



Appendix F

AUSPLUME Air Dispersion Modelling Results

appendix



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recycled paper

40ml
APPROX

467.3 - Chemsal EA- Total VOC Emissions

Concentration or deposition	Concentration
Emission rate units	grams/second
Concentration units	milligrams/m3
Units conversion factor	1.00E+03
Constant background concentration	0.00E+00
Terrain effects	None
Smooth stability class changes?	No
Other stability class adjustments ("urban modes")	None
Ignore building wake effects?	No
Decay coefficient (unless overridden by met. file)	0.000
Anemometer height	10 m
Roughness height at the wind vane site	0.300 m
Use the convective PDF algorithm?	No
Averaging time for sigma-theta values	60 min.

DISPERSION CURVES

Horizontal dispersion curves for sources <100m high	Sigma-theta
Vertical dispersion curves for sources <100m high	Pasquill-Gifford
Horizontal dispersion curves for sources >100m high	Briggs Rural
Vertical dispersion curves for sources >100m high	Briggs Rural
Enhance horizontal plume spreads for buoyancy?	Yes
Enhance vertical plume spreads for buoyancy?	Yes
Adjust horizontal P-G formulae for roughness height?	Yes
Adjust vertical P-G formulae for roughness height?	Yes
Roughness height	0.800m
Adjustment for wind directional shear	None

PLUME RISE OPTIONS

Gradual plume rise?	Yes
Stack-tip downwash included?	Yes
Building downwash algorithm:	PRIME method.
Entrainment coeff. for neutral & stable lapse rates	0.60, 0.60
Partial penetration of elevated inversions?	No
Disregard temp. gradients in the hourly met. file?	No

and in the absence of boundary-layer potential temperature gradients given by the hourly met. file, a value from the following table (in K/m) is used:

Wind Speed Category	Stability Class					
	A	B	C	D	E	F
1	0.000	0.000	0.000	0.000	0.020	0.035
2	0.000	0.000	0.000	0.000	0.020	0.035
3	0.000	0.000	0.000	0.000	0.020	0.035
4	0.000	0.000	0.000	0.000	0.020	0.035
5	0.000	0.000	0.000	0.000	0.020	0.035
6	0.000	0.000	0.000	0.000	0.020	0.035

WIND SPEED CATEGORIES

Boundaries between categories (in m/s) are: 1.54, 3.09, 5.14, 8.23, 10.80

WIND PROFILE EXPONENTS: "Irwin Urban" values (unless overridden by met. file)

AVERAGING TIMES

1 hour

467.3 - Chemsal EA- Total VOC Emissions

SOURCE CHARACTERISTICS

STACK SOURCE: DP1

X(m)	Y(m)	Ground Elev.	Stack Height	Diameter	Temperature	Speed										
23	9	0m	11m	0.10m	21c	26.7m/s										
Effective building dimensions (in metres)																
Flow direction			10°	20°	30°	40°	50°	60°	70°	80°	90°	100°	110°	120°		
Effective building width			64	78	88	98	105	110	111	109	104	110	112	111		
Effective building height			10	10	10	10	10	10	10	10	10	10	10	10		
Along-flow building length			110	112	111	107	99	88	78	64	49	64	78	88		
Along-flow distance from stack			-8	-8	-7	-6	-5	-3	-2	0	1	-14	-28	-41		
Across-flow distance from stack			-19	-11	-3	5	14	23	31	38	44	47	48	49		

Flow direction	130°	140°	150°	160°	170°	180°	190°	200°	210°	220°	230°	240°
Effective building width	107	99	88	78	64	49	64	78	88	98	105	110
Effective building height	10	10	10	10	10	10	10	10	10	10	10	10
Along-flow building length	98	105	110	111	109	104	110	112	111	107	99	88
Along-flow distance from stack	-54	-67	-78	-86	-92	-96	-102	-104	-104	-101	-94	-85
Across-flow distance from stack	47	45	41	37	32	25	19	11	3	-5	-14	-23

Flow direction	250°	260°	270°	280°	290°	300°	310°	320°	330°	340°	350°	360°
Effective building width	111	109	104	110	112	111	107	99	88	78	64	49
Effective building height	10	10	10	10	10	10	10	10	10	10	10	10
Along-flow building length	78	64	49	64	78	88	98	105	110	111	109	104
Along-flow distance from stack	-76	-64	-50	-51	-50	-48	-44	-39	-32	-25	-17	-9
Across-flow distance from stack	-31	-38	-44	-47	-48	-49	-47	-45	-41	-37	-32	-25

(Constant) emission rate = 2.10E-01 grams/second
No gravitational settling or scavenging.

