Dangerous Goods Transport Incident Management Strategy

Oakdale South – Warehouse 3A (Sigma)

GOODMAN PROPERTY SERVICES (AUST) PTY LTD

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1 Introduction

1.1 Overview

In this incident management strategy (the Strategy) reference is made to the following documents in its preparation:

- *PHA, prepared by Core Engineering, dated 29 July 2016*
- *Dangerous Goods (Road and Rail Transport) Regulation 2014*
- National Transport Commission, *Australian Code for the Transport of Dangerous Goods by Road & Rail*, December 2015
- U.S. Department of Transport, *2012 Emergency Response Guidebook* (**ERG2012**), dated 2012
- National Road Transport Commission, *Guidelines for the Preparation of a Transport Emergency Response Plan* (**GPTERP**), dated 2003

1.2 Purpose

The purpose of this Strategy is to document the overarching goals and measures envisaged to manage incidents involving the transport of Dangerous Goods (**DGs**). It is not intended to act as a detailed Transport Emergency Response Plan (**TERP**) noting that numerous TERPs may be required to reflect the varying nature of Dangerous Goods to be stored on-site. Furthermore, each freight company or "prime contractor" may adopt varying TERPs depending on the procedures and policies of each respective company.

1.3 Objectives

The objectives for any Dangerous Goods incident management plan are outlined in the GPTERP which states:

- To minimise any adverse effects on people, damage to property or harm to the environment in a transport emergency;
- To facilitate a rapid and effective emergency response and recovery;
- To provide assistance to emergency and security services; and
- To communicate vital information to all relevant persons involved in the transport emergency (both internal personnel and external agencies) with a minimum of delay.

1.4 Nature of Dangerous Goods Transported

As outlined in the PHA, prepared by Core Engineering, the warehouse includes the storage of the following Dangerous Goods:

CLASS	PACKING GROUP	QUANTITY (L OR KG)
2.1 (aerosols)	N/A	3,000 kg*

2.2 (aerosols)	N/A	2,600 kg
3	II & III	1,700 L
5.1	II & III	67 L
8	II & III	1,500 L
9	III	30 L

2 Legislative Requirements

Clause 152 of the Dangerous Goods (Road and Rail Transport) Regulation 2014 legislation states:

"*A prime contractor or rail operator must not transport a placard load if the prime contractor or rail operator does not have an emergency plan for the transport of the goods*"

"*A person must not consign a placard load for transport if the person does not have an emergency plan for the transport of the goods*"

1.5 Roles and Responsibilities

The legislation also outlines a numerous duties and responsibilities in relation emergencies generally which are summarised below:

2.1.1 Vehicle Driver

The driver of the road vehicle must:

(a) notify the prime contractor, the Competent Authority and the police or fire service of the incident as soon as practicable, and

(b) provide any reasonable assistance required by an authorised officer or an officer of an emergency service to deal with the situation.

1.5.1 Prime contractor's duties

The prime contractors is to inform the Competent Authority if a vehicle transporting dangerous goods is involved in an incident resulting in a dangerous situation. Notification should occur as soon as practicable after becoming aware of the incident and include the following details about the incident:

- where the incident occurred,
- the time and date of the incident,
- the nature of the incident,
- the dangerous goods being transported when the incident occurred,

- any other details that the Competent Authority may require.

Not later than 21 days after the day on which the incident occurs, the prime contractor or rail operator must give to the Competent Authority a written report about the incident stating the following:

- where the incident occurred,
- the time and date of the incident,
- the nature of the incident,
- what the driver believes to be the likely cause of the incident,
- what the prime contractor believes to be the likely cause of the incident,
- the dangerous goods being transported when the incident occurred,
- the measures taken to control any leak, spill or accidental escape of dangerous goods and any fire or explosion arising out of the incident,
- the measures taken after the incident in relation to the dangerous goods involved in the incident.

3 Road Transport of Dangerous Goods Requirements

3.1 General Provisions

The following provides a summary of the general requirements outlined in the *Australian Code for the Transport of Dangerous Goods by Road and Rail*:

Dangerous goods must not be offered for transport unless:

(a) the goods have been properly classified, packed, marked, labelled and described on a dangerous goods transport document; and

(b) the goods are in a fit condition for transport as required by this Code, and no dangerous residue of the dangerous goods adheres to the outside of the package.

Dangerous goods must not be transported unless:

(a) cargo transport units have been appropriately marked, labelled and placarded; and

(b) cargo transport units are otherwise in a condition for transport as required.

If a cargo transport unit, pressure drum, MEGC or IBC is marked with notations indicating how it should be handled in the transport of dangerous goods, it must be handled in accordance with those notations.

3.2 Special Provisions for Class 2 Dangerous Goods

Aerosols transported for the purposes of reprocessing or disposal must only be transported in well-ventilated cargo transport units as described below. Furthermore, Class 2 Dangerous Goods must not be stowed near heat sources.

If liquefied gas is transported in a cylinder fitted with a pressure relief device and the venting of the liquid would create a risk greater than the venting of the gas, the cylinder must be stowed so that the pressure relief device communicates with the vapour space.

When transporting gases in cylinders, the main cylinder valve must always be shut and any regulator removed prior to loading.

3.2.1 Ventilation

The following dangerous goods must not be transported in a placard load unless the cargo transport unit or compartment in which they are transported is ventilated to prevent the build-up of vapours that are likely to increase risk:

- dangerous goods [other than aerosols (UN 1950) and gas cartridges (UN 2037)] of Division 2.1 or 2.3, or subsidiary risk of 2.1; or
- liquefied oxygen.
- The ventilation must produce a flow of air that circulates throughout the unit or compartment, in particular through the highest and lowest parts of the unit or compartment, and must provide for the air to be released from the unit or compartment after it has circulated. However, the requirements in the previous sentence do not apply in the case of a shipping container that is being used:

  (a) to import those goods if appropriate measures are taken to check for vapours before the container is opened, and to be able to deal, when the container is opened, with any build-up of vapours that may have occurred; and

  (b) to export those goods if the container will be accepted for carriage by sea or air without needing to comply with those requirements

3.3 Procedures During Road Transport

Drivers are to adhere to the procedures outlined in Part 13 of the *Australian Code for the Transport of Dangerous Goods by Road & Rail*. An extract of the relevant section is included in **Appendix A**.

3.4 Road Transport Route Selection

Routes for road vehicles transporting Dangerous Goods should be pre- planned, whenever possible and to the extent practicable, having regard for the following:

- minimise the risk of personal injury or harm to the environment or property during the journey.
- avoid heavily populated or environmentally sensitive areas, congested crossings, tunnels, narrow streets, alleys, or sites where there may be, a concentration of people.

A road vehicle transporting Dangerous Goods must observe any requirements or restrictions on the selection of routes or times of travel which have been determined by relevant Authorities, if applicable.

While it is not always practicable to pre-plan in detail the route of a courier or local pick-up or delivery vehicle, the driver should nonetheless be made aware of any areas to avoid in localities where travel is anticipated.

4 Transport Emergency Response Plan Preparation

As outlined in Section 2 above, an Emergency Plan will be required prior to the transport of any Dangerous Goods. It is expected that such plans will be prepared by prime contractors involved in the transport of Dangerous Goods to/from the Site.

Reference should be made to the Guidelines for the Preparation of a Transport Emergency Response Plan **Appendix B** when preparing these Emergency Plans.

Unless outlined in a TERP applicable to specific loads or Dangerous Goods, it is expected that the emergency response plans would, as a minimum, be in accordance with the Guides specified within the *2012 Emergency Response Guidebook* or *HB76: 2010 Dangerous Goods – Initial Emergency Response Guide*. Relevant Guides (from ERG2012) applicable to the Dangerous Goods to be transport to/from the site is included in **Appendix C**. These Guides have been modified to reflect emergency contact information (Triple Zero | 000) relevant to Australian jurisdictions.

This is not an exhaustive list and selection of the most appropriate Guide(s) from the 2012 Emergency Response Guidebook or HB 76 shall be the responsibility of the prime contractor, depending on the nature of goods transported.

In the event of a discrepancy between these Guides or HB76, the requirements of HB76 shall prevail.

4.1 PLAN ACTIVATION

4.1.1 Internal Alerting Mechanism

The altering mechanism for each TERP shall be stated explicitly within each plan.

Generally, the plan(s) will become 'active' upon knowledge (or suspicion of) an incident during transport of the Dangerous Goods which could (or potentially) pose a risk to safety, damage to property or harm the environment.

4.1.2 Situation Appraisal

A checklist for collation of relevant information in relation to an Incident is included in **Appendix D**.

4.1.3 Authority and Resources Mobilisation

Authorities shall be notified in the event of any Incident, in accordance with applicable TERPs.

Generally, this will involve NSW Police in the role of emergency coordinator and the NSW Fire Brigade as the combatant authority. Fire Brigade, Environmental Protection Agency (EPA) personnel may be required for the clean-up phase of an Incident.

4.2 RESPONSE TASKS

4.2.1External Alerting Mechanism

In the event of an emergency, contact Emergency Services (Police, Fire and Ambulance) by calling Triple Zero (000) immediately.

NSW Police shall be notified under any circumstance in which any of the following has the potential to occur:

- injury to persons or damage to property
- unplanned or emergency traffic management around the incident area is required
- emergency situations generally

NSW Fire Brigade shall be notified in the event of:

- an emergency situation
- serious spills

NSW Police, as the coordinating authority, shall notify other relevant authorities as required.

4.2.2 Emergency Action / Containment / Clean-up

Emergency actions, containment and required clean-up processes shall be outlined in respective TERPs when developed. Generally, the response shall be undertaken in the following steps:

1) Alert Phase

   Notification of prime contractor management and necessary Authorities, as required.

2) Response Phase

   Dispatch of necessary Emergency Services, technical advisors and preliminary assessment of the incident. This include isolation and containment of the area.

3) Remedial Response Phase

   Detailed assessment of the incident and carry out control and remedial measures, as required.

   Further resources will be requested, as necessary.

4) Disposal

   Arrange and supervision of the disposal of any hazardous or contaminated materials.

5) Rehabilitation

   If necessary, undertake further rehabilitation of the affected area(s) to minimise the hazard.

6) Follow-up

   Investigate the cause and evaluate the incident response.

4.3 RESOURCES

4.3.1 Contact List

A detailed contact list shall be prepared as part of the final TERP(s) once the details of key internal team members are known.

4.3.2 Communications

Mobile phones will generally be used as the primary means of communication during an emergency. Care should be taken in the use of communication (or other electrical) devices in close proximity of explosive or flammable materials.

4.3.3 Equipment and Materials

All vehicles transporting Dangerous Goods with a placard must be equipped with:

- Fire extinguishers (multiple may be required depending on nature and size of loads); and
- At least three portable warning devices that comply with AS 3790 and are clean and in good condition;
- Personal protective equipment and safety equipment that is clean, suitable for the purpose and in a serviceable condition; and

- A copy of relevant Australian Standards and other Emergency Response Guides, as applicable:
  - *HB 76:2010, Dangerous Goods - Initial Emergency Response Guide*
  - *AS 1678, Emergency procedure guide - Transport Series*
  - *AS 1678.0.0.001-2004, Emergency procedure guide - Transport - - Vehicle fire*
  - *AS 1678.2A1-2004, Emergency procedure guide - Transport - Group text EPG for Class 2 substances - Flammable, compressed gas*

A list of Personal Protective Equipment required by the Australian Code for the Transport of Dangerous Goods by Road or Rail (Edition 7.4) is outlined below for each relevant Class of Dangerous Goods.

Class 2.1 (aerosols)

- Gas detector suitable for detecting LP Gas, in accordance with AS1596, where a vehicle is transporting unodourised LP Gas
- Gas tight googles or full face shield, as appropriate. (If goods are carried in a receptacle with a capacity greater than 500 litres, or the goods are cryogenic liquids)
- Thermally insulated gloves or gauntlets
- Electric torch complying with AS60079.11 (or other recognised Code)

Class 3 (flammable liquids)

- Eye wash kit of at least 250mL filled and ready for use
- Chemically resistant gloves or gauntlets
- Electric torch complying with AS60079.11 (or other recognised Code)

Class 8 (corrosive substances)

- Respiratory protection equipment for escape purposes.

  (*The minimum requirement is air supplied short term breathing apparatus suitable for escape purposes, except when, even in an emergency, the dangerous goods will not give rise to harmful vapours, gases or dust. Note that where a driver attends to the loading or transfer of goods, SCBA with a duration of greater than 15 minutes may be required by other (e.g. health and safety) legislation.*)
- Gas tight googles or full face shield, as appropriate
- Eye wash kit of at least 250mL filled and ready for use
- Chemically resistant gloves or gauntlets
- Chemically resistant suit or coveralls
- Chemically resistant boots
- Any electric torch

4.3.4 Personnel

Appropriate personnel and resources shall be allocated in response to specific incidents.

When allocating personnel and resources, consideration should be given to the type of Dangerous Goods being transported (which may influence size of isolation or evacuation areas required), location (e.g. is the emergency or spill located at or near an intersection such that additional Traffic Control resources may be required) and likely during of incident response.

4.3.5 Media

Emergency Services personnel are to act as the designated media contact at the site of an emergency.

4.4 PREPAREDNESS

4.4.1 Hazard Analysis and Risk Assessment

Reference should be made to the Sigma Dangerous Goods risk assessments prepared in accordance with the NSW Work Health and Safety Act and Regulation 2011.

4.4.2 Training & Exercises

Simulated and/or practical training and exercises should be undertaken regularly to ensure relevant key persons are familiar with the actions required in the event of an incident. It is recommended that these be undertaken annually prior to the review and update of the TERP so that any “lessons learnt” can be incorporated into the new plan in a pro-active manner.

Input involving external bodies such as vehicle contractors and Emergency Services would also be beneficial.

4.4.3 Maintenance of Response Equipment

All emergency response equipment shall be appropriately maintained in a serviceable condition.

4.4.4 Investigative Follow-up

For serious incidents, an investigation shall be undertaken by each relevant authority using standard procedures.

For minor incidents not requiring intervention by Emergency Services, an internal investigation shall be undertaken to determine the cause of the incident, review the effectiveness of response actions and attempt to identify potential improvements to the TERP, where necessary.

4.4.5 Updating

This plan shall be reviewed and updated, as required, on an annual basis.

Furthermore, any necessary changes to the plan deemed necessary following investigation of any incidents should be made as a matter of urgency and the plan redistributed to relevant parties.

4.4.6 Plan Availability and Distribution

This plan should be made available to all persons with responsibilities under this plan, including:

- NSW Police
- NSW Fire Brigade
- NSW Environmental Protection Agency
- Roads and Maritime Service - Traffic Management Centre
- Warehouse Management
- Management of Freight / Transport Companies
- Individual Drivers

5 Conclusion

Incident management in relation to the transport of Dangerous Goods will be satisfactorily addressed through documented policies and procedures, as required by law. This will involve the preparation of detailed Transport Emergency Response Plans (TERPs) by future freight contractors and tenants

storing Dangerous Goods. These plans require detailed information including contact numbers for prime contractor management which are not available during the current stage of development planning.

APPENDICES

APPENDIX A: GOODS TOO DANGEROUS TO BE TRANSPORTED

A 1 Appendix A lists a number of substances and articles which are considered to be **goods too dangerous to be transported**.

A 2 If an entry in this Appendix includes the expression '**N.E.S**.', it refers to goods not **elsewhere specified**. In those cases, the goods named in this entry are also named in one or more entries in the Dangerous Goods Lists in Chapter 3.2. An entry in the Dangerous Goods Lists describes goods of that name that may be transported. For example, it may be possible to transport a substance in compliance with this Code after mixing it with diluents, stabilisers, inhibitors, desensitisers, phlegmatisers, solvents, wetting agents or adulterants, as specified in the Dangerous Goods List, to overcome the instability inherent in the goods. The entry in this Appendix refers to goods that do not meet the description specified in the Dangerous Goods Lists and any associated Special Provisions in Chapter 3.3.

A 3 The list in this Appendix is not an exhaustive listing of goods too dangerous to be transported (see 3.1.1.3).

A 4 Under Regulation 1.6.1(2)(a), the Competent Authority may determine that other goods are to be classified as goods too dangerous to be transported, or that goods listed in this Appendix are not too dangerous to be transported.

A 5 Some State and Territory legislation, that embodies the principles of the NOHSC National Standard on the Storage and Handling of Dangerous Goods, makes reference to this list and assigns a label or placard to these goods, for use when they are kept or handled on premises. The use of that label/placard is not authorised by this Code for transport purposes.

