2.8E-07	3.6E-07	2.7E-08	9.2E-09	9.9E-08
	R3046	299471	6253521	1.7E-06	1.7E-06	1.5E-05	8.3E-07	1.7E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.6E-09	1.5E-08	1.7E-09	1.2E-11	5.7E-10	6.2E-08	5.5E-09	3.7E-11	3.5E-09	4.2E-08	2.5E-08	1.5E-07	2.9E-07	3.7E-07	2.7E-08	9.3E-09	1.0E-07
	R3047	299521	6253521	1.7E-06	1.7E-06	1.5E-05	8.3E-07	1.7E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.7E-09	1.5E-08	1.7E-09	1.2E-11	5.7E-10	6.2E-08	5.5E-09	3.7E-11	3.5E-09	4.2E-08	2.5E-08	1.5E-07	2.9E-07	3.7E-07	2.7E-08	9.3E-09	1.0E-07
	R3048	299571	6253521	1.7E-06	1.7E-06	1.5E-05	8.4E-07	1.7E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.7E-09	1.5E-08	1.7E-09	1.2E-11	5.7E-10	6.2E-08	5.6E-09	3.7E-11	3.5E-09	4.2E-08	2.5E-08	1.5E-07	2.9E-07	3.7E-07	2.7E-08	9.4E-09	1.0E-07
	R3049	299621	6253521	1.7E-06	1.7E-06	1.5E-05	8.4E-07	1.7E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.7E-09	1.5E-08	1.7E-09	1.2E-11	5.7E-10	6.2E-08	5.6E-09	3.7E-11	3.5E-09	4.2E-08	2.5E-08	1.5E-07	2.9E-07	3.7E-07	2.7E-08	9.4E-09	1.0E-07
	R3050	299671	6253521	1.7E-06	1.7E-06	1.5E-05	8.4E-07	1.7E-06	4.5E-05	2.0E-04	3.8E-05	3.3E-06	6.7E-09	1.5E-08	1.7E-09	1.2E-11	5.7E-10	6.2E-08	5.6E-09	3.7E-11	3.5E-09	4.2E-08	2.5E-08	1.5E-07	2.9E-07	3.7E-07	2.7E-08	9.4E-09	1.0E-07