STACK SOURCE: DP2

X(m)	Y(m)	Ground Elev.	Stack Height	Diameter	Temperature	Speed						
74	13	0m	11m	0.20m	20C	5.3m/s						
Effective building dimensions (in metres)												
Flow direction	10°	20°	30°	40°	50°	60°	70°	80°	90°	100°	110°	120°
Effective building width	64	78	88	98	105	110	111	109	104	110	112	111
Effective building height	10	10	10	10	10	10	10	10	10	10	10	10
Along-flow building length	110	112	111	107	99	88	78	64	49	64	78	88
Along-flow distance from stack	-22	-30	-36	-42	-47	-50	-51	-52	-50	-63	-74	-83
Across-flow distance from stack	31	35	39	41	43	44	44	42	39	33	27	19
Flow direction	130°	140°	150°	160°	170°	180°	190°	200°	210°	220°	230°	240°
Effective building width	107	99	88	78	64	49	64	78	88	98	105	110
Effective building height	10	10	10	10	10	10	10	10	10	10	10	10
Along-flow building length	98	105	110	111	109	104	110	112	111	107	99	88
Along-flow distance from stack	-90	-96	-99	-99	-97	-91	-88	-83	-75	-64	-52	-39
Across-flow distance from stack	11	3	-6	-13	-19	-26	-31	-35	-39	-41	-43	-44
Flow direction	250°	260°	270°	280°	290°	300°	310°	320°	330°	340°	350°	360°
Effective building width	111	109	104	110	112	111	107	99	88	78	64	49
Effective building height	10	10	10	10	10	10	10	10	10	10	10	10
Along-flow building length	78	64	49	64	78	88	98	105	110	111	109	104
Along-flow distance from stack	-26	-13	1	-1	-4	-6	-8	-9	-11	-12	-13	-13
Across-flow distance from stack	-44	-42	-39	-33	-27	-19	-11	-3	6	13	19	26

(Constant) emission rate = 0.00E+00 grams/second
No gravitational settling or scavenging.

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467.3 - Chemsal EA- Total VOC Emissions

RECEPTOR LOCATIONS

The Cartesian receptor grid has the following x-values (or eastings):

-1000.m	-950.m	-900.m	-850.m	-800.m	-750.m	-700.m
-650.m	-600.m	-550.m	-500.m	-475.m	-450.m	-425.m
-400.m	-375.m	-350.m	-325.m	-300.m	-275.m	-250.m
-225.m	-200.m	-175.m	-150.m	-125.m	-100.m	-75.m
-50.m	-25.m	0.m	100.m	125.m	150.m	175.m
200.m	225.m	250.m	275.m	300.m	325.m	350.m
375.m	400.m	425.m	450.m	475.m	500.m	550.m
600.m	650.m	700.m	750.m	800.m	850.m	900.m
950.m	1000.m					

and these y-values (or northings):

-1000.m	-950.m	-900.m	-850.m	-800.m	-750.m	-700.m
-650.m	-600.m	-550.m	-500.m	-475.m	-450.m	-425.m
-400.m	-375.m	-350.m	-325.m	-300.m	-275.m	-250.m
-225.m	-200.m	-175.m	-150.m	-125.m	-100.m	-75.m
-50.m	-25.m	0.m	25.m	50.m	75.m	100.m
125.m	150.m	175.m	200.m	225.m	250.m	275.m
300.m	325.m	350.m	375.m	400.m	425.m	450.m
475.m	500.m	550.m	600.m	650.m	700.m	750.m
800.m	850.m	900.m	950.m	1000.m		

DISCRETE RECEPTOR LOCATIONS (in metres)

No.	X	Y	ELEV	HEIGHT	No.	X	Y	ELEV	HEIGHT
1	25	-1000	0.0	0.0	88	50	0	0.0	0.0
2	25	-950	0.0	0.0	89	50	150	0.0	0.0
3	25	-900	0.0	0.0	90	50	175	0.0	0.0