List of some goods too dangerous to be transported

Acetyl acetone peroxide, N.E.S.
Acetyl benzoyl peroxide, N.E.S.
Acetyl cyclohexane sulfonyl peroxide, N.E.S.
Acetylene (liquefied)
Acetylene silver nitrate
Acetyl hydroperoxide, N.E.S. (Alt: Peracetic acid)
Acetyl peroxide, N.E.S.
Acraldehyde, N.E.S. (Alt: Acrolein)
Acroleic acid, N.E.S. (Alt: Acrylic acid)
Acrolein dimer, N.E.S.
Acrolein, N.E.S.
Acrylaldehyde, N.E.S. (Alt: Acrolein)
Acryldehyde, N.E.S.
Acrylic acid , N.E.S.
Acrylic acid isobutyl ester, N.E.S. (Alt: Isobutyl acrylate)
Acrylic aldehyde, N.E.S. (Alt: Acrolein)
Acrylonitrile, N.E.S.
Allyl aldehyde, N.E.S. (Alt: Acrolein)
Aluminium dross, wet or hot
Ammonium azide
Ammonium bromate
Ammonium chlorate
Ammonium fulminate
Ammonium nitrate, N.E.S.
Ammonium nitrite
Ammonium permanganate
Ammonium picrate, N.E.S.
Ammonium salt and a chlorate, mixtures of
Ammonium salt and a nitrite, mixtures of
tert-Amyl hydroperoxide, N.E.S.
tert-Amyl perdecanoate, N.E.S.
tert-Amyl peroxyacetate, N.E.S.
tert-Amyl peroxybenzoate, N.E.S.
tert-Amyl peroxyneodecanoate, N.E.S.
tert-Amyl peroxypivalate, N.E.S.
Antimony sulfide and chlorate, mixtures of
Arsenic sulfide and chlorate, mixtures of
Ascaridole
Azaurolic acid (salts of), N.E.S.
Azidodithiocarbonic acid
Azidoethyl nitrate
Azido guanidine picrate, N.E.S.
5-Azido-1-hydroxy tetrazole
Azido hydroxy tetrazole (mercury and silver salts)
3-Azido-1,2-propylene glycol dinitrate
Aziridine, N.E.S. (Alt: Ethyleneimine)
Azotetrazole, N.E.S.
Barium azide, N.E.S.
Benzene diazonium chloride, N.E.S.
Benzene diazonium nitrate, N.E.S.
Benzene-1,3-disulfohydrazide, N.E.S.
Benzene triozonide
Benzoxidiazoles, N.E.S.
Benzoyl azide
Biphenyl triozonide
2,2-Bis-(*tert*-butylperoxy) butane, N.E.S.
1,1-Bis-(*tert*-butylperoxy) cyclohexane, N.E.S.
2,2-Bis-(4,4-di-*tert*-butylperoxy cyclohexyl) propane, N.E.S.
Bis-(2-methylbenzoyl) peroxide, N.E.S.
Bis-(3,5,5-trimethyl-1,2-dioxolanyl-3)peroxide, N.E.S.
Bromine azide
4-Bromo-1,2-dinitrobenzene
Bromosilane
Butadienes, N.E.S.
1,2,4-Butanetriol trinitrate
2-Butenal, N.E.S. (Alt: Crotonaldehyde)
Butene oxide, N.E.S. (Alt: 1,2-Butylene oxide)
tert-Butoxycarbonyl azide
n-Butoxyethylene, N.E.S. (Alt: Butyl vinyl ether)
Butyl acrylate, N.E.S.
1,2-Butylene oxide, N.E.S.
tert-Butyl hydroperoxide, N.E.S.
tert-Butyl peracetate, N.E.S.
tert-Butyl perdiethylacetate and *tert*-Butyl perbenzoate mixtures, N.E.S.
tert-Butyl perisobutyrate, N.E.S.
tert-Butyl peroxyacetate, N.E.S.
tert-Butyl peroxybutyl fumarate, N.E.S.
tert-Butyl peroxycrotonate, N.E.S. (Alt: *tert*-Butyl percrotonate)
n-Butyl peroxydicarbonate, N.E.S. (Alt: *n*-Butyl perdicarbonate, and Di-*n*-butylperoxydicarbonate)
tert-Butyl peroxyisobutyrate, N.E.S. (Alt: *tert*-Butyl perisobutyrate)
tert-Butyl peroxyisopropylcarbonate, N.E.S.
1-(2-*tert*-Butylperoxy isopropyl)-3-isopropenylbenzene, N.E.S.
tert-Butyl peroxyneoheptanoate, N.E.S.
tert-Butyl peroxypivalate, N.E.S. (Alt: *tert*-Butyl perpivalate)
Butyl vinyl ether, N.E.S.
Calcium azide, N.E.S.
Carbazide
Charcoal screenings, wet
Charcoal, wet

Chloral, anhydrous, N.E.S.
Chloric acid, N.E.S.
Chlorine azide
Chlorine cyanide, N.E.S. (Alt: Cyanogen chloride)
Chlorine dioxide
Chloroacetone, N.E.S.
p-Chlorobenzoyl peroxide, N.E.S.
2-Chlorobutadiene-1,3, N.E.S. (Alt: Chloroprene)
3-Chloroperoxybenzoic acid, N.E.S.
Chloroprene, N.E.S.
Chlorotrifluoroethylene, N.E.S. (Alt: Trifluorochloroethylene)
Cinnamene, N.E.S. (Alt: Styrene monomer)
Cinnamol, N.E.S. (Alt: Styrene monomer)
Coal briquettes, hot
Coke, hot
Copper acetylide
Copper amine azide
Copper tetramine nitrate
Crotonaldehyde, N.E.S.
Cumyl hydroperoxide, N.E.S.
Cumyl peroxyneodecanoate, N.E.S.
Cumyl peroxyneoheptanoate, N.E.S.
Cumyl peroxypivalate, N.E.S.
Cyanogen chloride, N.E.S.
Cyanuric triazide
Cyclohexanone peroxide, N.E.S.
Cyclotetramethylene tetranitramine, N.E.S. (Alt: HMX)
Cyclotrimethylene trinitramine, N.E.S. (Alt: RDX or Cyclonite)
Diacetone alcohol peroxides, N.E.S.
Diacetyl peroxide, N.E.S. (Alt: Acetyl peroxide)
1,1-Di-(*tert*-amylperoxy)cyclohexane, N.E.S.
p-Diazidobenzene
1,1-Diazidoethane
1,1'-Diazidoethane
1,2'-Diazidoethane
1,1'-Diazoaminonaphthalene
Diazoaminotetrazole, N.E.S.
Diazodinitrophenol, N.E.S.
Diazodiphenylmethane
Diazonium nitrates, N.E.S.
Diazonium perchlorates, N.E.S.
1,3-Diazopropane
Dibenzyl perdicarbonate, N.E.S.
Dibenzyl peroxydicarbonate, N.E.S.
Dibromoacetylene
Di-*tert*-butyl peroxyazelate, N.E.S.
2,2-Di-(*tert*-butylperoxy) butane, N.E.S. (Alt: 2,2-Bis-(*tert*-butylperoxy) butane)
1,1-Di-(4-*tert*-butylperoxy)cyclohexane, N.E.S. (Alt: 1,1-Bis-(4-*tert*-butylperoxy) cyclohexane)
Di-*n*-butylperoxydicarbonate, N.E.S.
Di-(*tert*-butylperoxy) phthalate, N.E.S.
2,2-Di-(*tert*-butylperoxy)propane, N.E.S.
Dichloroacetylene, N.E.S.
N,N'-Dichloroazodicarbonamidine (salts of), N.E.S.
Di-4-chlorobenzoyl peroxide, N.E.S. (Alt: *p*-Chlorobenzoyl peroxide)
Dichloroethyl sulfide
2,2-Di-(4,4-di(*tert*-butylperoxy)cyclohexyl) propane, N.E.S.
Di-2,4-dichlorobenzoyl peroxide, N.E.S.
Diethanol nitrosamine dinitrate, N.E.S.
Diethylene glycol dinitrate
Diethylgold bromide
Diethyl perdicarbonate, N.E.S.
Diethyl peroxydicarbonate, N.E.S. (Alt: Diethyl pericarbonate)
2,2-Dihydroperoxy propane, N.E.S.
1,8-Dihydroxy-2,4,5,7-tetranitroanthraquinone (Chrysamminic acid)
Di-(1-hydroxytetrazole), N.E.S.
Diiodacetylene
Diisobutyryl peroxide, N.E.S. (Alt: Isobutyryl peroxide)
Diisopropylbenzene hydroperoxide, N.E.S.
Di-(2-methylbenzoyl) peroxide, N.E.S.
2,5-Dimethyl-2,5-di-(*tert*-butylperoxy)hexyne-3, N.E.S.
2,5-Dimethyl-2,5-dihydroperoxyhexane, N.E.S.
3,5-Dimethyl-3,5-dihydroxydioxolane-1,2, N.E.S.
2,5-Dimethyl-2,5-di-(3,5,5-trimethylhexanoylperoxy)hexane, N.E.S.
Dimethyleneimine, N.E.S. (Alt: Ethyleneimine)
2,5-Dimethylhexane-2,5-dihydroperoxide, N.E.S. (Alt: 2,5-Dimethyl-2,5-dihydroperoxy hexane)
1,1-Dimethyl-3-hydroxybutyl peroxyneoheptanoate, N.E.S.
Di-(1-naphthoyl) peroxide
Di-(2-neodecanoylepoxyisopropyl) benzene, N.E.S.
Dinitro-7,8-dimethylglycoluril, N.E.S.
1,3-Dinitro-5,5-dimethyl hydantoin
1,3-Dinitro-4,5-dinitrosobenzene
1,1-Dinitroethane, N.E.S.
1,2-Dinitroethane

Dinitroglycoluril
Dinitromethane
Dinitropropylene glycol
2,4-Dinitroresorcinol (heavy metal salts of), N.E.S.
4,6-Dinitroresorcinol (heavy metal salts of), N.E.S.
Dinitroresorcinols, N.E.S.
3,5-Dinitrosalicylic acid (lead salt), N.E.S.
Dinitrosobenzylamidine and salts of, N.E.S.
N,N-Dinitroso-*N,N'*-dimethylterephthalimide, N.E.S.
N,N'-Dinitrosopentamethylenetetramine, N.E.S.
2,2-Dinitrostilbene
1,4-Dinitro-1,1,4,4-tetramethylolbutanetetranitrate, N.E.S.
2,4-Dinitro-1,3,5-trimethylbenzene
Di-(β -nitroxyethyl) ammonium nitrate
α,α'-Di-(nitroxy) methylether
1,9-Dinitroxy pentamethylene-2,4,6,8-tetramine, N.E.S.
Diperoxy azelaic acid, N.E.S.
Diperoxy dodecane diacid, N.E.S.
Dipropionyl peroxide, N.E.S. (Alt: Propionyl peroxide)
Distearyl perdicarbonate, N.E.S.
Distearyl peroxydicarbonate, N.E.S. (Alt: Distearyl perdicarbonate)
Di-(3,5,5-trimethyl-1,2-dioxolanyl-3) peroxide, N.E.S.
Di-(3,5,5-trimethylhexanoyl) peroxide, N.E.S.
Divinyl, N.E.S. (Alt: Butadienes)
Divinyl ether, N.E.S.
Divinyl oxide, N.E.S. (Alt: Divinyl ether)
2,6-Epoxy-5-hexenal, N.E.S. (Alt: Acrolein dimer)
Ethanolamine dinitrate
Ethyl acrylate, N.E.S.
Ethyl 3,3-di-(*tert*-amylperoxy)butyrate, N.E.S.
Ethylene diamine diperchlorate
Ethylene glycol dinitrate
Ethyleneimine, N.E.S.
Ethyl hydroperoxide
Ethyl methacrylate, N.E.S.
Ethyl methyl ketone peroxide(s), N.E.S.
Ethyl nitrate
Ethyl nitrite
Ethyl perchlorate
Ethyl propenoate, N.E.S. (Alt: Ethyl acrylate)
Flammable mixture of dangerous goods of Division 2.1 or sub-risk 2.1 with oxygen, nitrous oxide or air
Formaldehyde, gaseous
2-Formyl-3,4-dihydro-2*H*-pyran, N.E.S. (Alt: Acrolein dimer)
Fulminate of mercury, N.E.S.
Fulminating gold
Fulminating platinum
Fulminating silver
Fulminic acid
Galactan trinitrate
Galactsan trinitrate
Glycerol-1,3-dinitrate
Glycerol monogluconate trinitrate
Glycerol monolactate trinitrate
Guanyl nitrosaminoguanylidene hydrazine, N.E.S.
Guanyl nitrosaminoguanyl tetrazine
Hafnium metal powder, N.E.S., having a particle size less than 3 micrometres if mechanically produced or 10 micrometres if chemically produced
Hexamethylene triperoxide diamine, N.E.S.
Hexamethylol benzene hexanitrate
Hexanitroazoxy benzene
2,2',4,4',6,6'-Hexanitro-3,3'-dihydroxyazobenzene, N.E.S.
2,2',3',4,4',6-Hexanitrodiphenylamine, N.E.S.
2,3'4,4',6,6'p-Hexanitrodiphenylether
N,N'-(Hexanitrodiphenyl) ethylene dinitramine, N.E.S.
Hexanitrodiphenyl urea
Hexanitroethane
Hexanitrooxanilide
HMX, N.E.S.
Hydrazine azide
Hydrazine chlorate
Hydrazine dicarbonic acid diazide
Hydrazine perchlorate
Hydrazine selenate
Hydrocyanic acid, anhydrous, N.E.S.
Hydrogen cyanide, anhydrous, N.E.S.
Hydrogen peroxide, concentrations greater than 60% hydrogen peroxide, N.E.S.
Hydroxylamine iodide
Hyponitrous acid
Ignition element for lighter, containing pyrophoric liquid
Initiating explosives, N.E.S.
Inositol hexanitrate, N.E.S.
Inulin trinitrate, N.E.S.
Iodine azide, N.E.S.
Iodoxy compounds, N.E.S.
Iridium nitratopentamine iridium nitrate
Isobutyl acrylate, N.E.S.
Isobutyl methacrylate, N.E.S.

Isobutyl methyl ketone peroxide, N.E.S.
Isobutyryl peroxide, N.E.S.
Isoprene, N.E.S.
Isopropyl *sec*-butyl peroxydicarbonate + Di-*sec*-butyl peroxydicarbonate + Di-isopropyl peroxydicarbonate, N.E.S.
Isopropylcumyl hydroperoxide, N.E.S. (Alt: Diisopropylbenzene hydroperoxide)
Isothiocyanic acid
Lead azide, N.E.S.
Lead mononitroresorcinate, N.E.S.
Lead picrate, N.E.S.
Lead styphnate, N.E.S.
Lead 2,4,6-trinitroresorcinate, N.E.S.
Lighters (cigarettes) containing pyrophoric liquid
Magnesium dross, wet or hot
Mannitan tetranitrate
Mercurous azide
Mercury acetylide
Mercury iodide aquabasic ammonobasic (Iodide of Millon's base)
Mercury nitride
Mercury oxycyanide, N.E.S.
Methacrylic acid, N.E.S.
Methazoic acid
Methyl acetylene/propadiene, mixtures, N.E.S.
β-Methyl acrolein, N.E.S. (Alt: Crotonaldehyde)
Methyl acrylate, N.E.S.
Methylamine dinitramine and dry salts thereof
Methylamine nitroform
Methylamine perchlorate, N.E.S.
Methyl-1,3-butadiene, N.E.S. (Alt: Isoprene)
Methylcyclohexanone peroxide(s), N.E.S.
Methyldichloroarsine
Methylene glycol dinitrate
Methyl ethyl ketone peroxide(s), N.E.S.
α-Methylglucoside tetranitrate
α-Methylglycerol trinitrate
Methyl isobutyl ketone peroxide(s), N.E.S.
Methyl methacrylate monomer, N.E.S.
Methyl nitramine, metal salts of
Methyl nitrate
Methyl nitrite
Methyl picric acid, heavy metal salts of
Methylpropyl acrylate, N.E.S. (Alt: Isobutyl acrylate)
Methylstyrenes, *ortho-, meta-, para-*, N.E.S.
Methyl trimethylol methane trinitrate
Methylvinylbenzenes, N.E.S. (Alt: Vinyl toluenes)
Monochloroacetone, N.E.S.
Naphthalene diozonide
Naphthylamine perchlorate
Nickel picrate
Nitrated paper (unstable)
Nitrates of diazonium compounds
N-Nitroaniline
m-Nitrobenzene diazonium perchlorate
Nitrocellulose, N.E.S.
Nitrocotton, N.E.S.
6-Nitro-4-diazotoluene-3-sulfonic acid, N.E.S.
Nitroethyl nitrate
Nitroethylene polymer
Nitrogen trichloride
Nitrogen triiodide
Nitrogen triiodide monoamine
Nitroglycerin, liquid, N.E.S.
Nitroguanidine, N.E.S.
Nitroguanidine nitrate
1-Nitro hydantoin
Nitroisobutanetriol trinitrate
Nitromannite, N.E.S.
N-Nitro-*N*-methylglycolamide nitrate
2-Nitro-2-methylpropanol nitrate
m-Nitrophenyldinitro methane
Nitrostarch, N.E.S.
Nitrosugars, N.E.S.
Octogen, N.E.S.
1,7-Octadiene-3,5-diyne-1,8-dimethoxy-9-octadecynoic acid
Organic peroxide type A, liquid
Organic peroxide type A, solid
Pentaerythrite tetranitrate, N.E.S.
Pentaerythritol tetranitrate, N.E.S.
Pentanitroaniline, N.E.S.
Peracetic acid, N.E.S.
Perchloric acid, N.E.S.
Peroxyacetic acid, N.E.S.
PETN, N.E.S.
m-Phenylene diaminediperchlorate, N.E.S.
Phenylethylene, N.E.S. (Alt: Styrene monomer)
Phosphorus (white or red) and a chlorate, mixtures of
Picric acid, N.E.S.
Potassium carbonyl
2-Propenal, N.E.S. (Alt: Acrolein)
Propenenitrile, N.E.S. (Alt: Acrylonitrile)
Propenoic acid, N.E.S. (Alt: Acrylic acid)
Propionyl peroxide, N.E.S.
Propylene aldehyde, N.E.S. (Alt: Crotonaldehyde)
Propyleneimine, N.E.S.

Pyridine perchlorate
Quebrachitol pentanitrate
Selenium nitride
Self-reactive liquid type A
Self-reactive solid type A
Shaped charges (commercial) containing more than 220g of explosives
Silver acetylide, N.E.S.
Silver azide, N.E.S.
Silver chlorate, N.E.S.
Silver chlorite, N.E.S.
Silver fulminate, N.E.S.
Silver oxalate, N.E.S.
Silver perchlorate
Silver picrate, N.E.S.
Sodium dinitro-*o*-cresolate, N.E.S.
Sodium picramate, N.E.S.
Sodium picryl peroxide
Sodium tetranitride
Styrene, monomer, N.E.S.
Sucrose octanitrate, N.E.S.
Sulfur and chlorate, loose mixtures of
Sulfur trioxide, N.E.S.
Sulfuric anhydride, N.E.S. (Alt: Sulfur trioxide)
Tetraazido benzene quinone
Tetrachloromethyl perchlorate
Tetraethylammonium perchlorate, N.E.S.
Tetrafluorohydrazine
Tetrahydrofuran, N.E.S.
Tetramethylene diperoxide dicarbamide
Tetranitrodiglycerin
2,3,4,6-Tetranitrophenol
2,3,4,6-Tetranitrophenyl methyl nitramine
2,3,4,6-Tetranitrophenylnitramine
Tetranitroresorcinol, N.E.S.
2,3,5,6-Tetranitroso-1,4-dinitrobenzene
2,3,5,6-Tetranitroso nitrobenzene, N.E.S.
Tetrazine, N.E.S.
Tetrazolylazide, N.E.S.
Titanium dichloride
Tolyethylenes, mixed isomers, N.E.S. (Alt: Vinyl toluenes)
Trichloroacetaldehyde, anhydrous, N.E.S. (Alt: Chloral)
Trichloroacetic aldehyde, anhydrous, N.E.S. (Alt: Chloral)
Trichloromethyl perchlorate
Trifluorochloroethylene, N.E.S.
Trifluoromonochloroethylene, N.E.S.
Triformoxime trinitrate
Trimethylene glycol diperchlorate
Trimethylol nitromethane trinitrate
2,2,4-Trimethylpentyl-2-peroxyphenoxy acetate, N.E.S.
2,4,4-Trimethylpentyl-2-peroxyneodecanoate, N.E.S.
1,3,5-Trimethyl-2,4,6-trinitrobenzene
Trinitroacetic acid, N.E.S.
Trinitroacetonitrile
Trinitroamine cobalt
Trinitrobenzene, N.E.S.
Trinitrobenzoic acid, N.E.S.
2,4,6-Trinitro-1,3-diazobenzene
Trinitroethanol
Trinitroethylnitrate
Trinitromethane
1,3,5-Trinitronaphthalene
Trinitrophenol, N.E.S. (Alt: Picric acid)
2,4,6-Trinitrophenyl guanidine, N.E.S.
2,4,6-Trinitrophenyl nitramine
2,4,6-Trinitrophenyl trimethylol methyl nitramine trinitrate, N.E.S.
2,4,6-Trinitroso-3-methyl nitraminoanisole
Trinitrotetramine cobalt nitrate
2,4,6-Trinitro-1,3,5-triazido benzene, N.E.S.
Tri-(β -nitroxyethyl) ammonium nitrate
Tris-bis-bifluoroamino diethoxy propane (TVOPA)
Urea nitrate, N.E.S.
Vinyl acetate, N.E.S.
Vinyl benzene, N.E.S. (Alt: Styrene, monomer)
Vinyl bromide, N.E.S.
Vinyl-*n*-butylether, N.E.S. (Alt: Vinyl butylether)
Vinyl butyrate, N.E.S.
Vinyl chloride, N.E.S.
Vinyl cyanide, N.E.S. (Alt: Acrylonitrile)
Vinyl ether, N.E.S. (Alt: Divinyl ether)
Vinyl ethyl ether, N.E.S.
Vinyl fluoride, N.E.S.
Vinylidene, N.E.S.
Vinyl isobutylether, N.E.S.
Vinyl methyl ether, N.E.S.
Vinyl nitrate polymer
Vinyl pyridines, N.E.S.
Vinyl toluenes, mixed isomers, N.E.S.
Vinyl trichlorosilane, N.E.S.
p-Xylyl diazide
Zirconium picramate, N.E.S.

Appendix B

GUIDELINES FOR THE PREPARATION OF A TRANSPORT EMERGENCY RESPONSE PLAN

Endorsed by ACTDG

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INTRODUCTION

A Transport Emergency Response Plan (TERP) is required to meet the requirements of Regulation 14.5 of the Road Transport Reform (Dangerous Goods) Regulations (C'wlth) 1997 (the Regulations), and Rule 14.5 of the Rail (Dangerous Goods) Rules (the Rail Rules). A well constructed TERP could prevent a minor incident from becoming a disaster, save lives, prevent injuries, and minimise damage to property and the environment.

AIM

This guide is aimed at assisting in the preparation of a TERP, and is not meant to cover all the topics to be addressed in every conceivable planning situation, nor must all the topics covered in the guide be addressed in every TERP prepared. The document is what its title indicates – a guide – to be used as needed when preparing the plan.

OBJECTIVES OF A TRANSPORT EMERGENCY RESPONSE PLAN

- To minimise any adverse effects on people, damage to property or harm to the environment in a transport emergency;
- To facilitate a rapid and effective emergency response and recovery;
- To provide assistance to emergency and security services; and
- To communicate vital information to all relevant persons involved in the transport emergency (both internal personnel and external agencies) with a minimum of delay.

PLANNING

A TERP prepares for the unexpected by identifying response mechanisms to a variety of potential crises arising from the transport of dangerous goods. It outlines the necessary resources, personnel, and logistics which allow for a prompt, coordinated, and rational approach to a transport incident. The plan must contain sufficient detail to enable those involved in the response to effectively carry out their duties. The plan should also take in to consideration requirements specified in 14.6 and 14.7 of the Regulations and Rail Rules.

Every plan should have a stated policy, purpose, and organisational structure, geographic scope, and contain details of the classes of dangerous goods and mode of transport.

A finished plan does not ensure readiness. Continual appraisal using table-top and simulation exercises, plus regular updating of equipment, contact lists, and training of personnel will improve the capability to successfully respond to transport emergency situations. Liaison with emergency and, where relevant, security services in the planning phase is a critical element in the development of the plan. This may include communication with emergency and/or security services along the transport route.

PLAN ELEMENTS

The following elements should be considered when preparing a Transport Emergency Response Plan. They are grouped under four major headings: PLAN ACTIVATION, RESPONSE TASKS, RESOURCES, and PREPAREDNESS.

I PLAN ACTIVATION

1. INTERNAL ALERTING MECHANISM

The plan should describe how transport emergency calls are processed within the organisation and how appropriate response personnel in a position of authority will activate and implement the plan. (This section should be brief, one page or less, easily found on the cover or first page of the plan, and be simple so as to minimise the number of calls to be made.)

2. SITUATION APPRAISAL

A checklist should be developed for recording essential information about the incident to facilitate decision making; date, time, location, nature of the incident, likely or possible causes of the incident (such as collision with another vehicle or object, equipment failure, sabotage or attack), injuries, type of container involved, placard, label, and manifest details, weather conditions, terrain, personnel on site, amounts of dangerous goods and other materials involved, etc. Answers to some questions may be unknown, but a comprehensive checklist will assist in gathering as much information as possible during the initial call.

The situation appraisal will define the critical issues at hand, allow the plan activators to set priorities regarding preventative and corrective strategies, and choose the response required to protect lives, property, and the environment in an effective manner.

3. AUTHORITY AND RESOURCES MOBILISATION

The plan should identify specific positions within an organisation (preferably by name) and their scope of authority. These could include the person in charge within the organisation, the chain of command, technical and medical advisors and their areas of expertise, on-scene authority for organisation, spokesperson(s) including public relations and media person, who will be responsible for requesting outside assistance.

II. RESPONSE TASKS

1. EXTERNAL ALERTING MECHANISM

The plan must describe how and when the organisation will alert external parties such as emergency services, fire authorities, police, security services, environment protection authorities, competent authorities, road authorities and outside contractors.

2. EMERGENCY ACTION / CONTAINMENT / CLEANUP

Appropriate measures should be described for each material to be handled in a manner which will minimise danger and the impact on the environment including initial emergency action, containment, recovery and cleanup. The location, capability, and limitations of equipment to be used should be described.

III. RESOURCES

1. CONTACT LIST

The plan should contain an accurate, up-to-date telephone roster for emergencies which may include individuals within the organisation, regulatory contacts, containment and cleanup equipment contractors, technical specialists, public health and environment protection authorities including alternates and respective telephone / facsimile numbers. (The contact list may be included as an annex to the TERP to facilitate updating.)

2. COMMUNICATIONS

The plan should describe the communication network to be used and provide clear operational procedures for the use of mobile phones, radios and other communication devices.

3. LOGISTIC SUPPORT

The plan should describe the movement of people and equipment to and from the emergency site. This becomes an important aspect if the transport incident occurs in a remote location.

4. EQUIPMENT AND MATERIALS

An inventory of emergency response equipment, a detailed list of specific resources and items of equipment available from within the organisation, and externally, should be maintained. If outside contractors are to be utilised, the personnel and equipment and their expertise and capabilities should be evaluated in advance.

5. PERSONNEL

The plan should designate response personnel, and describe their duties. Each person must be fully aware of his or her role.

6. MEDIA

The press will often be present at an emergency. A designated media contact will serve to assist in relaying important information between the organisation and the media.

IV. PREPAREDNESS

1. HAZARD ANALYSIS AND RISK ASSESSMENT

Multiple plans may be required depending on a hazard analysis of possible scenarios.

2. TRAINING

Training should provide the capability for rapid and competent response, vital to success in an emergency situation. An emergency situation often provides an unfamiliar, emotional and hostile working environment for the responders. Anyone with little training or experience will have difficulty dealing effectively with the incident. All personnel who have an active role in the plan must be trained in the key aspects of the plan.

3. EXERCISES

Table-top and simulation exercises allow the plan to be scrutinised under conditions which approximate an actual incident. Assessment can be done in stages whereby one specific aspect of the plan is evaluated at a time. After each stage has been reviewed, a full scale scenario can be introduced. Having completed “in-house” full scale incident scenarios, interaction with external agencies such as consignors, prime contractors and the emergency services can be beneficial in evaluating the overall plan.

4. MAINTENANCE OF RESPONSE EQUIPMENT

The plan should show schedules for preventative maintenance of relevant equipment listed in the plan. The plan should also show the system by which the maintenance schedules are met.

5. INVESTIGATIVE FOLLOW UP

When an organisation has dealt with an incident, the overall response should be evaluated to determine the effectiveness of the plan. The TERP should then be updated and modified as necessary.

6. UPDATING

A nominated individual should be responsible for updating the plan (including contact telephone numbers) and informing all plan holders of any changes. This is particularly important where information gathering / situation appraisal is carried out by an external contracted emergency response provider. A record of plan amendments should be maintained. The plan should be updated at least annually.

7. PLAN AVAILABILITY AND DISTRIBUTION

The plan should include a listing of all recipients, their names, addresses and title. All staff who have responsibilities within the emergency plan should have access to the plan.

Appendix C

Appendix C1 – Guides 118, 121 and 123 (Class 2.1 Dangerous Goods)

EMERGENCY RESPONSE GUIDE (118)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- EXTREMELY FLAMMABLE.
- May be ignited by heat, sparks or flames.
- May form explosive mixtures with air.
- Vapours from liquefied gas are initially heavier than air and spread along ground.
- Vapours may travel to source of ignition and flash back.
- Some of these materials may react violently with water.
- Cylinders exposed to fire may vent and release flammable gas through pressure relief devices.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

HEALTH

- May cause toxic effects if inhaled.
- Vapours are extremely irritating.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control may cause pollution.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Keep out of low areas.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural fire fighters' protective clothing provides limited protection in re situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Large Spill

- • Consider initial downwind evacuation for at least 800 meters.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters in all directions; also, consider initial evacuation for 1600 meters in all directions.

EMERGENCY RESPONSE

FIRE

- **DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED**.

Small Fire

- Dry chemical or CO_2.

Large Fire

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

Fire involving Tanks

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Fully encapsulating, vapour protective clothing should be worn for spills and leaks with no fire.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Use water spray to reduce vapours or divert vapour cloud drift. Avoid allowing water runoff to contact spilled material.
- Do not direct water at spill or source of leak.
- Isolate area until gas has dispersed.

FIRST AID

- Move victim to fresh air.
- **CALL TRIPLE ZERO (000)** or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim warm and quiet.
- Keep victim under observation.
- Effects of contact or inhalation may be delayed.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

POTENTIAL HAZARDS

HEALTH

- Vapours may cause dizziness or asphyxiation without warning.
- Vapours from liquefied gas are initially heavier than air and spread along ground.

FIRE OR EXPLOSION

- **Non- flammable gases.**
- Containers may explode when heated.
- Ruptured cylinders may rocket.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Keep out of low areas.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural fire fighters' protective clothing provides limited protection in re situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 100 meters.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters in all directions; also, consider initial evacuation for 800 meters in all directions.

EMERGENCY RESPONSE

FIRE

- Use extinguishing agent suitable for type of surrounding fire.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

Fire Involving Tanks

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapours or divert vapour cloud drift. Avoid allowing water runoff to contact spilled material.
- Do not direct water at spill or source of leak.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basement or confined areas.
- Allow substance to evaporate.
- Ventilate the area

FIRST AID

- Move victim to fresh air.
- **CALL TRIPLE ZERO (000)** or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

EMERGENCY RESPONSE GUIDE (123)

POTENTIAL HAZARDS

HEALTH

- **TOXIC; may be fatal if inhaled or absorbed through skin.**
- Vapours may be irritating.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control may cause pollution.

FIRE OR EXPLOSION

- Some may burn but none ignite readily.
- Vapours from liquefied gas are initially heavier than air and spread along ground.
- Cylinders exposed to fire may vent and release toxic and/or corrosive gas through pressure relief devices.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Keep out of low areas.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural fire fighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Spill

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non- highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under “PUBLIC SAFETY”.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters in all directions; also, consider initial evacuation for 800 meters in all directions.

EMERGENCY RESPONSE

FIRE

Small Fire

- Dry chemical or CO_2.

Large Fire

- Water spray, fog or regular foam.
- Do not get water inside containers.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

Fire Involving Tanks

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no re.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or con ned areas.
- Use water spray to reduce vapours or divert vapour cloud drift. Avoid allowing water runoff to contact spilled material.
- Do not direct water at spill or source of leak.
- Isolate area until gas has dispersed.

FIRST AID

- Move victim to fresh air.
- **CALL TRIPLE ZERO (000)** or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim warm and quiet.
- Keep victim under observation.
- Effects of contact or inhalation may be delayed.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

Appendix C2 – Guide 127
(Flammable Liquids)

EMERGENCY RESPONSE

FIRE

CAUTION: All these products have a very low flash point: Use of water spray when fighting fire may be inefficient.

Small Fire

- Dry chemical, CO_2. or alcohol resistant foam.

Large Fire

- Water spray, fog or alcohol resistant foam.
- **Do not use straight streams.**
- Move containers from fire area if you can do it without risk.

Fire Involving Tanks

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- A vapour suppressing foam may be used to reduce vapours.
- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- Use clean non-sparking tools to collect absorbed material.

Large Spill

- Dike far ahead of liquid spill for later disposal.
- Water spray may reduce vapour; but may not prevent ignition in closed spaces.

FIRST AID

- Move victim to fresh air.
- **CALL TRIPLE ZERO (000)** or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Wash skin with soap and water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves

Appendix C3 – Guide 153
(Corrosive Substances)

EMERGENCY RESPONSE GUIDE (153)

POTENTIAL HAZARDS

HEALTH

- **TOXIC**; inhalation, ingestion or skin contact with material may cause severe injury or death.
- Contact with molten substance may cause severe burns to skin and eyes.
- Avoid any skin contact.
- Effects of contact or inhalation may be delayed.
- Fire may produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.