4	25	-850	0.0	0.0	91	50	200	0.0	0.0
5	25	-800	0.0	0.0	92	50	225	0.0	0.0
6	25	-750	0.0	0.0	93	50	250	0.0	0.0
7	25	-700	0.0	0.0	94	50	275	0.0	0.0
8	25	-650	0.0	0.0	95	50	300	0.0	0.0
9	25	-600	0.0	0.0	96	50	325	0.0	0.0
10	25	-550	0.0	0.0	97	50	350	0.0	0.0
11	25	-500	0.0	0.0	98	50	375	0.0	0.0
12	25	-475	0.0	0.0	99	50	400	0.0	0.0
13	25	-450	0.0	0.0	100	50	425	0.0	0.0
14	25	-425	0.0	0.0	101	50	450	0.0	0.0
15	25	-400	0.0	0.0	102	50	475	0.0	0.0
16	25	-375	0.0	0.0	103	50	500	0.0	0.0
17	25	-350	0.0	0.0	104	50	550	0.0	0.0
18	25	-325	0.0	0.0	105	50	600	0.0	0.0
19	25	-300	0.0	0.0	106	50	650	0.0	0.0
20	25	-275	0.0	0.0	107	50	700	0.0	0.0
21	25	-250	0.0	0.0	108	50	750	0.0	0.0
22	25	-225	0.0	0.0	109	50	800	0.0	0.0
23	25	-200	0.0	0.0	110	50	850	0.0	0.0
24	25	-175	0.0	0.0	111	50	900	0.0	0.0
25	25	-150	0.0	0.0	112	50	950	0.0	0.0
26	25	-125	0.0	0.0	113	50	1000	0.0	0.0
27	25	-100	0.0	0.0	114	75	-1000	0.0	0.0
28	25	-75	0.0	0.0	115	75	-950	0.0	0.0
29	25	-50	0.0	0.0	116	75	-900	0.0	0.0
30	25	-25	0.0	0.0	117	75	-850	0.0	0.0
31	25	0	0.0	0.0	118	75	-800	0.0	0.0
32	25	125	0.0	0.0	119	75	-750	0.0	0.0
33	25	150	0.0	0.0	120	75	-700	0.0	0.0
34	25	175	0.0	0.0	121	75	-650	0.0	0.0
35	25	200	0.0	0.0	122	75	-600	0.0	0.0
36	25	225	0.0	0.0	123	75	-550	0.0	0.0
37	25	250	0.0	0.0	124	75	-500	0.0	0.0
38	25	275	0.0	0.0	125	75	-475	0.0	0.0
39	25	300	0.0	0.0	126	75	-450	0.0	0.0
40	25	325	0.0	0.0	127	75	-425	0.0	0.0
41	25	350	0.0	0.0	128	75	-400	0.0	0.0
42	25	375	0.0	0.0	129	75	-375	0.0	0.0
43	25	400	0.0	0.0	130	75	-350	0.0	0.0
44	25	425	0.0	0.0	131	75	-325	0.0	0.0
45	25	450	0.0	0.0	132	75	-300	0.0	0.0
46	25	475	0.0	0.0	133	75	-275	0.0	0.0
47	25	500	0.0	0.0	134	75	-250	0.0	0.0
48	25	550	0.0	0.0	135	75	-225	0.0	0.0
49	25	600	0.0	0.0	136	75	-200	0.0	0.0
50	25	650	0.0	0.0	137	75	-175	0.0	0.0
51	25	700	0.0	0.0	138	75	-150	0.0	0.0
52	25	750	0.0	0.0	139	75	-125	0.0	0.0
53	25	800	0.0	0.0	140	75	-100	0.0	0.0
54	25	850	0.0	0.0	141	75	-75	0.0	0.0
55	25	900	0.0	0.0	142	75	-50	0.0	0.0
56	25	950	0.0	0.0	143	75	-25	0.0	0.0
57	25	1000	0.0	0.0	144	75	0	0.0	0.0
58	50	-1000	0.0	0.0	145	75	50	0.0	0.0
59	50	-950	0.0	0.0	146	75	75	0.0	0.0
60	50	-900	0.0	0.0	147	75	100	0.0	0.0
61	50	-850	0.0	0.0	148	75	125	0.0	0.0
62	50	-800	0.0	0.0	149	75	150	0.0	0.0
63	50	-750	0.0	0.0	150	75	175	0.0	0.0
64	50	-700	0.0	0.0	151	75	200	0.0	0.0
65	50	-650	0.0	0.0	152	75	225	0.0	0.0
66	50	-600	0.0	0.0	153	75	250	0.0	0.0
67	50	-550	0.0	0.0	154	75	275	0.0	0.0
68	50	-500	0.0	0.0	155	75	300	0.0	0.0
69	50	-475	0.0	0.0	156	75	325	0.0	0.0
70	50	-450	0.0	0.0	157	75	350	0.0	0.0
71	50	-425	0.0	0.0	158	75	375	0.0	0.0
72	50	-400	0.0	0.0	159	75	400	0.0	0.0
73	50	-375	0.0	0.0	160	75	425	0.0	0.0
74	50	-350	0.0	0.0	161	75	450	0.0	0.0
75	50	-325	0.0	0.0	162	75	475	0.0	0.0
76	50	-300	0.0	0.0	163	75	500	0.0	0.0
77	50	-275	0.0	0.0	164	75	550	0.0	0.0
78	50	-250	0.0	0.0	165	75	600	0.0	0.0
79	50	-225	0.0	0.0	166	75	650	0.0	0.0
80	50	-200	0.0	0.0	167	75	700	0.0	0.0
81	50	-175	0.0	0.0	168	75	750	0.0	0.0
82	50	-150	0.0	0.0	169	75	800	0.0	0.0
83	50	-125	0.0	0.0	170	75	850	0.0	0.0
84	50	-100	0.0	0.0	171	75	900	0.0	0.0
85	50	-75	0.0	0.0	172	75	950	0.0	0.0
86	50	-50	0.0	0.0	173	75	1000	0.0	0.0
87	50	-25	0.0	0.0					