FIRE OR EXPLOSION

- Combustible material: may burn but does not ignite readily.
- When heated, vapours may form explosive mixtures with air: indoors, outdoors and sewers explosion hazards.
- Those substances designated with a (P) may polymerize explosively when heated or involved in a fire.
- Contact with metals may evolve flammable hydrogen gas.
- Containers may explode when heated.
- Runoff may pollute waterways.
- Substance may be transported in a molten form.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters for liquids and at least 25 meters for solids.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate enclosed areas.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural fire fighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Spill

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non- highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under “PUBLIC SAFETY”.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters in all directions; also, consider initial evacuation for 800 meters in all directions.

EMERGENCY RESPONSE

FIRE

Small Fire

- Dry chemical, CO_2 or water spray.

Large Fire

- Dry chemical, CO2, alcohol-resistant foam or water spray.
- Move containers from re area if you can do it without risk.
- Dike fire-control water for later disposal; do not scatter the material.

Fire Involving Tanks

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Do not get water inside containers.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- DO NOT GET WATER INSIDE CONTAINERS.

FIRST AID

- Move victim to fresh air.
- **CALL TRIPLE ZERO (000**) or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Keep victim warm and quiet.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves

Appendix C4 – Guide 171
(Miscellaneous Dangerous Goods)

EMERGENCY RESPONSE GUIDE (171)

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Some may burn but none ignite readily.
- Containers may explode when heated.
- Some may be transported hot.

HEALTH

- Inhalation of material may be harmful.
- Contact may cause burns to skin and eyes.
- Inhalation of Asbestos dust may have a damaging effect on the lungs.
- Fire may produce irritating, corrosive and/or toxic gases.
- Some liquids produce vapours that may cause dizziness or suffocation.
- Runoff from fire control may cause pollution.

PUBLIC SAFETY

- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters for liquids and at least 25 meters for solids.
- Keep unauthorized personnel away.
- Stay upwind.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural fire fighters' protective clothing provides limited protection.

EVACUATION

Spill

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non- highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under “PUBLIC SAFETY”.

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters in all directions; also, consider initial evacuation for 800 meters in all directions.

EMERGENCY RESPONSE

FIRE

Small Fire

- Dry chemical, CO_2 or water spray or regular foam.

Large Fire

- Water spray, fog or regular foam.
- Do not scatter spilled material with high pressure water streams.
- Move containers from fire area if you can do it without risk.
- Dike fire-control water for later disposal.

Fire Involving Tanks

- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Prevent dust cloud.
- Avoid inhalation of asbestos dust.

Small Dry Spill

- With clean shovel place material into clean, dry container and cover loosely; move containers from spill area.

Small Spill

- Take up with sand or other non-combustible absorbent material and place into containers for later disposal.

Large Spill

- Dike far ahead of liquid spill for later disposal.
- Cover powder spill with plastic sheet or tarp to minimize spreading.
- Prevent entry into waterways, sewers, basements or con ned areas.

FIRST AID

- Move victim to fresh air.
- **CALL TRIPLE ZERO (000)** or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

INTRODUCTION TO GREEN TABLES - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

Table 1 - Initial Isolation and Protective Action Distances suggests distances useful to protect people from vapors resulting from spills involving dangerous goods that are considered toxic by inhalation (TIH). This list includes certain chemical warfare agents and materials that produce toxic gases upon contact with water. Table 1 provides first responders with initial guidance until technically qualified emergency response personnel are available.

The **Initial Isolation Zone** defines an area SURROUNDING the incident in which persons may be exposed to dangerous (upwind) and life threatening (downwind) concentrations of material. The **Protective Action Zone** defines an area DOWNWIND from the incident in which persons may become incapacitated and unable to take protective action and/or incur serious or irreversible health effects. Table 1 provides specific guidance for small and large spills occurring day or night.

Adjusting distances for a specific incident involves many interdependent variables and should be made only by personnel technically qualified to make such adjustments. For this reason, no precise guidance can be provided in this document to aid in adjusting the table distances; however, general guidance follows.

Factors That May Change the Protective Action Distances

The orange-bordered guide for a material clearly indicates under the section EVACUATION – Fire, the evacuation distance required to protect against fragmentation hazard of a large container. If the material becomes involved in a **FIRE**, the toxic hazard may be less than the fire or explosion hazard. In these cases, the **Fire** hazard distance should be used.

Initial isolation and protective action distances in this guidebook are derived from historical data on transportation incidents and the use of statistical models. For worst-case scenarios involving the instantaneous release of the entire contents of a package (e.g., as a result of terrorism, sabotage or catastrophic accident) the distances may increase substantially. For such events, doubling of the initial isolation and protective action distances is appropriate in absence of other information.

If more than one tank car containing TIH materials involved in the incident is leaking, LARGE SPILL distances may need to be increased.

For a material with a protective action distance of 11.0+ km (7.0+ miles), the actual distance can be larger in certain atmospheric conditions. If the dangerous goods vapor plume is channeled in a valley or between many tall buildings, distances may be larger than shown in Table 1 due to less mixing of the plume with the atmosphere. Daytime spills in regions with known strong inversions or snow cover, or occurring near sunset, may require an increase of the protective action distance because airborne contaminants mix and disperse more slowly and may travel much farther downwind. In such cases, the nighttime protective action distance may be more appropriate. In addition, protective action distances may be larger for liquid spills when either the material or outdoor temperature exceeds 30°C (86°F).

Materials which react with water to produce large amounts of toxic gases are included in Table 1 - Initial Isolation and Protective Action Distances. Note that some water-reactive materials (WRM) which are also TIH (e.g., Bromine trifluoride (1746), Thionyl chloride (1836), etc.) produce additional TIH materials when spilled in water. For these materials, two entries are provided in Table 1 - Initial Isolation and Protective Action Distances (i.e., for spills on land and for spills in water). **If it is not clear whether the spill is on land or in water, or in cases where the spill occurs both on land and in water, choose the larger Protective Action Distance**.

Following Table 1, **Table 2** – Water-Reactive Materials Which Produce Toxic Gases lists materials that produce large amounts of Toxic Inhalation Hazard gases (TIH) when spilled in water as well as the toxic gases that are produced when spilled in water.

When a water-reactive TIH producing material is spilled into a river or stream, the source of the toxic gas may move with the current and stretch from the spill point downstream for a substantial distance.

Finally, **Table 3** lists Initial Isolation and Protective Action Distances for Toxic Inhalation Hazard materials that may be more commonly encountered.

The selected materials are:

- Ammonia, anhydrous (UN1005)
- Chlorine (UN1017)
- Ethylene oxide (UN1040)
- Hydrogen chloride (UN1050) and Hydrogen chloride, refrigerated liquid (UN2186)
- Hydrogen fluoride (UN1052)
- Sulfur dioxide/Sulphur dioxide (UN1079)

The materials are presented in alphabetical order and provide Initial Isolation and Protective Action Distances for large spills (more than 208 liters or 55 US gallons) involving different container types (therefore different volume capacities) for day time and night time situations and for different wind speeds.

PROTECTIVE ACTION DECISION FACTORS TO CONSIDER

The choice of protective actions for a given situation depends on a number of factors. For some cases, evacuation may be the best option; in others, sheltering in-place may be the best course. Sometimes, these two actions may be used in combination. In any emergency, officials need to quickly give the public instructions. The public will need continuing information and instructions while being evacuated or sheltered in-place.

Proper evaluation of the factors listed below will determine the effectiveness of evacuation or in-place protection (shelter in-place). The importance of these factors can vary with emergency conditions. In specific emergencies, other factors may need to be identified and considered as well. This list indicates what kind of information may be needed to make the initial decision.

The Dangerous Goods

- Degree of health hazard
- Chemical and physical properties
- Amount involved
- Containment/control of release
- Rate of vapor movement

The Population Threatened

- Location
- Number of people
- Time available to evacuate or shelter in-place
- Ability to control evacuation or shelter in-place
- Building types and availability
- Special institutions or populations, e.g., nursing homes, hospitals, prisons

Weather Conditions

- Effect on vapor and cloud movement
- Potential for change
- Effect on evacuation or shelter in-place

PROTECTIVE ACTIONS

Protective Actions are those steps taken to preserve the health and safety of emergency responders and the public during an incident involving releases of dangerous goods. Table 1 - Initial Isolation and Protective Action Distances (green-bordered pages) predicts the size of downwind areas which could be affected by a cloud of toxic gas. People in this area should be evacuated and/or sheltered in-place inside buildings.

Isolate Hazard Area and Deny Entry means to keep everybody away from the area if they are not directly involved in emergency response operations. Unprotected emergency responders should not be allowed to enter the isolation zone. This "isolation" task is done first to establish control over the area of operations. This is the first step for any protective actions that may follow. See Table 1 - Initial Isolation and Protective Action Distances (green-bordered pages) for more detailed information on specific materials.

Evacuate means to move all people from a threatened area to a safer place. To perform an evacuation, there must be enough time for people to be warned, to get ready, and to leave an area. If there is enough time, evacuation is the best protective action. Begin evacuating people nearby and those outdoors in direct view of the scene. When additional help arrives, expand the area to be evacuated downwind and crosswind to at least the extent recommended in this guidebook. Even after people move to the distances recommended, they may not be completely safe from harm. They should not be permitted to congregate at such distances. Send evacuees to a definite place, by a specific route, far enough away so they will not have to be moved again if the wind shifts.

Shelter In-Place means people should seek shelter inside a building and remain inside until the danger passes. **Sheltering in-place is used when evacuating the public would cause greater risk than staying where they are, or when an evacuation cannot be performed.** Direct the people inside to **close all doors and windows** and to **shut off all ventilating, heating and cooling systems.** In-place protection (shelter in-place) may not be the best option if (a) the vapors are flammable; (b) if it will take a long time for the gas to clear the area; or (c) if buildings cannot be closed tightly. Vehicles can offer some protection for a short period if the windows are closed and the ventilating systems are shut off. Vehicles are not as effective as buildings for in-place protection.

It is vital to maintain communications with competent persons inside the building so that they are advised about changing conditions. **Persons protected-in-place should be warned to stay far from windows** because of the danger from glass and projected metal fragments in a fire and/or explosion.

Every dangerous goods incident is different. Each will have special problems and concerns. Action to protect the public must be selected carefully. These pages can help with **initial** decisions on how to protect the public. Officials must continue to gather information and monitor the situation until the threat is removed.

BACKGROUND ON TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

Initial Isolation and Protective Action Distances in this guidebook were determined for small and large spills occurring during day or night. The overall analysis was statistical in nature and utilized state-of-the-art emission rate and dispersion models; statistical release data from the U.S. DOT HMIS (Hazardous Materials Information System) database; meteorological observations from over 120 locations in United States, Canada and Mexico; and the most current toxicological exposure guidelines.

For each chemical, thousands of hypothetical releases were modeled to account for the statistical variation in both release amount and atmospheric conditions. Based on this statistical sample, the 90th percentile Protective Action Distance for each chemical and category was selected to appear in the Table. A brief description of the analysis is provided below. A detailed report outlining the methodology and data used in the generation of the Initial Isolation and Protective Action Distances may be obtained from the U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration.

Release amounts and emission rates into the atmosphere were statistically modeled based on (1) data from the U.S. DOT HMIS database; (2) container types and sizes authorized for transport as specified in 49 CFR §172.101 and Part 173; (3) physical properties of the individual materials, and (4) atmospheric data from a historical database. The emission model calculated the release of vapor due to evaporation of pools on the ground, direct release of vapors from the container, or a combination of both, as would occur for liquefied gases which can flash to form both a vapor/aerosol mixture and an evaporating pool. In addition, the emission model also calculated the emission of toxic vapor by-products generated from spilling water-reactive materials in water. Spills that involve releases of approximately 208 liters for liquids (55 US gallons) and 300 kg for solids (660 pounds) or less are considered Small Spills, while spills that involve greater quantities are considered Large Spills. An exception to this is certain chemical warfare agents where Small Spills include releases up to 2 kg (4.4 lbs), and Large Spills include releases up to 25 kg (55 lbs). These agents are BZ, CX, GA, GB, GD, GF, HD, HL, HN1, HN2, HN3, L and VX.

Downwind dispersion of the vapor was estimated for each case modeled. Atmospheric parameters affecting the dispersion, and the emission rate, were selected in a statistical fashion from a database containing hourly meteorological data from 120 cities in the United States, Canada and Mexico. The dispersion calculation accounted for the time dependent emission rate from the source as well as the density of the vapor plume (i.e., heavy gas effects). Since atmospheric mixing is less effective at dispersing vapor plumes during nighttime, day and night were separated in the analysis. In Table 1, "Day" refers to time periods after sunrise and before sunset, while "Night" includes all hours between sunset and sunrise.

Toxicological short-term exposure guidelines for the materials were applied to determine the downwind distance to which persons may become incapacitated and unable to take protective action or may incur serious health effects after a once-in-a-lifetime, or rare, exposure. When available, toxicological exposure guidelines were chosen from AEGL-2 or ERPG-2 emergency response guidelines, with AEGL-2 values being the first choice. For materials that do not have AEGL-2 or ERPG-2 values, emergency response guidelines estimated from lethal concentration limits derived from animal studies were used, as recommended by an independent panel of toxicological experts from industry and academia.

HOW TO USE TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

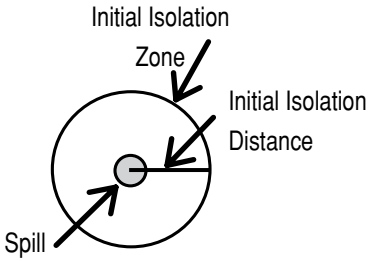
(1) The responder should already have:

- Identified the material by its ID Number and Name; (if an ID Number cannot be found, use the Name of Material index in the blue-bordered pages to locate that number.)
- Found the three-digit guide for that material in order to consult the emergency actions recommended jointly with this table;
- **Noted the wind direction.**

(2) Look in Table 1 (the green-bordered pages) for the ID Number and Name of the Material involved in the incident. Some ID Numbers have more than one shipping name listed—look for the specific name of the material. (If the shipping name is not known and Table 1 lists more than one name for the same ID Number, use the entry with the largest protective action distances.)

(3) Determine if the incident involves a SMALL or LARGE spill and if DAY or NIGHT. Generally, a SMALL SPILL is one which involves a single, small package (e.g., a drum containing up to approximately 208 liters (55 US gallons)), a small cylinder, or a small leak from a large package. A LARGE SPILL is one which involves a spill from a large package, or multiple spills from many small packages. DAY is any time after sunrise and before sunset. NIGHT is any time between sunset and sunrise.

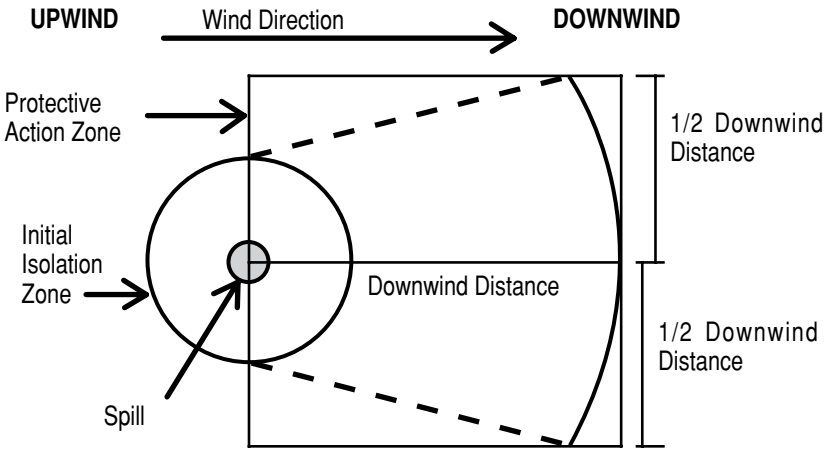
(4) Look up the INITIAL ISOLATION DISTANCE. Direct all persons to move, in a crosswind direction, away from the spill to the distance specified—in meters and feet.



(5) Look up the initial PROTECTIVE ACTION DISTANCE shown in Table 1. For a given material, spill size, and whether day or night, Table 1 gives the downwind distance—in kilometers and miles— for which protective actions should be considered. For practical purposes, the Protective Action Zone (i.e., the area in which people are at risk of harmful exposure) is a square, whose length and width are the same as the downwind distance shown in Table 1.

(6) Initiate Protective Actions to the extent possible, beginning with those closest to the spill site and working away from the site in the downwind direction. When a water-reactive TIH producing material is spilled into a river or stream, the source of the toxic gas may move with the current or stretch from the spill point downstream for a substantial distance.

The shape of the area in which protective actions should be taken (the Protective Action Zone) is shown in this figure. The spill is located at the center of the small circle. The larger circle represents the INITIAL ISOLATION zone around the spill.



NOTE 1: See "Introduction To Green Tables – Initial Isolation And Protective Action Distances" under "Factors That May Change the Protective Action Distances" (page 285)

NOTE 2: See Table 2 – Water-Reactive Materials which Produce Toxic Gases for the list of gases produced when these materials are spilled in water.