1 Peak values for the 100 worst cases (in milligrams/m3)
Averaging time = 1 hour

Rank	Value	Time Recorded hour,date	Coordinates (* denotes polar)
1	7.01E-01	03,09/08/05	(100, 100, 0.0)
2	6.99E-01	01,24/04/05	(100, 100, 0.0)
3	6.93E-01	08,01/06/05	(100, 100, 0.0)
4	6.92E-01	20,06/09/05	(100, 100, 0.0)
5	6.89E-01	07,29/07/05	(100, 100, 0.0)
6	6.89E-01	19,20/05/05	(100, 100, 0.0)
7	6.85E-01	03,24/08/05	(100, 100, 0.0)
8	6.85E-01	21,10/05/05	(100, 100, 0.0)
9	6.83E-01	06,25/02/05	(100, 75, 0.0)
10	6.83E-01	22,26/04/05	(75, 100, 0.0)
11	6.82E-01	18,10/06/05	(75, 100, 0.0)
12	6.79E-01	02,30/05/05	(100, 100, 0.0)
13	6.79E-01	01,29/09/05	(75, 100, 0.0)
14	6.79E-01	04,13/04/05	(100, 100, 0.0)
15	6.79E-01	24,27/01/05	(100, 100, 0.0)
16	6.79E-01	06,02/11/05	(100, 100, 0.0)
17	6.78E-01	03,26/08/05	(100, 75, 0.0)
18	6.77E-01	06,13/06/05	(100, 100, 0.0)
19	6.77E-01	21,15/04/05	(100, 75, 0.0)
20	6.76E-01	20,02/06/05	(75, 100, 0.0)
21	6.75E-01	01,10/04/05	(75, 100, 0.0)
22	6.74E-01	01,03/05/05	(100, 100, 0.0)
23	6.73E-01	03,26/04/05	(75, 100, 0.0)
24	6.73E-01	01,24/10/05	(100, 100, 0.0)
25	6.73E-01	02,05/03/05	(75, 100, 0.0)
26	6.73E-01	05,07/06/05	(75, 100, 0.0)
27	6.73E-01	06,24/03/05	(100, 100, 0.0)
28	6.72E-01	02,07/11/05	(125, 75, 0.0)
29	6.72E-01	06,06/04/05	(100, 100, 0.0)
30	6.71E-01	23,18/11/05	(125, 50, 0.0)
31	6.71E-01	01,01/12/05	(75, 100, 0.0)
32	6.70E-01	03,03/04/05	(75, 100, 0.0)
33	6.69E-01	06,28/04/05	(75, 100, 0.0)
34	6.68E-01	20,07/10/05	(100, 100, 0.0)
35	6.68E-01	01,17/10/05	(125, 50, 0.0)
36	6.67E-01	04,16/02/05	(125, 50, 0.0)
37	6.67E-01	08,07/07/05	(100, 100, 0.0)
38	6.67E-01	06,20/02/05	(75, 100, 0.0)
39	6.66E-01	07,06/08/05	(100, 75, 0.0)
40	6.66E-01	04,23/04/05	(100, 100, 0.0)
41	6.66E-01	05,26/09/05	(125, 75, 0.0)
42	6.66E-01	07,04/05/05	(75, 100, 0.0)
43	6.66E-01	21,18/04/05	(125, 75, 0.0)
44	6.65E-01	03,27/01/05	(100, 100, 0.0)
45	6.65E-01	07,29/08/05	(125, 75, 0.0)
46	6.63E-01	19,05/06/05	(100, 100, 0.0)
47	6.62E-01	03,12/07/05	(125, 50, 0.0)
48	6.62E-01	01,30/05/05	(125, 75, 0.0)
49	6.61E-01	01,24/09/05	(75, 100, 0.0)
50	6.61E-01	21,12/08/05	(100, 75, 0.0)
51	6.61E-01	06,18/02/05	(100, 50, 0.0)
52	6.61E-01	05,20/01/05	(75, 100, 0.0)
53	6.60E-01	01,25/03/05	(100, 100, 0.0)
54	6.59E-01	01,13/04/05	(100, 50, 0.0)
55	6.59E-01	02,29/07/05	(100, 100, 0.0)
56	6.58E-01	05,02/04/05	(100, 75, 0.0)
57	6.58E-01	20,14/09/05	(125, 50, 0.0)
58	6.58E-01	04,01/07/05	(125, 50, 0.0)
59	6.57E-01	06,21/09/05	(125, 75, 0.0)
60	6.57E-01	24,27/05/05	(100, 50, 0.0)
61	6.57E-01	24,28/04/05	(100, 100, 0.0)
62	6.57E-01	08,06/07/05	(125, 75, 0.0)
63	6.56E-01	24,13/08/05	(100, 75, 0.0)
64	6.56E-01	03,29/10/05	(100, 100, 0.0)
65	6.56E-01	07,28/04/05	(75, 100, 0.0)
66	6.56E-01	05,21/10/05	(125, 75, 0.0)
67	6.56E-01	23,25/09/05	(125, 50, 0.0)
68	6.55E-01	23,24/03/05	(100, 100, 0.0)
69	6.55E-01	04,12/07/05	(100, 75, 0.0)
70	6.54E-01	01,05/05/05	(100, 75, 0.0)
71	6.54E-01	23,28/07/05	(75, 125, 0.0)
72	6.54E-01	03,02/06/05	(125, 75, 0.0)
73	6.54E-01	01,08/08/05	(100, 75, 0.0)
74	6.54E-01	02,11/04/05	(75, 100, 0.0)
75	6.53E-01	07,14/08/05	(75, 100, 0.0)

76	6.52E-01	05,24/02/05	(	125,	50,	0.0)
77	6.52E-01	05,28/12/05	(	100,	75,	0.0)
78	6.51E-01	04,05/12/05	(	75,	100,	0.0)
79	6.51E-01	22,12/03/05	(	100,	100,	0.0)
80	6.51E-01	05,29/12/05	(	75,	100,	0.0)
81	6.50E-01	06,06/05/05	(	125,	75,	0.0)
82	6.50E-01	02,24/07/05	(	100,	50,	0.0)
83	6.49E-01	04,15/11/05	(	100,	75,	0.0)
84	6.49E-01	22,27/09/05	(	100,	75,	0.0)
85	6.48E-01	04,23/07/05	(	75,	100,	0.0)
86	6.48E-01	23,15/10/05	(	75,	100,	0.0)
87	6.48E-01	03,01/02/05	(	125,	75,	0.0)
88	6.48E-01	03,27/05/05	(	75,	100,	0.0)
89	6.47E-01	01,10/06/05	(	125,	75,	0.0)
90	6.47E-01	06,16/04/05	(	75,	100,	0.0)
91	6.47E-01	23,29/05/05	(	75,	125,	0.0)
92	6.47E-01	24,04/03/05	(	75,	100,	0.0)
93	6.47E-01	02,29/08/05	(	100,	100,	0.0)
94	6.46E-01	01,27/07/05	(	125,	75,	0.0)
95	6.45E-01	01,25/04/05	(	100,	100,	0.0)
96	6.45E-01	24,08/08/05	(	100,	100,	0.0)
97	6.44E-01	21,31/03/05	(	100,	75,	0.0)
98	6.44E-01	23,13/04/05	(	100,	100,	0.0)
99	6.44E-01	04,22/05/05	(	125,	75,	0.0)
100	6.43E-01	01,09/08/05	(	100,	50,	0.0)

467.3 - Chemsal EA- Mercury Emissions

Concentration or deposition	Concentration
Emission rate units	grams/second
Concentration units	milligrams/m3
Units conversion factor	1.00E+03
Constant background concentration	0.00E+00
Terrain effects	None
Smooth stability class changes?	No
Other stability class adjustments ("urban modes")	None
Ignore building wake effects?	No
Decay coefficient (unless overridden by met. file)	0.000
Anemometer height	10 m
Roughness height at the wind vane site	0.300 m
Use the convective PDF algorithm?	No
Averaging time for sigma-theta values	60 min.

DISPERSION CURVES

Horizontal dispersion curves for sources <100m high	Sigma-theta
Vertical dispersion curves for sources <100m high	Pasquill-Gifford
Horizontal dispersion curves for sources >100m high	Briggs Rural
Vertical dispersion curves for sources >100m high	Briggs Rural
Enhance horizontal plume spreads for buoyancy?	Yes
Enhance vertical plume spreads for buoyancy?	Yes
Adjust horizontal P-G formulae for roughness height?	Yes
Adjust vertical P-G formulae for roughness height?	Yes
Roughness height	0.800m
Adjustment for wind directional shear	None

PLUME RISE OPTIONS

Gradual plume rise?	Yes
Stack-tip downwash included?	Yes
Building downwash algorithm:	PRIME method.
Entrainment coeff. for neutral & stable lapse rates	0.60,0.60
Partial penetration of elevated inversions?	No
Disregard temp. gradients in the hourly met. file?	No

and in the absence of boundary-layer potential temperature gradients given by the hourly met. file, a value from the following table (in K/m) is used:

Wind Speed Category	Stability Class					
	A	B	C	D	E	F
1	0.000	0.000	0.000	0.000	0.020	0.035
2	0.000	0.000	0.000	0.000	0.020	0.035
3	0.000	0.000	0.000	0.000	0.020	0.035
4	0.000	0.000	0.000	0.000	0.020	0.035
5	0.000	0.000	0.000	0.000	0.020	0.035
6	0.000	0.000	0.000	0.000	0.020	0.035

WIND SPEED CATEGORIES

Boundaries between categories (in m/s) are: 1.54, 3.09, 5.14, 8.23, 10.80

WIND PROFILE EXPONENTS: "Irwin Urban" values (unless overridden by met. file)

AVERAGING TIMES

1 hour

467.3 - Chemsal EA- Mercury Emissions

SOURCE CHARACTERISTICS

STACK SOURCE: DP1

X(m)	Y(m)	Ground Elev.	Stack Height	Diameter	Temperature	Speed								
23	9	0m	11m	0.10m	21C	26.7m/s								
Effective building dimensions (in metres)														
Flow direction			10°	20°	30°	40°	50°	60°	70°	80°	90°	100°	110°	120°
Effective building width			64	78	88	98	105	110	111	109	104	110	112	111
Effective building height			10	10	10	10	10	10	10	10	10	10	10	10
Along-flow building length			110	112	111	107	99	88	78	64	49	64	78	88
Along-flow distance from stack			-8	-8	-7	-6	-5	-3	-2	0	1	-14	-28	-41
Across-flow distance from stack			-19	-11	-3	5	14	23	31	38	44	47	48	49

Flow direction	130°	140°	150°	160°	170°	180°	190°	200°	210°	220°	230°	240°
Effective building width	107	99	88	78	64	49	64	78	88	98	105	110
Effective building height	10	10	10	10	10	10	10	10	10	10	10	10
Along-flow building length	98	105	110	111	109	104	110	112	111	107	99	88
Along-flow distance from stack	-54	-67	-78	-86	-92	-96	-102	-104	-104	-101	-94	-85
Across-flow distance from stack	47	45	41	37	32	25	19	11	3	-5	-14	-23

Flow direction	250°	260°	270°	280°	290°	300°	310°	320°	330°	340°	350°	360°
Effective building width	111	109	104	110	112	111	107	99	88	78	64	49
Effective building height	10	10	10	10	10	10	10	10	10	10	10	10
Along-flow building length	78	64	49	64	78	88	98	105	110	111	109	104
Along-flow distance from stack	-76	-64	-50	-51	-50	-48	-44	-39	-32	-25	-17	-9
Across-flow distance from stack	-31	-38	-44	-47	-48	-49	-47	-45	-41	-37	-32	-25

(Constant) emission rate = 0.00E+00 grams/second
No gravitational settling or scavenging.

STACK SOURCE: DP2

X(m)	Y(m)	Ground Elev.	Stack Height	Diameter	Temperature	Speed						
74	13	0m	11m	0.20m	20C	5.3m/s						
Effective building dimensions (in metres)												
Flow direction	10°	20°	30°	40°	50°	60°	70°	80°	90°	100°	110°	120°
Effective building width	64	78	88	98	105	110	111	109	104	110	112	111
Effective building height	10	10	10	10	10	10	10	10	10	10	10	10
Along-flow building length	110	112	111	107	99	88	78	64	49	64	78	88
Along-flow distance from stack	-22	-30	-36	-42	-47	-50	-51	-52	-50	-63	-74	-83
Across-flow distance from stack	31	35	39	41	43	44	44	42	39	33	27	19
Flow direction	130°	140°	150°	160°	170°	180°	190°	200°	210°	220°	230°	240°
Effective building width	107	99	88	78	64	49	64	78	88	98	105	110
Effective building height	10	10	10	10	10	10	10	10	10	10	10	10
Along-flow building length	98	105	110	111	109	104	110	112	111	107	99	88
Along-flow distance from stack	-90	-96	-99	-99	-97	-91	-88	-83	-75	-64	-52	-39
Across-flow distance from stack	11	3	-6	-13	-19	-26	-31	-35	-39	-41	-43	-44
Flow direction	250°	260°	270°	280°	290°	300°	310°	320°	330°	340°	350°	360°
Effective building width	111	109	104	110	112	111	107	99	88	78	64	49
Effective building height	10	10	10	10	10	10	10	10	10	10	10	10
Along-flow building length	78	64	49	64	78	88	98	105	110	111	109	104
Along-flow distance from stack	-26	-13	1	-1	-4	-6	-8	-9	-11	-12	-13	-13
Across-flow distance from stack	-44	-42	-39	-33	-27	-19	-11	-3	6	13	19	26