Call the emergency response telephone number listed on the shipping paper or the appropriate response agency as soon as possible for additional information on the material, safety precautions and mitigation procedures.

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package) First ISOLATE in all Directions Meters (Feet)	SMALL SPILLS Then PROTECT persons Downwind during- DAY Kilometers (Miles)	SMALL SPILLS Then PROTECT persons Downwind during- NIGHT Kilometers (Miles)	LARGE SPILLS (From a large package or from many small packages) First ISOLATE in all Directions Meters (Feet)	LARGE SPILLS Then PROTECT persons Downwind during- DAY Kilometers (Miles)	LARGE SPILLS Then PROTECT persons Downwind during- NIGHT Kilometers (Miles)
1005 *	**125**	Ammonia, anhydrous	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)
1005 *	**125**	Anhydrous ammonia						
1008	**125**	Boron trifluoride	30 m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.4 mi)	300 m (1000 ft)	1.7 km (1.1 mi)	4.8 km (3.0 mi)
1008	**125**	Boron trifluoride, compressed						
1016	**119**	Carbon monoxide	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	200 m (600 ft)	1.2 km (0.8 mi)	4.8 km (3.0 mi)
1016	**119**	Carbon monoxide, compressed						
1017 *	**124**	Chlorine	60 m (200 ft)	0.4 km (0.2 mi)	1.5 km (1.0 mi)	500 m (1500 ft)	3.0 km (1.9 mi)	7.9 km (4.9 mi)
1023	**119**	Coal gas	60 m (200 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	100 m (300 ft)	0.4 km (0.2 mi)	0.5 km (0.3 mi)
1023	**119**	Coal gas, compressed						
1026	**119**	Cyanogen	30 m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.3 mi)	60 m (200 ft)	0.4 km (0.2 mi)	1.7 km (1.0 mi)
1026	**119**	Cyanogen gas						
1040 *	**119P**	Ethylene oxide	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.9 km (0.5 mi)	2.0 km (1.3 mi)
1040 *	**119P**	Ethylene oxide with Nitrogen						
1045	**124**	Fluorine	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	100 m (300 ft)	0.5 km (0.3 mi)	2.3 km (1.4 mi)
1045	**124**	Fluorine, compressed						
1048	**125**	Hydrogen bromide, anhydrous	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	200 m (600 ft)	1.2 km (0.8 mi)	3.9 km (2.4 mi)
1050 *	**125**	Hydrogen chloride, anhydrous	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.3 km (0.2 mi)	1.3 km (0.8 mi)
1051	**117**	AC **(when used as a weapon)**	60 m (200 ft)	0.3 km (0.2 mi)	1.0 km (0.6 mi)	1000 m (3000 ft)	3.7 km (2.3 mi)	8.4 km (5.3 mi)

1051	**117**	Hydrocyanic acid, aqueous solutions, with more than 20% Hydrogen cyanide	60 m	(200 ft)	0.2 km	(0.1 mi)	0.6 km	(0.4 mi)	400 m	(1250 ft)	1.4 km	(0.9 mi)	3.8 km	(2.4 mi)
1051	**117**	Hydrogen cyanide, anhydrous, stabilized												
1051	**117**	Hydrogen cyanide, stabilized												
1052 *	**125**	Hydrogen fluoride, anhydrous	30 m	(100 ft)	0.1 km	(0.1 mi)	0.5 km	(0.3 mi)	300 m	(1000 ft)	1.5 km	(0.9 mi)	3.2 km	(2.0 mi)
1053	**117**	Hydrogen sulfide	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.3 mi)	300 m	(1000 ft)	1.7 km	(1.0 mi)	5.6 km	(3.5 mi)
1053	**117**	Hydrogen sulphide												
1062	**123**	Methyl bromide	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.2 mi)	100 m	(300 ft)	0.6 km	(0.4 mi)	1.9 km	(1.2 mi)
1064	**117**	Methyl mercaptan	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	150 m	(500 ft)	1.0 km	(0.7 mi)	3.2 km	(2.0 mi)
1067	**124**	Dinitrogen tetroxide	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.2 mi)	300 m	(1000 ft)	1.1 km	(0.7 mi)	2.7 km	(1.7 mi)
1067	**124**	Nitrogen dioxide												
1069	**125**	Nitrosyl chloride	30 m	(100 ft)	0.2 km	(0.2 mi)	1.1 km	(0.7 mi)	600 m	(2000 ft)	3.6 km	(2.3 mi)	9.5 km	(5.9 mi)
1071	**119**	Oil gas	60 m	(200 ft)	0.2 km	(0.1 mi)	0.2 km	(0.1 mi)	100 m	(300 ft)	0.4 km	(0.2 mi)	0.5 km	(0.3 mi)
1071	**119**	Oil gas, compressed												
1076	**125**	CG **(when used as a weapon)**	150 m	(500 ft)	0.8 km	(0.5 mi)	3.2 km	(2.0 mi)	1000 m	(3000 ft)	7.5 km	(4.7 mi)	11.0+ km	(7.0+ mi)
1076	**125**	Diphosgene	30 m	(100 ft)	0.2 km	(0.1 mi)	0.2 km	(0.1 mi)	30 m	(100 ft)	0.3 km	(0.2 mi)	0.5 km	0.3 mi)
1076	**125**	DP **(when used as a weapon)**	30 m	(100 ft)	0.2 km	(0.1 mi)	0.7 km	(0.4 mi)	200 m	(600 ft)	1.0 km	(0.7 mi)	2.4 km	(1.5 mi)
1076	**125**	Phosgene	100 m	(300 ft)	0.6 km	(0.4 mi)	2.7 km	(1.7 mi)	500 m	(1500 ft)	3.1 km	(1.9 mi)	10.8 km	(6.7 mi)
1079 *	**125**	Sulfur dioxide	100 m	(300 ft)	0.7 km	(0.4 mi)	2.8 km	(1.7 mi)	1000 m	(3000 ft)	5.6 km	(3.5 mi)	11.0+ km	(7.0+ mi)
1079 *	**125**	Sulphur dioxide												
1082	**119P**	Trifluorochloroethylene, stabilized	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.4 km	(0.3 mi)	0.9 km	(0.6 mi)
1092	**131P**	Acrolein, stabilized	150 m	(500 ft)	1.4 km	(0.9 mi)	4.0 km	(2.5 mi)	800 m	(2500 ft)	9.3 km	(5.8 mi)	11.0+ km	(7.0+ mi)
1098	**131**	Allyl alcohol	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	60 m	(200 ft)	0.3 km	(0.2 mi)	0.5 km	(0.3 mi)

"+" means distance can be larger in certain atmospheric conditions

* PLEASE ALSO CONSULT TABLE 3 FOR THIS MATERIAL

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package) First ISOLATE in all Directions Meters (Feet)	SMALL SPILLS Then PROTECT persons Downwind during- DAY Kilometers (Miles)	SMALL SPILLS Then PROTECT persons Downwind during- NIGHT Kilometers (Miles)	LARGE SPILLS (From a large package or from many small packages) First ISOLATE in all Directions Meters (Feet)	LARGE SPILLS Then PROTECT persons Downwind during- DAY Kilometers (Miles)	LARGE SPILLS Then PROTECT persons Downwind during- NIGHT Kilometers (Miles)
1135	**131**	Ethylene chlorohydrin	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m (200 ft)	0.3 km (0.2 mi)	0.4 km (0.3 mi)
1143	**131P**	Crotonaldehyde	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.0 km (0.6 mi)
1143	**131P**	Crotonaldehyde, stabilized						
1162	**155**	Dimethyldichlorosilane **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	60 m (200 ft)	0.6 km (0.4 mi)	1.9 km (1.2 mi)
1163	**131**	1,1-Dimethylhydrazine	30 m (100 ft)	0.2 km (0.1 mi)	0.5 km (0.4 mi)	100 m (300 ft)	1.1 km (0.7 mi)	2.2 km (1.4 mi)
1163	**131**	Dimethylhydrazine, unsymmetrical						
1182	**155**	Ethyl chloroformate	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.4 km (0.2 mi)	0.6 km (0.4 mi)
1183	**139**	Ethyldichlorosilane **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.7 km (0.5 mi)	2.2 km (1.4 mi)
1185	**131P**	Ethyleneimine, stabilized	30 m (100 ft)	0.2 km (0.1 mi)	0.5 km (0.3 mi)	100 m (300 ft)	1.0 km (0.6 mi)	2.0 km (1.3 mi)
1196	**155**	Ethyltrichlorosilane **(when spilled in water)**	30 m (100 ft)	0.2 km (0.1 mi)	0.7 km (0.5 mi)	200 m (600 ft)	2.1 km (1.3 mi)	6.3 km (3.9 mi)
1238	**155**	Methyl chloroformate	30 m (100 ft)	0.2 km (0.2 mi)	0.6 km (0.4 mi)	150 m (500 ft)	1.1 km (0.7 mi)	2.3 km (1.4 mi)
1239	**131**	Methyl chloromethyl ether	30 m (100 ft)	0.3 km (0.2 mi)	1.1 km (0.7 mi)	200 m (600 ft)	2.2 km (1.4 mi)	4.6 km (2.9 mi)
1242	**139**	Methyldichlorosilane **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.8 km (0.5 mi)	2.5 km (1.6 mi)
1244	**131**	Methylhydrazine	30 m (100 ft)	0.3 km (0.2 mi)	0.6 km (0.4 mi)	100 m (300 ft)	1.4 km (0.9 mi)	2.3 km (1.4 mi)
1250	**155**	Methyltrichlorosilane **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	100 m (300 ft)	0.9 km (0.6 mi)	2.6 km (1.7 mi)

1251	**131P**	Methyl vinyl ketone, stabilized	100 m	(300 ft)	0.3 km	(0.2 mi)	0.8 km	(0.5 mi)	800 m	(2500 ft)	1.5 km	(1.0 mi)	3.0 km	(1.9 mi)
1259	**131**	Nickel carbonyl	100 m	(300 ft)	1.4 km	(0.9 mi)	5.4 km	(3.4 mi)	1000 m	(3000 ft)	11.0+ km	(7.0+ mi)	11.0+ km	(7.0+ mi)
1295	**139**	Trichlorosilane **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	60 m	(200 ft)	0.7 km	(0.4 mi)	2.2 km	(1.4 mi)
1298	**155**	Trimethylchlorosilane **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.6 km	(0.4 mi)	1.6 km	(1.0 mi)
1305	**155P**	Vinyltrichlorosilane **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.2 mi)	60 m	(200 ft)	0.6 km	(0.4 mi)	2.0 km	(1.3 mi)
1305	**155P**	Vinyltrichlorosilane, stabilized **(when spilled in water)**												
1340	**139**	Phosphorus pentasulfide, free from yellow and white Phosphorus **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.4 km	(0.2 mi)	1.4 km	(0.9 mi)
1340	**139**	Phosphorus pentasulphide, free from yellow and white Phosphorus **(when spilled in water)**												
1360	**139**	Calcium phosphide **(when spilled in water)**	30 m	(100 ft)	0.2 km	(0.1 mi)	0.7 km	(0.4 mi)	300 m	(1000 ft)	1.1 km	(0.7 mi)	3.8 km	(2.4 mi)
1380	**135**	Pentaborane	60 m	(200 ft)	0.6 km	(0.4 mi)	2.0 km	(1.2 mi)	200 m	(600 ft)	2.7 km	(1.7 mi)	8.2 km	(5.1 mi)
1384	**135**	Sodium dithionite **(when spilled in water)**	30 m	(100 ft)	0.2 km	(0.1 mi)	0.6 km	(0.4 mi)	60 m	(200 ft)	0.8 km	(0.5 mi)	2.7 km	(1.7 mi)
1384	**135**	Sodium hydrosulfite **(when spilled in water)**												
1384	**135**	Sodium hydrosulphite **(when spilled in water)**												
1397	**139**	Aluminum phosphide **(when spilled in water)**	60 m	(200 ft)	0.2 km	(0.2 mi)	0.9 km	(0.6 mi)	500 m	(1500 ft)	2.1 km	(1.3 mi)	7.5 km	(4.7 mi)

"+" means distance can be larger in certain atmospheric conditions

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package) First ISOLATE in all Directions		Then PROTECT persons Downwind during- DAY		NIGHT		LARGE SPILLS (From a large package or from many small packages) First ISOLATE in all Directions		Then PROTECT persons Downwind during- DAY		NIGHT	
			Meters	(Feet)	Kilometers	(Miles)	Kilometers	(Miles)	Meters	(Feet)	Kilometers	(Miles)	Kilometers	(Miles)
1419	**139**	Magnesium aluminum phosphide **(when spilled in water)**	60 m	(200 ft)	0.2 km	(0.1 mi)	0.9 km	(0.5 mi)	500 m	(1500 ft)	1.9 km	(1.2 mi)	6.5 km	(4.1 mi)
1432	**139**	Sodium phosphide **(when spilled in water)**	30 m	(100 ft)	0.2 km	(0.1 mi)	0.6 km	(0.4 mi)	400 m	(1250 ft)	1.4 km	(0.9 mi)	4.2 km	(2.6 mi)
1510	**143**	Tetranitromethane	30 m	(100 ft)	0.2 km	(0.2 mi)	0.4 km	(0.2 mi)	60 m	(200 ft)	0.5 km	(0.4 mi)	1.0 km	(0.6 mi)
1541	**155**	Acetone cyanohydrin, stabilized **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	100 m	(300 ft)	0.3 km	(0.2 mi)	1.0 km	(0.7 mi)
1556	**152**	MD **(when used as a weapon)**	300 m	(1000 ft)	1.6 km	(1.0 mi)	4.3 km	(2.7 mi)	1000 m	(3000 ft)	11.0+ km	(7.0+ mi)	11.0+ km	(7.0+ mi)
1556	**152**	Methyldichloroarsine	100 m	(300 ft)	1.4 km	(0.9 mi)	2.2 km	(1.4 mi)	300 m	(1000 ft)	3.8 km	(2.4 mi)	6.9 km	(4.3 mi)
1556	**152**	PD **(when used as a weapon)**	60 m	(200 ft)	0.4 km	(0.3 mi)	0.4 km	(0.3 mi)	300 m	(1000 ft)	1.6 km	(1.0 mi)	1.6 km	(1.0 mi)
1560	**157**	Arsenic chloride	30 m	(100 ft)	0.2 km	(0.1 mi)	0.3 km	(0.2 mi)	100 m	(300 ft)	1.0 km	(0.6 mi)	1.6 km	(1.0 mi)
1560	**157**	Arsenic trichloride												
1569	**131**	Bromoacetone	30 m	(100 ft)	0.4 km	(0.3 mi)	1.2 km	(0.8 mi)	150 m	(500 ft)	1.9 km	(1.2 mi)	3.6 km	(2.3 mi)
1580	**154**	Chloropicrin	30 m	(100 ft)	0.4 km	(0.3 mi)	1.0 km	(0.6 mi)	150 m	(500 ft)	1.6 km	(1.0 mi)	3.1 km	(1.9 mi)
1581	**123**	Chloropicrin and Methyl bromide mixture	30 m	(100 ft)	0.1 km	(0.1 mi)	0.6 km	(0.4 mi)	300 m	(1000 ft)	2.1 km	(1.3 mi)	5.9 km	(3.7 mi)
1581	**123**	Methyl bromide and Chloropicrin mixture												

1582 1582	**119** **119**	Chloropicrin and Methyl chloride mixture Methyl chloride and Chloropicrin mixture	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.3 mi)	60 m	(200 ft)	0.4 km	(0.2 mi)	1.7 km	(1.1 mi)
1583	**154**	Chloropicrin mixture, n.o.s.	30 m	(100 ft)	0.4 km	(0.3 mi)	1.0 km	(0.6 mi)	150 m	(500 ft)	1.6 km	(1.0 mi)	3.1 km	(1.9 mi)
1589	**125**	CK **(when used as a weapon)**	150 m	(500 ft)	1.0 km	(0.6 mi)	3.8 km	(2.4 mi)	800 m	(2500 ft)	5.7 km	(3.6 mi)	11.0+ km	(7.0+ mi)
1589	**125**	Cyanogen chloride, stabilized	100 m	(300 ft)	0.5 km	(0.3 mi)	2.2 km	(1.4 mi)	400 m	(1250 ft)	2.6 km	(1.7 mi)	8.6 km	(5.4 mi)
1595 1595	**156** **156**	Dimethyl sulfate Dimethyl sulphate	30 m	(100 ft)	0.2 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	0.8 km	(0.5 mi)
1605	**154**	Ethylene dibromide	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.2 km	(0.1 mi)	0.2 km	(0.1 mi)
1612	**123**	Hexaethyl tetraphosphate and compressed gas mixture	100 m	(300 ft)	0.8 km	(0.5 mi)	2.7 km	(1.7 mi)	400 m	(1250 ft)	3.5 km	(2.2 mi)	8.1 km	(5.1 mi)
1613 1613	**154** **154**	Hydrocyanic acid, aqueous solution, with not more than 20% Hydrogen cyanide Hydrogen cyanide, aqueous solution, with not more than 20% Hydrogen cyanide	60 m	(200 ft)	0.2 km	(0.1 mi)	0.2 km	(0.1 mi)	150 m	(500 ft)	0.5 km	(0.3 mi)	1.3 km	(0.8 mi)
1614	**152**	Hydrogen cyanide, stabilized (absorbed)	60 m	(200 ft)	0.2 km	(0.1 mi)	0.7 km	(0.4 mi)	150 m	(500 ft)	0.5 km	(0.4 mi)	1.7 km	(1.1 mi)
1647 1647	**151** **151**	Ethylene dibromide and Methyl bromide mixture, liquid Methyl bromide and Ethylene dibromide mixture, liquid	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.2 mi)	100 m	(300 ft)	0.6 km	(0.4 mi)	1.9 km	(1.2 mi)
1660 1660	**124** **124**	Nitric oxide Nitric oxide, compressed	30 m	(100 ft)	0.1 km	(0.1 mi)	0.6 km	(0.4 mi)	100 m	(300 ft)	0.6 km	(0.4 mi)	2.3 km	(1.5 mi)
1670	**157**	Perchloromethyl mercaptan	30 m	(100 ft)	0.2 km	(0.2 mi)	0.4 km	(0.2 mi)	100 m	(300 ft)	0.7 km	(0.5 mi)	1.3 km	(0.8 mi)