(Constant) emission rate = 4.00E-07 grams/second
No gravitational settling or scavenging.

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467.3 - Chemsal EA- Mercury Emissions

RECEPTOR LOCATIONS

The Cartesian receptor grid has the following x-values (or eastings):

-1000.m	-950.m	-900.m	-850.m	-800.m	-750.m	-700.m
-650.m	-600.m	-550.m	-500.m	-475.m	-450.m	-425.m
-400.m	-375.m	-350.m	-325.m	-300.m	-275.m	-250.m
-225.m	-200.m	-175.m	-150.m	-125.m	-100.m	-75.m
-50.m	-25.m	0.m	100.m	125.m	150.m	175.m
200.m	225.m	250.m	275.m	300.m	325.m	350.m
375.m	400.m	425.m	450.m	475.m	500.m	550.m
600.m	650.m	700.m	750.m	800.m	850.m	900.m
950.m	1000.m					

and these y-values (or northings):

-1000.m	-950.m	-900.m	-850.m	-800.m	-750.m	-700.m
-650.m	-600.m	-550.m	-500.m	-475.m	-450.m	-425.m
-400.m	-375.m	-350.m	-325.m	-300.m	-275.m	-250.m
-225.m	-200.m	-175.m	-150.m	-125.m	-100.m	-75.m
-50.m	-25.m	0.m	25.m	50.m	75.m	100.m
125.m	150.m	175.m	200.m	225.m	250.m	275.m
300.m	325.m	350.m	375.m	400.m	425.m	450.m
475.m	500.m	550.m	600.m	650.m	700.m	750.m
800.m	850.m	900.m	950.m	1000.m		

DISCRETE RECEPTOR LOCATIONS (in metres)

No.	X	Y	ELEV	HEIGHT	No.	X	Y	ELEV	HEIGHT
1	25	-1000	0.0	0.0	88	50	0	0.0	0.0
2	25	-950	0.0	0.0	89	50	150	0.0	0.0
3	25	-900	0.0	0.0	90	50	175	0.0	0.0

4	25	-850	0.0	0.0	91	50	200	0.0	0.0
5	25	-800	0.0	0.0	92	50	225	0.0	0.0
6	25	-750	0.0	0.0	93	50	250	0.0	0.0
7	25	-700	0.0	0.0	94	50	275	0.0	0.0
8	25	-650	0.0	0.0	95	50	300	0.0	0.0
9	25	-600	0.0	0.0	96	50	325	0.0	0.0
10	25	-550	0.0	0.0	97	50	350	0.0	0.0
11	25	-500	0.0	0.0	98	50	375	0.0	0.0
12	25	-475	0.0	0.0	99	50	400	0.0	0.0
13	25	-450	0.0	0.0	100	50	425	0.0	0.0
14	25	-425	0.0	0.0	101	50	450	0.0	0.0
15	25	-400	0.0	0.0	102	50	475	0.0	0.0
16	25	-375	0.0	0.0	103	50	500	0.0	0.0
17	25	-350	0.0	0.0	104	50	550	0.0	0.0
18	25	-325	0.0	0.0	105	50	600	0.0	0.0
19	25	-300	0.0	0.0	106	50	650	0.0	0.0
20	25	-275	0.0	0.0	107	50	700	0.0	0.0
21	25	-250	0.0	0.0	108	50	750	0.0	0.0
22	25	-225	0.0	0.0	109	50	800	0.0	0.0
23	25	-200	0.0	0.0	110	50	850	0.0	0.0
24	25	-175	0.0	0.0	111	50	900	0.0	0.0
25	25	-150	0.0	0.0	112	50	950	0.0	0.0
26	25	-125	0.0	0.0	113	50	1000	0.0	0.0
27	25	-100	0.0	0.0	114	75	-1000	0.0	0.0
28	25	-75	0.0	0.0	115	75	-950	0.0	0.0
29	25	-50	0.0	0.0	116	75	-900	0.0	0.0
30	25	-25	0.0	0.0	117	75	-850	0.0	0.0
31	25	0	0.0	0.0	118	75	-800	0.0	0.0
32	25	125	0.0	0.0	119	75	-750	0.0	0.0
33	25	150	0.0	0.0	120	75	-700	0.0	0.0
34	25	175	0.0	0.0	121	75	-650	0.0	0.0
35	25	200	0.0	0.0	122	75	-600	0.0	0.0
36	25	225	0.0	0.0	123	75	-550	0.0	0.0
37	25	250	0.0	0.0	124	75	-500	0.0	0.0
38	25	275	0.0	0.0	125	75	-475	0.0	0.0
39	25	300	0.0	0.0	126	75	-450	0.0	0.0
40	25	325	0.0	0.0	127	75	-425	0.0	0.0
41	25	350	0.0	0.0	128	75	-400	0.0	0.0
42	25	375	0.0	0.0	129	75	-375	0.0	0.0
43	25	400	0.0	0.0	130	75	-350	0.0	0.0
44	25	425	0.0	0.0	131	75	-325	0.0	0.0
45	25	450	0.0	0.0	132	75	-300	0.0	0.0
46	25	475	0.0	0.0	133	75	-275	0.0	0.0
47	25	500	0.0	0.0	134	75	-250	0.0	0.0
48	25	550	0.0	0.0	135	75	-225	0.0	0.0
49	25	600	0.0	0.0	136	75	-200	0.0	0.0
50	25	650	0.0	0.0	137	75	-175	0.0	0.0
51	25	700	0.0	0.0	138	75	-150	0.0	0.0
52	25	750	0.0	0.0	139	75	-125	0.0	0.0
53	25	800	0.0	0.0	140	75	-100	0.0	0.0
54	25	850	0.0	0.0	141	75	-75	0.0	0.0
55	25	900	0.0	0.0	142	75	-50	0.0	0.0
56	25	950	0.0	0.0	143	75	-25	0.0	0.0
57	25	1000	0.0	0.0	144	75	0	0.0	0.0
58	50	-1000	0.0	0.0	145	75	50	0.0	0.0
59	50	-950	0.0	0.0	146	75	75	0.0	0.0
60	50	-900	0.0	0.0	147	75	100	0.0	0.0
61	50	-850	0.0	0.0	148	75	125	0.0	0.0
62	50	-800	0.0	0.0	149	75	150	0.0	0.0
63	50	-750	0.0	0.0	150	75	175	0.0	0.0
64	50	-700	0.0	0.0	151	75	200	0.0	0.0
65	50	-650	0.0	0.0	152	75	225	0.0	0.0
66	50	-600	0.0	0.0	153	75	250	0.0	0.0
67	50	-550	0.0	0.0	154	75	275	0.0	0.0
68	50	-500	0.0	0.0	155	75	300	0.0	0.0
69	50	-475	0.0	0.0	156	75	325	0.0	0.0
70	50	-450	0.0	0.0	157	75	350	0.0	0.0
71	50	-425	0.0	0.0	158	75	375	0.0	0.0
72	50	-400	0.0	0.0	159	75	400	0.0	0.0
73	50	-375	0.0	0.0	160	75	425	0.0	0.0
74	50	-350	0.0	0.0	161	75	450	0.0	0.0
75	50	-325	0.0	0.0	162	75	475	0.0	0.0
76	50	-300	0.0	0.0	163	75	500	0.0	0.0
77	50	-275	0.0	0.0	164	75	550	0.0	0.0
78	50	-250	0.0	0.0	165	75	600	0.0	0.0
79	50	-225	0.0	0.0	166	75	650	0.0	0.0
80	50	-200	0.0	0.0	167	75	700	0.0	0.0
81	50	-175	0.0	0.0	168	75	750	0.0	0.0
82	50	-150	0.0	0.0	169	75	800	0.0	0.0
83	50	-125	0.0	0.0	170	75	850	0.0	0.0
84	50	-100	0.0	0.0	171	75	900	0.0	0.0
85	50	-75	0.0	0.0	172	75	950	0.0	0.0
86	50	-50	0.0	0.0	173	75	1000	0.0	0.0
87	50	-25	0.0	0.0					