"+" means distance can be larger in certain atmospheric conditions

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package) First ISOLATE in all Directions	SMALL SPILLS Then PROTECT persons Downwind during- DAY	SMALL SPILLS Then PROTECT persons Downwind during- NIGHT	LARGE SPILLS (From a large package or from many small packages) First ISOLATE in all Directions	LARGE SPILLS Then PROTECT persons Downwind during- DAY	LARGE SPILLS Then PROTECT persons Downwind during- NIGHT
			Meters (Feet)	Kilometers (Miles)	Kilometers (Miles)	Meters (Feet)	Kilometers (Miles)	Kilometers (Miles)
1680	**157**	Potassium cyanide **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	100 m (300 ft)	0.3 km (0.2 mi)	1.2 km (0.8 mi)
1680	**157**	Potassium cyanide, solid **(when spilled in water)**						
1689	**157**	Sodium cyanide **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	100 m (300 ft)	0.4 km (0.2 mi)	1.4 km (0.9 mi)
1689	**157**	Sodium cyanide, solid **(when spilled in water)**						
1694	**159**	CA **(when used as a weapon)**	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)	100 m (300 ft)	0.5 km (0.4 mi)	2.6 km (1.6 mi)
1695	**131**	Chloroacetone, stabilized	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.4 km (0.3 mi)	0.8 km (0.5 mi)
1697	**153**	CN **(when used as a weapon)**	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.3 km (0.2 mi)	1.2 km (0.8 mi)
1698	**154**	Adamsite **(when used as a weapon)**	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.3 km (0.2 mi)	1.4 km (0.9 mi)
1698	**154**	DM **(when used as a weapon)**						
1699	**151**	DA **(when used as a weapon)**	30 m (100 ft)	0.2 km (0.1 mi)	0.8 km (0.5 mi)	300 m (1000 ft)	1.9 km (1.2 mi)	7.5 km (4.7 mi)
1716	**156**	Acetyl bromide **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.3 km (0.8 mi)
1717	**155**	Acetyl chloride **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	100 m (300 ft)	1.0 km (0.6 mi)	2.8 km (1.7 mi)
1722	**155**	Allyl chlorocarbonate	100 m (300 ft)	0.4 km (0.2 mi)	0.9 km (0.6 mi)	400 m (1250 ft)	1.5 km (1.0 mi)	3.0 km (1.9 mi)
1722	**155**	Allyl chloroformate						

1724	**155**	Allyltrichlorosilane, stabilized **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.2 mi)	60 m	(200 ft)	0.6 km	(0.4 mi)	1.9 km	(1.2 mi)
1725	**137**	Aluminum bromide, anhydrous **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.2 km	(0.1 mi)	0.6 km	(0.4 mi)
1726	**137**	Aluminum chloride, anhydrous **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	60 m	(200 ft)	0.6 km	(0.4 mi)	2.2 km	(1.4 mi)
1728	**155**	Amyltrichlorosilane **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.2 mi)	60 m	(200 ft)	0.6 km	(0.4 mi)	1.9 km	(1.2 mi)
1732	**157**	Antimony pentafluoride **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.5 km	(0.3 mi)	150 m	(500 ft)	1.2 km	(0.7 mi)	4.2 km	(2.6 mi)
1741	**125**	Boron trichloride **(when spilled on land)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	100 m	(300 ft)	0.6 km	(0.4 mi)	1.4 km	(0.9 mi)
1741	**125**	Boron trichloride **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.5 km	(0.3 mi)	100 m	(300 ft)	1.3 km	(0.8 mi)	3.8 km	(2.4 mi)
1744 1744 1744	**154** **154** **154**	Bromine Bromine, solution Bromine, solution (Inhalation Hazard Zone A)	60 m	(200 ft)	0.6 km	(0.4 mi)	1.9 km	(1.2 mi)	300 m	(1000 ft)	2.8 km	(1.8 mi)	6.5 km	(4.0 mi)
1744	**154**	Bromine, solution (Inhalation Hazard Zone B)	60 m	(200 ft)	0.5 km	(0.3 mi)	1.3 km	(0.8 mi)	150 m	(500 ft)	1.8 km	(1.1 mi)	4.2 km	(2.6 mi)
1745	**144**	Bromine pentafluoride **(when spilled on land)**	30 m	(100 ft)	0.4 km	(0.2 mi)	1.4 km	(0.9 mi)	200 m	(600 ft)	2.3 km	(1.4 mi)	5.1 km	(3.2 mi)
1745	**144**	Bromine pentafluoride **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.6 km	(0.4 mi)	150 m	(500 ft)	1.2 km	(0.8 mi)	4.4 km	(2.7 mi)
1746	**144**	Bromine trifluoride **(when spilled on land)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	30 m	(100 ft)	0.3 km	(0.2 mi)	0.5 km	(0.4 mi)
1746	**144**	Bromine trifluoride **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.5 km	(0.3 mi)	100 m	(300 ft)	1.1 km	(0.7 mi)	4.1 km	(2.5 mi)

"+" means distance can be larger in certain atmospheric conditions

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package) First ISOLATE in all Directions		Then PROTECT persons Downwind during- DAY		NIGHT		LARGE SPILLS (From a large package or from many small packages) First ISOLATE in all Directions		Then PROTECT persons Downwind during- DAY		NIGHT	
			Meters	(Feet)	Kilometers	(Miles)	Kilometers	(Miles)	Meters	(Feet)	Kilometers	(Miles)	Kilometers	(Miles)
1747	**155**	Butyltrichlorosilane **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.2 mi)	60 m	(200 ft)	0.6 km	(0.4 mi)	1.8 km	(1.1 mi)
1749	**124**	Chlorine trifluoride	60 m	(200 ft)	0.3 km	(0.2 mi)	1.2 km	(0.8 mi)	300 m	(1000 ft)	1.5 km	(0.9 mi)	4.6 km	(2.9 mi)
1752	**156**	Chloroacetyl chloride **(when spilled on land)**	30 m	(100 ft)	0.3 km	(0.2 mi)	0.6 km	(0.4 mi)	100 m	(300 ft)	1.2 km	(0.8 mi)	2.3 km	(1.4 mi)
1752	**156**	Chloroacetyl chloride **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.3 km	(0.2 mi)	0.9 km	(0.6 mi)
1753	**156**	Chlorophenyltrichlorosilane **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.3 km	(0.2 mi)	1.0 km	(0.7 mi)
1754	**137**	Chlorosulfonic acid **(when spilled on land)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.3 km	(0.2 mi)	0.4 km	(0.2 mi)
1754	**137**	Chlorosulfonic acid **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	60 m	(200 ft)	0.7 km	(0.5 mi)	2.5 km	(1.5 mi)
1754	**137**	Chlorosulfonic acid and Sulfur trioxide mixture **(when spilled on land)**	100 m	(300 ft)	0.4 km	(0.2 mi)	0.9 km	(0.5 mi)	400 m	(1250 ft)	2.9 km	(1.8 mi)	5.7 km	(3.5 mi)
1754	**137**	Chlorosulfonic acid and Sulfur trioxide mixture **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	60 m	(200 ft)	0.7 km	(0.5 mi)	2.5 km	(1.5 mi)
1754	**137**	Chlorosulphonic acid **(when spilled on land)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.3 km	(0.2 mi)	0.4 km	(0.2 mi)

1754	**137**	Chlorosulphonic acid **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	60 m	(200 ft)	0.7 km	(0.5 mi)	2.5 km	(1.5 mi)
1754	**137**	Chlorosulphonic acid and Sulphur trioxide mixture **(when spilled on land)**	100 m	(300 ft)	0.4 km	(0.2 mi)	0.9 km	(0.5 mi)	400 m	(1250 ft)	2.9 km	(1.8 mi)	5.7 km	(3.5 mi)
1754	**137**	Chlorosulphonic acid and Sulphur trioxide mixture **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	60 m	(200 ft)	0.7 km	(0.5 mi)	2.5 km	(1.5 mi)
1754	**137**	Sulfur trioxide and Chlorosulfonic acid mixture **(when spilled on land)**	100 m	(300 ft)	0.4 km	(0.2 mi)	0.9 km	(0.5 mi)	400 m	(1250 ft)	2.9 km	(1.8 mi)	5.7 km	(3.5 mi)
1754	**137**	Sulfur trioxide and Chlorosulfonic acid mixture **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	60 m	(200 ft)	0.7 km	(0.5 mi)	2.5 km	(1.5 mi)
1754	**137**	Sulphur trioxide and Chlorosulphonic acid mixture **(when spilled on land)**	100 m	(300 ft)	0.4 km	(0.2 mi)	0.9 km	(0.5 mi)	400 m	(1250 ft)	2.9 km	(1.8 mi)	5.7 km	(3.5 mi)
1754	**137**	Sulphur trioxide and Chlorosulphonic acid mixture **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	60 m	(200 ft)	0.7 km	(0.5 mi)	2.5 km	(1.5 mi)
1758	**137**	Chromium oxychloride **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.2 km	(0.2 mi)	0.8 km	(0.5 mi)
1762	**156**	Cyclohexenyltrichlorosilane **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	30 m	(100 ft)	0.4 km	(0.3 mi)	1.4 km	(0.9 mi)
1763	**156**	Cyclohexyltrichlorosilane **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	30 m	(100 ft)	0.4 km	(0.3 mi)	1.4 km	(0.9 mi)

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TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package) First ISOLATE in all Directions Meters (Feet)	SMALL SPILLS Then PROTECT persons Downwind during- DAY Kilometers (Miles)	SMALL SPILLS Then PROTECT persons Downwind during- NIGHT Kilometers (Miles)	LARGE SPILLS (From a large package or from many small packages) First ISOLATE in all Directions Meters (Feet)	LARGE SPILLS Then PROTECT persons Downwind during- DAY Kilometers (Miles)	LARGE SPILLS Then PROTECT persons Downwind during- NIGHT Kilometers (Miles)
1765	**156**	Dichloroacetyl chloride **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	1.0 km (0.6 mi)
1766	**156**	Dichlorophenyltrichlorosilane **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	60 m (200 ft)	0.6 km (0.4 mi)	2.1 km (1.3 mi)
1767	**155**	Diethyldichlorosilane **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.4 km (0.3 mi)	1.1 km (0.7 mi)
1769	**156**	Diphenyldichlorosilane **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.4 km (0.3 mi)	1.3 km (0.8 mi)
1771	**156**	Dodecyltrichlorosilane **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.4 km (0.9 mi)
1777	**137**	Fluorosulfonic acid **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.2 km (0.2 mi)	0.8 km (0.5 mi)
1777	**137**	Fluorosulphonic acid **(when spilled in water)**						
1781	**156**	Hexadecyltrichlorosilane **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.2 km (0.2 mi)	0.7 km (0.4 mi)
1784	**156**	Hexyltrichlorosilane **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.5 km (0.9 mi)
1799	**156**	Nonyltrichlorosilane **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.6 km (1.0 mi)
1800	**156**	Octadecyltrichlorosilane **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.5 km (1.0 mi)

1801	**156**	Octyltrichlorosilane **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	1.6 km	(1.0 mi)
1804	**156**	Phenyltrichlorosilane **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	1.5 km	(1.0 mi)
1806	**137**	Phosphorus pentachloride **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.2 mi)	30 m	(100 ft)	0.4 km	(0.3 mi)	1.5 km	(0.9 mi)
1808	**137**	Phosphorus tribromide **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.2 mi)	60 m	(200 ft)	0.6 km	(0.4 mi)	2.0 km	(1.2 mi)
1809	**137**	Phosphorus trichloride **(when spilled on land)**	30 m	(100 ft)	0.2 km	(0.1 mi)	0.5 km	(0.3 mi)	100 m	(300 ft)	1.0 km	(0.6 mi)	2.2 km	(1.4 mi)
1809	**137**	Phosphorus trichloride **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	60 m	(200 ft)	0.8 km	(0.5 mi)	2.5 km	(1.6 mi)
1810	**137**	Phosphorus oxychloride **(when spilled on land)**	30 m	(100 ft)	0.3 km	(0.2 mi)	0.7 km	(0.4 mi)	100 m	(300 ft)	1.2 km	(0.7 mi)	2.2 km	(1.4 mi)
1810	**137**	Phosphorus oxychloride **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	60 m	(200 ft)	0.7 km	(0.4 mi)	2.3 km	(1.4 mi)
1815	**132**	Propionyl chloride **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.3 km	(0.2 mi)	0.8 km	(0.5 mi)
1816	**155**	Propyltrichlorosilane **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	60 m	(200 ft)	0.6 km	(0.4 mi)	2.0 km	(1.3 mi)
1818	**157**	Silicon tetrachloride **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	100 m	(300 ft)	0.9 km	(0.6 mi)	2.8 km	(1.7 mi)
1828	**137**	Sulfur chlorides **(when spilled on land)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	60 m	(200 ft)	0.3 km	(0.2 mi)	0.5 km	(0.3 mi)
1828	**137**	Sulfur chlorides **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	30 m	(100 ft)	0.4 km	(0.2 mi)	1.2 km	(0.8 mi)
1828	**137**	Sulphur chlorides **(when spilled on land)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	60 m	(200 ft)	0.3 km	(0.2 mi)	0.5 km	(0.3 mi)

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TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package) First ISOLATE in all Directions Meters	(Feet)	Then PROTECT persons Downwind during- DAY Kilometers	(Miles)	NIGHT Kilometers	(Miles)	LARGE SPILLS (From a large package or from many small packages) First ISOLATE in all Directions Meters	(Feet)	Then PROTECT persons Downwind during- DAY Kilometers	(Miles)	NIGHT Kilometers	(Miles)
1828	**137**	Sulphur chlorides **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	30 m	(100 ft)	0.4 km	(0.2 mi)	1.2 km	(0.8 mi)
1829	**137**	Sulfur trioxide, stabilized	100 m	(300 ft)	0.4 km	(0.2 mi)	0.9 km	(0.5 mi)	400 m	(1250 ft)	2.9 km	(1.8 mi)	5.7 km	(3.5 mi)
1829	**137**	Sulphur trioxide, stabilized												
1831	**137**	Sulfuric acid, fuming	100 m	(300 ft)	0.4 km	(0.2 mi)	0.9 km	(0.5 mi)	400 m	(1250 ft)	2.9 km	(1.8 mi)	5.7 km	(3.5 mi)
1831	**137**	Sulfuric acid, fuming, with not less than 30% free Sulfur trioxide												
1831	**137**	Sulphuric acid, fuming												
1831	**137**	Sulphuric acid, fuming, with not less than 30% free Sulphur trioxide												
1834	**137**	Sulfuryl chloride **(when spilled on land)**	30 m	(100 ft)	0.2 km	(0.1 mi)	0.5 km	(0.4 mi)	100 m	(300 ft)	0.9 km	(0.6 mi)	2.0 km	(1.3 mi)
1834	**137**	Sulfuryl chloride **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	1.8 km	(1.1 mi)
1834	**137**	Sulphuryl chloride **(when spilled on land)**	30 m	(100 ft)	0.2 km	(0.1 mi)	0.5 km	(0.4 mi)	100 m	(300 ft)	0.9 km	(0.6 mi)	2.0 km	(1.3 mi)
1834	**137**	Sulphuryl chloride **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	1.8 km	(1.1 mi)
1836	**137**	Thionyl chloride **(when spilled on land)**	30 m	(100 ft)	0.2 km	(0.2 mi)	0.7 km	(0.5 mi)	100 m	(300 ft)	0.9 km	(0.6 mi)	1.9 km	(1.2 mi)

1836	**137**	Thionyl chloride **(when spilled in water)**	100 m	(300 ft)	1.1 km	(0.7 mi)	3.0 km	(1.9 mi)	800 m	(2500 ft)	9.9 km	(6.2 mi)	11.0+ km	(7.0+ mi)
1838	**137**	Titanium tetrachloride **(when spilled on land)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	30 m	(100 ft)	0.4 km	(0.3 mi)	0.7 km	(0.4 mi)
1838	**137**	Titanium tetrachloride **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	1.8 km	(1.1 mi)
1859 1859	**125** **125**	Silicon tetrafluoride Silicon tetrafluoride, compressed	30 m	(100 ft)	0.2 km	(0.1 mi)	0.8 km	(0.5 mi)	100 m	(300 ft)	0.6 km	(0.4 mi)	2.5 km	(1.6 mi)
1892	**151**	ED **(when used as a weapon)**	150 m	(500 ft)	2.0 km	(1.2 mi)	2.9 km	(1.8 mi)	1000 m	(3000 ft)	10.4 km	(6.5 mi)	11.0+ km	(7.0+ mi)
1892	**151**	Ethyldichloroarsine	150 m	(500 ft)	1.5 km	(1.0 mi)	2.4 km	(1.5 mi)	500 m	(1500 ft)	5.2 km	(3.3 mi)	10.2 km	(6.1 mi)
1898	**156**	Acetyl iodide **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.2 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	1.1 km	(0.7 mi)
1911 1911	**119** **119**	Diborane Diborane, compressed	60 m	(200 ft)	0.3 km	(0.2 mi)	1.0 km	(0.7 mi)	200 m	(600 ft)	1.3 km	(0.8 mi)	3.9 km	(2.5 mi)
1923 1923 1923	**135** **135** **135**	Calcium dithionite **(when spilled in water)** Calcium hydrosulfite **(when spilled in water)** Calcium hydrosulphite **(when spilled in water)**	30 m	(100 ft)	0.2 km	(0.1 mi)	0.7 km	(0.4 mi)	60 m	(200 ft)	0.8 km	(0.5 mi)	2.8 km	(1.7 mi)
1929 1929 1929	**135** **135** **135**	Potassium dithionite **(when spilled in water)** Potassium hydrosulfite **(when spilled in water)** Potassium hydrosulphite **(when spilled in water)**	30 m	(100 ft)	0.2 km	(0.1 mi)	0.6 km	(0.4 mi)	60 m	(200 ft)	0.7 km	(0.4 mi)	2.5 km	(1.5 mi)

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1931	**171**	Zinc dithionite **(when spilled in water)**	30 m (100 ft)	0.2 km (0.1 mi)	0.6 km (0.4 mi)	60 m (200 ft)	0.7 km (0.5 mi)	2.5 km (1.6 mi)
1931	**171**	Zinc hydrosulfite **(when spilled in water)**						
1931	**171**	Zinc hydrosulphite **(when spilled in water)**						
1953	**119**	Compressed gas, flammable, poisonous, n.o.s. (Inhalation Hazard Zone A)	100 m (300 ft)	0.5 km (0.3 mi)	2.2 km (1.4 mi)	600 m (2000 ft)	2.6 km (1.7 mi)	8.6 km (5.4 mi)
1953	**119**	Compressed gas, flammable, poisonous, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	300 m (1000 ft)	1.3 km (0.8 mi)	3.5 km (2.2 mi)
1953	**119**	Compressed gas, flammable, poisonous, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	200 m (600 ft)	1.0 km (0.7 mi)	3.2 km (2.0 mi)
1953	**119**	Compressed gas, flammable, poisonous, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	200 m (600 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)
1953	**119**	Compressed gas, flammable, toxic, n.o.s. (Inhalation Hazard Zone A)	100 m (300 ft)	0.5 km (0.3 mi)	2.2 km (1.4 mi)	600 m (2000 ft)	2.6 km (1.7 mi)	8.6 km (5.4 mi)
1953	**119**	Compressed gas, flammable, toxic, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	300 m (1000 ft)	1.3 km (0.8 mi)	3.5 km (2.2 mi)

1953	**119**	Compressed gas, flammable, toxic, n.o.s. (Inhalation Hazard Zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	200 m	(600 ft)	1.0 km	(0.7 mi)	3.2 km	(2.0 mi)
1953	**119**	Compressed gas, flammable, toxic, n.o.s. (Inhalation Hazard Zone D)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	200 m	(600 ft)	0.8 km	(0.5 mi)	2.0 km	(1.3 mi)
1953	**119**	Compressed gas, poisonous, flammable, n.o.s.	100 m	(300 ft)	0.5 km	(0.3 mi)	2.2 km	(1.4 mi)	600 m	(2000 ft)	2.6 km	(1.7 mi)	8.6 km	(5.4 mi)
1953	**119**	Compressed gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone A)												
1953	**119**	Compressed gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	300 m	(1000 ft)	1.3 km	(0.8 mi)	3.5 km	(2.2 mi)
1953	**119**	Compressed gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	200 m	(600 ft)	1.0 km	(0.7 mi)	3.2 km	(2.0 mi)
1953	**119**	Compressed gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone D)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	200 m	(600 ft)	0.8 km	(0.5 mi)	2.0 km	(1.3 mi)
1953	**119**	Compressed gas, toxic, flammable, n.o.s.	100 m	(300 ft)	0.5 km	(0.3 mi)	2.2 km	(1.4 mi)	600 m	(2000 ft)	2.6 km	(1.7 mi)	8.6 km	(5.4 mi)
1953	**119**	Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone A)												
1953	**119**	Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	300 m	(1000 ft)	1.3 km	(0.8 mi)	3.5 km	(2.2 mi)
1953	**119**	Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	200 m	(600 ft)	1.0 km	(0.7 mi)	3.2 km	(2.0 mi)

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1953	**119**	Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	200 m (600 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)
1955	**123**	Compressed gas, poisonous, n.o.s.	100 m (300 ft)	0.5 km (0.3 mi)	2.2 km (1.4 mi)	600 m (2000 ft)	3.5 km (2.2 mi)	9.4 km (5.9 mi)
1955	**123**	Compressed gas, poisonous, n.o.s. (Inhalation Hazard Zone A)						
1955	**123**	Compressed gas, poisonous, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.1 mi)	0.8 km (0.5 mi)	300 m (1000 ft)	1.5 km (0.9 mi)	4.6 km (2.9 mi)
1955	**123**	Compressed gas, poisonous, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	150 m (500 ft)	0.9 km (0.6 mi)	2.8 km (1.7 mi)
1955	**123**	Compressed gas, poisonous, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)
1955	**123**	Compressed gas, toxic, n.o.s.	100 m (300 ft)	0.5 km (0.3 mi)	2.2 km (1.4 mi)	600 m (2000 ft)	3.5 km (2.2 mi)	9.4 km (5.9 mi)
1955	**123**	Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone A)						
1955	**123**	Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.1 mi)	0.8 km (0.5 mi)	300 m (1000 ft)	1.5 km (0.9 mi)	4.6 km (2.9 mi)
1955	**123**	Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	150 m (500 ft)	0.9 km (0.6 mi)	2.8 km (1.7 mi)

1955	**123**	Compressed gas, toxic, n.o.s. (Inhalation Hazard Zone D)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	150 m	(500 ft)	0.8 km	(0.5 mi)	2.0 km	(1.3 mi)
1955	**123**	Organic phosphate compound mixed with compressed gas	100 m	(300 ft)	0.9 km	(0.6 mi)	2.6 km	(1.6 mi)	500 m	(1500 ft)	3.9 km	(2.4 mi)	9.4 km	(5.9 mi)
1955	**123**	Organic phosphate mixed with compressed gas												
1955	**123**	Organic phosphorus compound mixed with compressed gas												
1967	**123**	Insecticide gas, poisonous, n.o.s.	100 m	(300 ft)	0.9 km	(0.6 mi)	2.6 km	(1.6 mi)	500 m	(1500 ft)	3.9 km	(2.4 mi)	9.4 km	(5.9 mi)
1967	**123**	Insecticide gas, toxic, n.o.s.												
1967	**123**	Parathion and compressed gas mixture												
1975	**124**	Dinitrogen tetroxide and Nitric oxide mixture	30 m	(100 ft)	0.1 km	(0.1 mi)	0.6 km	(0.4 mi)	100 m	(300 ft)	0.6 km	(0.4 mi)	2.3 km	(1.5 mi)
1975	**124**	Nitric oxide and Dinitrogen tetroxide mixture												
1975	**124**	Nitric oxide and Nitrogen dioxide mixture												
1975	**124**	Nitric oxide and Nitrogen tetroxide mixture												
1975	**124**	Nitrogen dioxide and Nitric oxide mixture												
1975	**124**	Nitrogen tetroxide and Nitric oxide mixture												
1994	**131**	Iron pentacarbonyl	100 m	(300 ft)	0.9 km	(0.6 mi)	2.1 km	(1.3 mi)	400 m	(1250 ft)	4.8 km	(3.0 mi)	8.3 km	(5.2 mi)
2004	**135**	Magnesium diamide **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.5 km	(0.3 mi)	100 m	(300 ft)	0.7 km	(0.5 mi)	2.4 km	(1.5 mi)
2011	**139**	Magnesium phosphide **(when spilled in water)**	60 m	(200 ft)	0.2 km	(0.1 mi)	0.8 km	(0.5 mi)	500 m	(1500 ft)	1.8 km	(1.1 mi)	6.0 km	(3.8 mi)

"+" means distance can be larger in certain atmospheric conditions

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package) First ISOLATE in all Directions Meters (Feet)	SMALL SPILLS Then PROTECT persons Downwind during- DAY Kilometers (Miles)	SMALL SPILLS Then PROTECT persons Downwind during- NIGHT Kilometers (Miles)	LARGE SPILLS (From a large package or from many small packages) First ISOLATE in all Directions Meters (Feet)	LARGE SPILLS Then PROTECT persons Downwind during- DAY Kilometers (Miles)	LARGE SPILLS Then PROTECT persons Downwind during- NIGHT Kilometers (Miles)
2012	**139**	Potassium phosphide **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.6 km (0.4 mi)	300 m (1000 ft)	1.2 km (0.8 mi)	4.0 km (2.5 mi)
2013	**139**	Strontium phosphide **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.6 km (0.4 mi)	300 m (1000 ft)	1.2 km (0.7 mi)	3.8 km (2.4 mi)
2032 2032	**157** **157**	Nitric acid, fuming Nitric acid, red fuming	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	150 m (500 ft)	0.5 km (0.3 mi)	1.1 km (0.7 mi)
2186 *	**125**	Hydrogen chloride, refrigerated liquid	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	300 m (1000 ft)	2.0 km (1.3 mi)	7.6 km (4.7 mi)
2188	**119**	Arsine	150 m (500 ft)	1.0 km (0.6 mi)	4.0 km (2.5 mi)	1000 m (3000 ft)	5.8 km (3.6 mi)	11.0+ km (7.0+ mi)
2188	**119**	SA **(when used as a weapon)**	300 m (1000 ft)	1.9 km (1.2 mi)	5.7 km (3.6 mi)	1000 m (3000 ft)	8.9 km (5.6 mi)	11.0+ km (7.0+ mi)
2189	**119**	Dichlorosilane	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.2 mi)	200 m (600 ft)	1.2 km (0.8 mi)	2.9 km (1.8 mi)
2190 2190	**124** **124**	Oxygen difluoride Oxygen difluoride, compressed	200 m (600 ft)	0.4 km (0.3 mi)	2.1 km (1.3 mi)	1000 m (3000 ft)	2.2 km (1.4 mi)	8.6 km (5.4 mi)
2191 2191	**123** **123**	Sulfuryl fluoride Sulphuryl fluoride	30 m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.3 mi)	300 m (1000 ft)	1.9 km (1.2 mi)	5.1 km (3.2 mi)
2192	**119**	Germane	150 m (500 ft)	0.8 km (0.5 mi)	3.2 km (2.0 mi)	800 m (2500 ft)	4.4 km (2.7 mi)	10.6 km (6.6 mi)
2194	**125**	Selenium hexafluoride	200 m (600 ft)	1.1 km (0.7 mi)	3.7 km (2.3 mi)	800 m (2500 ft)	5.0 km (3.1 mi)	11.0+ km (7.0+ mi)
2195	**125**	Tellurium hexafluoride	200 m (600 ft)	1.2 km (0.7 mi)	4.4 km (2.8 mi)	1000 m (3000 ft)	6.7 km (4.2 mi)	11.0+ km (7.0+ mi)
2196	**125**	Tungsten hexafluoride	30 m (100 ft)	0.2 km (0.1 mi)	0.8 km (0.5 mi)	150 m (500 ft)	0.9 km (0.6 mi)	3.1 km (2.0 mi)
2197	**125**	Hydrogen iodide, anhydrous	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	150 m (500 ft)	0.9 km (0.6 mi)	2.8 km (1.7 mi)

2198 2198	**125** **125**	Phosphorus pentafluoride Phosphorus pentafluoride, compressed	30 m	(100 ft)	0.2 km	(0.1 mi)	0.8 km	(0.5 mi)	150 m	(500 ft)	0.9 km	(0.5 mi)	3.3 km	(2.0 mi)
2199	**119**	Phosphine	60 m	(200 ft)	0.2 km	(0.2 mi)	1.0 km	(0.7 mi)	400 m	(1250 ft)	1.3 km	(0.8 mi)	4.1 km	(2.5 mi)
2202	**117**	Hydrogen selenide, anhydrous	200 m	(600 ft)	1.1 km	(0.7 mi)	4.9 km	(3.1 mi)	1000 m	(3000 ft)	8.5 km	(5.3 mi)	11.0+ km	(7.0+ mi)
2204 2204	**119** **119**	Carbonyl sulfide Carbonyl sulphide	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	300 m	(1000 ft)	1.3 km	(0.8 mi)	3.5 km	(2.2 mi)
2232 2232	**153** **153**	Chloroacetaldehyde 2-Chloroethanal	30 m	(100 ft)	0.2 km	(0.1 mi)	0.4 km	(0.2 mi)	60 m	(200 ft)	0.7 km	(0.5 mi)	1.3 km	(0.8 mi)
2308	**157**	Nitrosylsulfuric acic **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.3 mi)	300 m	(1000 ft)	0.9 km	(0.6 mi)	2.5 km	(1.6 mi)
2308	**157**	Nitrosylsulfuric acic, liquid **(when spilled in water)**												
2308	**157**	Nitrosylsulfuric acic, solid **(when spilled in water)**												
2308	**157**	Nitrosylsulphuric acic **(when spilled in water)**												
2308	**157**	Nitrosylsulphuric acic, liquid **(when spilled in water)**												
2308	**157**	Nitrosylsulphuric acic, solid **(when spilled in water)**												
2334	**131**	Allylamine	30 m	(100 ft)	0.2 km	(0.1 mi)	0.6 km	(0.4 mi)	150 m	(500 ft)	1.5 km	(0.9 mi)	2.8 km	(1.7 mi)
2337	**131**	Phenyl mercaptan	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.3 km	(0.2 mi)	0.5 km	(0.3 mi)
2353	**132**	Butyryl chloride **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.4 km	(0.2 mi)	1.0 km	(0.6 mi)
2382 2382	**131** **131**	1,2-Dimethylhydrazine Dimethylhydrazine, symmetrical	30 m	(100 ft)	0.2 km	(0.1 mi)	0.4 km	(0.2 mi)	60 m	(200 ft)	0.8 km	(0.5 mi)	1.5 km	(1.0 mi)