1 Peak values for the 100 worst cases (in milligrams/m3)
Averaging time = 1 hour

Rank	Value	Time Recorded hour,date	Coordinates (* denotes polar)
1	2.24E-06	21,15/10/05	(-25, 50, 0.0)
2	2.14E-06	19,24/05/05	(-25, 50, 0.0)
3	2.13E-06	23,15/01/05	(-25, 50, 0.0)
4	2.10E-06	04,30/11/05	(-25, 75, 0.0)
5	2.09E-06	21,14/07/05	(-25, 50, 0.0)
6	2.09E-06	05,27/06/05	(-25, 50, 0.0)
7	2.08E-06	04,02/12/05	(-25, 50, 0.0)
8	2.07E-06	17,01/08/05	(-25, 50, 0.0)
9	2.07E-06	02,06/06/05	(-25, 75, 0.0)
10	2.05E-06	21,06/11/05	(0, 0, 0.0)
11	2.04E-06	01,24/05/05	(-25, 50, 0.0)
12	2.01E-06	22,11/02/05	(0, 0, 0.0)
13	2.01E-06	01,19/06/05	(-25, 75, 0.0)
14	2.01E-06	02,27/06/05	(-25, 75, 0.0)
15	2.01E-06	02,14/06/05	(-25, 75, 0.0)
16	1.99E-06	03,01/06/05	(-25, 75, 0.0)
17	1.98E-06	05,06/08/05	(-25, 75, 0.0)
18	1.96E-06	21,19/12/05	(-25, 50, 0.0)
19	1.95E-06	02,30/01/05	(0, 75, 0.0)
20	1.92E-06	23,07/01/05	(0, 75, 0.0)
21	1.92E-06	01,12/02/05	(-25, 50, 0.0)
22	1.92E-06	22,09/04/05	(0, 75, 0.0)
23	1.91E-06	24,25/11/05	(-25, 50, 0.0)
24	1.90E-06	04,21/10/05	(0, 0, 0.0)
25	1.88E-06	21,30/10/05	(0, 75, 0.0)
26	1.88E-06	07,15/04/05	(0, 100, 0.0)
27	1.85E-06	07,06/06/05	(-25, 50, 0.0)
28	1.85E-06	23,19/05/05	(0, 75, 0.0)
29	1.84E-06	21,10/10/05	(0, 50, 0.0)
30	1.83E-06	23,05/07/05	(0, 100, 0.0)
31	1.83E-06	23,26/03/05	(0, 0, 0.0)
32	1.81E-06	06,10/05/05	(0, 75, 0.0)
33	1.81E-06	02,25/02/05	(-25, 50, 0.0)
34	1.80E-06	06,26/08/05	(0, 75, 0.0)
35	1.80E-06	03,08/06/05	(0, 75, 0.0)
36	1.80E-06	03,16/03/05	(0, 75, 0.0)
37	1.79E-06	24,04/08/05	(0, 100, 0.0)
38	1.79E-06	21,04/02/05	(0, 50, 0.0)
39	1.79E-06	06,07/07/05	(0, 100, 0.0)
40	1.78E-06	03,14/11/05	(0, 50, 0.0)
41	1.77E-06	23,28/11/05	(0, 100, 0.0)
42	1.77E-06	03,22/09/05	(0, 100, 0.0)
43	1.77E-06	22,31/05/05	(0, 50, 0.0)
44	1.77E-06	19,27/07/05	(0, 75, 0.0)
45	1.77E-06	19,06/07/05	(0, 75, 0.0)
46	1.77E-06	05,06/07/05	(0, 100, 0.0)
47	1.77E-06	06,10/03/05	(0, 75, 0.0)
48	1.76E-06	20,24/02/05	(-25, 25, 0.0)
49	1.75E-06	21,22/07/05	(0, 50, 0.0)
50	1.75E-06	05,07/03/05	(0, 75, 0.0)
51	1.74E-06	21,22/10/05	(0, 50, 0.0)
52	1.74E-06	23,06/04/05	(0, 100, 0.0)
53	1.74E-06	23,09/04/05	(0, 100, 0.0)
54	1.74E-06	04,19/06/05	(0, 50, 0.0)
55	1.74E-06	22,21/09/05	(0, 100, 0.0)
56	1.73E-06	05,17/07/05	(0, 75, 0.0)
57	1.72E-06	22,18/04/05	(0, 75, 0.0)
58	1.72E-06	24,08/02/05	(-25, 25, 0.0)
59	1.72E-06	06,18/08/05	(0, 100, 0.0)
60	1.72E-06	21,08/05/05	(0, 100, 0.0)
61	1.72E-06	04,06/03/05	(0, 75, 0.0)
62	1.72E-06	18,07/06/05	(0, 75, 0.0)
63	1.72E-06	02,23/02/05	(125, 25, 0.0)
64	1.71E-06	06,10/04/05	(-25, 25, 0.0)
65	1.71E-06	19,12/07/05	(0, 75, 0.0)
66	1.71E-06	02,01/11/05	(-25, 25, 0.0)
67	1.71E-06	05,02/08/05	(0, 50, 0.0)
68	1.70E-06	04,25/03/05	(0, 100, 0.0)
69	1.70E-06	18,09/06/05	(0, 100, 0.0)
70	1.70E-06	18,18/06/05	(25, 125, 0.0)
71	1.70E-06	23,07/12/05	(0, 75, 0.0)
72	1.70E-06	05,17/08/05	(0, 100, 0.0)
73	1.70E-06	04,12/06/05	(25, 125, 0.0)
74	1.69E-06	06,06/02/05	(0, 50, 0.0)
75	1.69E-06	01,08/04/05	(0, 100, 0.0)

76	1.69E-06	17,16/08/05	(	0,	25,	0.0)
77	1.69E-06	21,14/09/05	(	0,	50,	0.0)
78	1.68E-06	22,12/08/05	(	0,	75,	0.0)
79	1.68E-06	04,28/04/05	(	25,	125,	0.0)
80	1.67E-06	01,24/08/05	(	0,	75,	0.0)
81	1.67E-06	20,23/10/05	(	0,	0,	0.0)
82	1.66E-06	07,03/08/05	(	25,	125,	0.0)
83	1.66E-06	06,13/09/05	(	0,	100,	0.0)
84	1.66E-06	06,07/09/05	(	-25,	75,	0.0)
85	1.66E-06	06,04/07/05	(	0,	75,	0.0)
86	1.65E-06	05,20/07/05	(	0,	75,	0.0)
87	1.65E-06	01,14/08/05	(	0,	0,	0.0)
88	1.64E-06	07,07/06/05	(	0,	100,	0.0)
89	1.64E-06	20,13/06/05	(	0,	75,	0.0)
90	1.64E-06	05,22/10/05	(	0,	75,	0.0)
91	1.62E-06	02,05/06/05	(	0,	0,	0.0)
92	1.62E-06	23,08/11/05	(	0,	0,	0.0)
93	1.62E-06	18,09/05/05	(	-25,	50,	0.0)
94	1.62E-06	02,04/06/05	(	0,	0,	0.0)
95	1.62E-06	23,30/09/05	(	25,	125,	0.0)
96	1.61E-06	21,07/09/05	(	-25,	25,	0.0)
97	1.61E-06	21,10/04/05	(	0,	0,	0.0)
98	1.61E-06	05,18/06/05	(	25,	125,	0.0)
99	1.60E-06	08,05/06/05	(	25,	125,	0.0)
100	1.60E-06	07,08/08/05	(	-25,	50,	0.0)