"+" means distance can be larger in certain atmospheric conditions

*** PLEASE ALSO CONSULT TABLE 3 FOR THIS MATERIAL**

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package) First ISOLATE in all Directions Meters (Feet)	SMALL SPILLS Then PROTECT persons Downwind during- DAY Kilometers (Miles)	SMALL SPILLS Then PROTECT persons Downwind during- NIGHT Kilometers (Miles)	LARGE SPILLS (From a large package or from many small packages) First ISOLATE in all Directions Meters (Feet)	LARGE SPILLS Then PROTECT persons Downwind during- DAY Kilometers (Miles)	LARGE SPILLS Then PROTECT persons Downwind during- NIGHT Kilometers (Miles)
2395	**132**	Isobutyryl chloride **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.2 km (0.2 mi)	0.6 km (0.4 mi)
2407	**155**	Isopropyl chloroformate	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.0 km (0.6 mi)
2417	**125**	Carbonyl fluoride	100 m (300 ft)	0.6 km (0.4 mi)	2.3 km (1.4 mi)	600 m (2000 ft)	3.7 km (2.3 mi)	8.0 km (5.0 mi)
2417	**125**	Carbonyl fluoride, compressed						
2418	**125**	Sulfur tetrafluoride	100 m (300 ft)	0.5 km (0.4 mi)	2.6 km (1.6 mi)	600 m (2000 ft)	3.5 km (2.2 mi)	9.4 km (5.9 mi)
2418	**125**	Sulphur tetrafluoride						
2420	**125**	Hexafluoroacetone	60 m (200 ft)	0.3 km (0.2 mi)	1.4 km (0.9 mi)	1000 m (3000 ft)	7.6 km (4.7 mi)	11.0+ km (7.0+ mi)
2421	**124**	Nitrogen trioxide	60 m (200 ft)	0.4 km (0.3 mi)	1.8 km (1.1 mi)	300 m (1000 ft)	1.9 km (1.2 mi)	6.7 km (4.2 mi)
2434	**156**	Dibenzyldichlorosilane **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.2 km (0.1 mi)	0.6 km (0.4 mi)
2435	**156**	Ethylphenyldichlorosilane **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.4 km (0.2 mi)	1.1 km (0.7 mi)
2437	**156**	Methylphenyldichlorosilane **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.4 km (0.3 mi)	1.4 km (0.9 mi)
2438	**132**	Trimethylacetyl chloride	30 m (100 ft)	0.3 km (0.2 mi)	0.6 km (0.4 mi)	100 m (300 ft)	1.2 km (0.8 mi)	2.1 km (1.3 mi)
2442	**156**	Trichloroacetyl chloride	30 m (100 ft)	0.2 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.6 km (0.4 mi)	1.2 km (0.8 mi)
2474	**157**	Thiophosgene	60 m (200 ft)	0.7 km (0.4 mi)	2.0 km (1.2 mi)	300 m (1000 ft)	2.7 km (1.7 mi)	5.5 km (3.4 mi)
2477	**131**	Methyl isothiocyanate	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.2 km (0.2 mi)	0.4 km (0.2 mi)
2480	**155**	Methyl isocyanate	150 m (500 ft)	1.7 km (1.1 mi)	5.8 km (3.6 mi)	1000 m (3000 ft)	11.0+ km (7.0+ mi)	11.0+ km (7.0+ mi)

2481	**155**	Ethyl isocyanate	150 m	(500 ft)	1.8 km	(1.2 mi)	5.9 km	(3.7 mi)	1000 m	(3000 ft)	11.0+ km	(7.0+ mi)	11.0+ km	(7.0+ mi)
2482	**155**	n-Propyl isocyanate	100 m	(300 ft)	1.1 km	(0.7 mi)	2.8 km	(1.7 mi)	600 m	(2000 ft)	7.8 km	(4.9 mi)	11.0+ km	(7.0+ mi)
2483	**155**	Isopropyl isocyanate	100 m	(300 ft)	1.2 km	(0.8 mi)	3.1 km	(1.9 mi)	800 m	(2500 ft)	10.1 km	(6.3 mi)	11.0+ km	(7.0+ mi)
2484	**155**	tert-Butyl isocyanate	100 m	(300 ft)	1.1 km	(0.7 mi)	2.7 km	(1.7 mi)	600 m	(2000 ft)	7.2 km	(4.5 mi)	11.0+ km	(7.0+ mi)
2485	**155**	n-Butyl isocyanate	60 m	(200 ft)	0.8 km	(0.5 mi)	1.7 km	(1.1 mi)	300 m	(1000 ft)	4.0 km	(2.5 mi)	6.7 km	(4.2 mi)
2486	**155**	Isobutyl isocyanate	60 m	(200 ft)	0.8 km	(0.5 mi)	1.7 km	(1.1 mi)	300 m	(1000 ft)	4.0 km	(2.5 mi)	6.5 km	(4.1 mi)
2487	**155**	Phenyl isocyanate	30 m	(100 ft)	0.2 km	(0.2 mi)	0.3 km	(0.2 mi)	60 m	(200 ft)	0.8 km	(0.5 mi)	1.2 km	(0.8 mi)
2488	**155**	Cyclohexyl isocyanate	30 m	(100 ft)	0.2 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	0.7 km	(0.5 mi)
2495	**144**	Iodine pentafluoride **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.6 km	(0.4 mi)	150 m	(500 ft)	1.2 km	(0.8 mi)	4.6 km	(2.9 mi)
2521	**131P**	Diketene, stabilized	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.3 km	(0.2 mi)	0.5 km	(0.3 mi)
2534	**119**	Methylchlorosilane	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	100 m	(300 ft)	0.7 km	(0.4 mi)	1.8 km	(1.1 mi)
2548	**124**	Chlorine pentafluoride	30 m	(100 ft)	0.2 km	(0.2 mi)	1.2 km	(0.7 mi)	300 m	(1000 ft)	1.8 km	(1.1 mi)	7.3 km	(4.6 mi)
2600	**119**	Carbon monoxide and Hydrogen mixture, compressed	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	200 m	(600 ft)	1.2 km	(0.8 mi)	4.8 km	(3.0 mi)
2600	**119**	Hydrogen and Carbon monoxide mixture, compressed												
2605	**155**	Methoxymethyl isocyanate	30 m	(100 ft)	0.4 km	(0.2 mi)	0.5 km	(0.4 mi)	100 m	(300 ft)	1.2 km	(0.8 mi)	1.8 km	(1.2 mi)
2606	**155**	Methyl orthosilicate	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.2 km	(0.1 mi)	0.3 km	(0.2 mi)
2644	**151**	Methyl iodide	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	100 m	(300 ft)	0.3 km	(0.2 mi)	0.7 km	(0.5 mi)
2646	**151**	Hexachlorocyclopentadiene	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.3 km	(0.2 mi)	0.4 km	(0.3 mi)
2668	**131**	Chloroacetonitrile	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)
2676	**119**	Stibine	60 m	(200 ft)	0.4 km	(0.2 mi)	1.7 km	(1.1 mi)	300 m	(1000 ft)	1.9 km	(1.2 mi)	6.5 km	(4.0 mi)

"+" means distance can be larger in certain atmospheric conditions

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package) First ISOLATE in all Directions Meters (Feet)	SMALL SPILLS Then PROTECT persons Downwind during- DAY Kilometers (Miles)	SMALL SPILLS Then PROTECT persons Downwind during- NIGHT Kilometers (Miles)	LARGE SPILLS (From a large package or from many small packages) First ISOLATE in all Directions Meters (Feet)	LARGE SPILLS Then PROTECT persons Downwind during- DAY Kilometers (Miles)	LARGE SPILLS Then PROTECT persons Downwind during- NIGHT Kilometers (Miles)
2691	137	Phosphorus pentabromide **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	1.0 km (0.6 mi)
2692	157	Boron tribromide **(when spilled on land)**	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	30 m (100 ft)	0.3 km (0.2 mi)	0.7 km (0.4 mi)
2692	157	Boron tribromide **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)	60 m (200 ft)	0.8 km (0.5 mi)	2.5 km (1.6 mi)
2740	155	n-Propyl chloroformate	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.6 km (0.4 mi)	1.1 km (0.7 mi)
2742	155	sec-Butyl chloroformate	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.4 km (0.3 mi)	0.6 km (0.4 mi)
2742	155	Isobutyl chloroformate	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	0.5 km (0.3 mi)
2743	155	n-Butyl chloroformate	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.4 km (0.2 mi)	0.5 km (0.4 mi)
2806	138	Lithium nitride **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.3 mi)	60 m (200 ft)	0.6 km (0.4 mi)	2.1 km (1.3 mi)
2810	153	Buzz **(when used as a weapon)**	60 m (200 ft)	0.4 km (0.2 mi)	1.7 km (1.1 mi)	400 m (1250 ft)	2.2 km (1.4 mi)	8.1 km (5.0 mi)
2810	153	BZ **(when used as a weapon)**						
2810	153	CS **(when used as a weapon)**	30 m (100 ft)	0.1 km (0.1 mi)	0.6 km (0.4 mi)	100 m (300 ft)	0.4 km (0.3 mi)	1.9 km (1.2 mi)
2810	153	DC **(when used as a weapon)**	30 m (100 ft)	0.1 km (0.1 mi)	0.6 km (0.4 mi)	60 m (200 ft)	0.4 km (0.3 mi)	1.8 km (1.1 mi)
2810	153	GA **(when used as a weapon)**	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	100 m (300 ft)	0.5 km (0.4 mi)	0.6 km (0.4 mi)
2810	153	GB **(when used as a weapon)**	60 m (200 ft)	0.4 km (0.3 mi)	1.1 km (0.7 mi)	400 m (1250 ft)	2.1 km (1.3 mi)	4.9 km (3.0 mi)
2810	153	GD **(when used as a weapon)**	60 m (200 ft)	0.4 km (0.3 mi)	0.7 km (0.5 mi)	300 m (1000 ft)	1.8 km (1.1 mi)	2.7 km (1.7 mi)

2810	**153**	GF **(when used as a weapon)**	30 m	(100 ft)	0.2 km	(0.2 mi)	0.3 km	(0.2 mi)	150 m	(500 ft)	0.8 km	(0.5 mi)	1.0 km	(0.6 mi)
2810 2810	**153** **153**	H **(when used as a weapon)** HD **(when used as a weapon)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	60 m	(200 ft)	0.3 km	(0.2 mi)	0.4 km	(0.3 mi)
2810	**153**	HL **(when used as a weapon)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	100 m	(300 ft)	0.5 km	(0.3 mi)	1.0 km	(0.6 mi)
2810	**153**	HN-1 **(when used as a weapon)**	60 m	(200 ft)	0.3 km	(0.2 mi)	0.5 km	(0.3 mi)	200 m	(600 ft)	1.1 km	(0.7 mi)	1.8 km	(1.1 mi)
2810	**153**	HN-2 **(when used as a weapon)**	60 m	(200 ft)	0.3 km	(0.2 mi)	0.6 km	(0.4 mi)	300 m	(1000 ft)	1.3 km	(0.8 mi)	2.1 km	(1.3 mi)
2810	**153**	HN-3 **(when used as a weapon)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	60 m	(200 ft)	0.3 km	(0.2 mi)	0.3 km	(0.2 mi)
2810 2810	**153** **153**	L (Lewisite) **(when used as a weapon)** Lewisite **(when used as a weapon)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	100 m	(300 ft)	0.5 km	(0.3 mi)	1.0 km	(0.6 mi)
2810	**153**	Mustard **(when used as a weapon)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	60 m	(200 ft)	0.3 km	(0.2 mi)	0.4 km	(0.3 mi)
2810	**153**	Mustard Lewisite **(when used as a weapon)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	100 m	(300 ft)	0.5 km	(0.3 mi)	1.0 km	(0.6 mi)
2810 2810	**153** **153**	Poisonous liquid, n.o.s. Poisonous liquid, n.o.s. (Inhalation Hazard Zone A)	60 m	(200 ft)	0.4 km	(0.3 mi)	1.3 km	(0.8 mi)	200 m	(600 ft)	2.3 km	(1.4 mi)	5.1 km	(3.2 mi)
2810	**153**	Poisonous liquid, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.2 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	0.7 km	(0.5 mi)
2810 2810	**153** **153**	Poisonous liquid, organic, n.o.s. Poisonous liquid, organic, n.o.s. (Inhalation Hazard Zone A)	30 m	(100 ft)	0.3 km	(0.2 mi)	1.1 km	(0.7 mi)	300 m	(1000 ft)	1.8 km	(1.1 mi)	4.5 km	(2.8 mi)
2810	**153**	Poisonous liquid, organic, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.2 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	0.7 km	(0.5 mi)

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TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package) First ISOLATE in all Directions Meters (Feet)	SMALL SPILLS Then PROTECT persons Downwind during- DAY Kilometers (Miles)	SMALL SPILLS Then PROTECT persons Downwind during- NIGHT Kilometers (Miles)	LARGE SPILLS (From a large package or from many small packages) First ISOLATE in all Directions Meters (Feet)	LARGE SPILLS Then PROTECT persons Downwind during- DAY Kilometers (Miles)	LARGE SPILLS Then PROTECT persons Downwind during- NIGHT Kilometers (Miles)
2810	**153**	Sarin **(when used as a weapon)**	60 m (200 ft)	0.4 km (0.3 mi)	1.1 km (0.7 mi)	400 m (1250 ft)	2.1 km (1.3 mi)	4.9 km (3.0 mi)
2810	**153**	Soman **(when used as a weapon)**	60 m (200 ft)	0.4 km (0.3 mi)	0.7 km (0.5 mi)	300 m (1000 ft)	1.8 km (1.1 mi)	2.7 km (1.7 mi)
2810	**153**	Tabun **(when used as a weapon)**	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	100 m (300 ft)	0.5 km (0.4 mi)	0.6 km (0.4 mi)
2810	**153**	Thickened GD **(when used as a weapon)**	60 m (200 ft)	0.4 km (0.3 mi)	0.7 km (0.5 mi)	300 m (1000 ft)	1.8 km (1.1 mi)	2.7 km (1.7 mi)
2810 2810	**153** **153**	Toxic liquid, n.o.s. Toxic liquid, n.o.s. (Inhalation Hazard Zone A)	60 m (200 ft)	0.4 km (0.3 mi)	1.3 km (0.8 mi)	200 m (600 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)
2810	**153**	Toxic liquid, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)
2810 2810	**153** **153**	Toxic liquid, organic, n.o.s. Toxic liquid, organic, n.o.s. (Inhalation Hazard Zone A)	30 m (100 ft)	0.3 km (0.2mi)	1.1 km (0.7 mi)	300 m (1000 ft)	1.8 km (1.1 mi)	4.5 km (2.8 mi)
2810	**153**	Toxic liquid, organic, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)
2810	**153**	VX **(when used as a weapon)**	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m (200 ft)	0.4 km (0.2 mi)	0.3 km (0.2 mi)
2811	**154**	CX **(when used as a weapon)**	60 m (200 ft)	0.2 km (0.2 mi)	1.1 km (0.7 mi)	200 m (600 ft)	1.2 km (0.7 mi)	5.1 km (3.2 mi)
2826	**155**	Ethyl chlorothioformate	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.4 km (0.3 mi)	0.7 km (0.4 mi)

2845	**135**	Ethyl phosphonous dichloride, anhydrous	30 m	(100 ft)	0.3 km	(0.2 mi)	0.8 km	(0.5 mi)	150 m	(500 ft)	1.5 km	(0.9 mi)	2.8 km	(1.7 mi)
2845	**135**	Methyl phosphonous dichloride	30 m	(100 ft)	0.4 km	(0.3 mi)	1.2 km	(0.8 mi)	200 m	(600 ft)	2.3 km	(1.4 mi)	4.3 km	(2.7 mi)
2901	**124**	Bromine chloride	60 m	(200 ft)	0.3 km	(0.2 mi)	1.1 km	(0.7 mi)	400 m	(1250 ft)	2.5 km	(1.5 mi)	6.7 km	(4.2 mi)
2927	**154**	Ethyl phosphonothioic dichloride, anhydrous	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.2 km	(0.1 mi)	0.2 km	(0.1 mi)
2927	**154**	Ethyl phosphorodichloridate	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.2 km	(0.1 mi)	0.2 km	(0.1 mi)
2927	**154**	Poisonous liquid, corrosive, n.o.s.	60 m	(200 ft)	0.4 km	(0.2 mi)	0.9 km	(0.6 mi)	200 m	(600 ft)	1.5 km	(1.0 mi)	3.0 km	(1.9 mi)
2927	**154**	Poisonous liquid, corrosive, n.o.s. (Inhalation Hazard Zone A)												
2927	**154**	Poisonous liquid, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.2 km	(0.1 mi)	0.2 km	(0.1 mi)	30 m	(100 ft)	0.4 km	(0.3 mi)	0.7 km	(0.4 mi)
2927	**154**	Poisonous liquid, corrosive, organic, n.o.s.	60 m	(200 ft)	0.3 km	(0.2 mi)	0.8 km	(0.5 mi)	300 m	(1000 ft)	1.5 km	(1.0 mi)	3.0 km	(1.9 mi)
2927	**154**	Poisonous liquid, corrosive, organic, n.o.s. (Inhalation Hazard Zone A)												
2927	**154**	Poisonous liquid, corrosive, organic, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.2 km	(0.1 mi)	0.2 km	(0.1 mi)	30 m	(100 ft)	0.4 km	(0.3 mi)	0.6 km	(0.4 mi)
2927	**154**	Toxic liquid, corrosive, n.o.s.	60 m	(200 ft)	0.4 km	(0.2 mi)	0.9 km	(0.6 mi)	200 m	(600 ft)	1.5 km	(1.0 mi)	3.0 km	(1.9 mi)
2927	**154**	Toxic liquid, corrosive, n.o.s. (Inhalation Hazard Zone A)												
2927	**154**	Toxic liquid, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.2 km	(0.1 mi)	0.2 km	(0.1 mi)	30 m	(100 ft)	0.4 km	(0.3 mi)	0.7 km	(0.4 mi)

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TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package) First ISOLATE in all Directions Meters (Feet)	SMALL SPILLS Then PROTECT persons Downwind during- DAY Kilometers (Miles)	SMALL SPILLS Then PROTECT persons Downwind during- NIGHT Kilometers (Miles)	LARGE SPILLS (From a large package or from many small packages) First ISOLATE in all Directions Meters (Feet)	LARGE SPILLS Then PROTECT persons Downwind during- DAY Kilometers (Miles)	LARGE SPILLS Then PROTECT persons Downwind during- NIGHT Kilometers (Miles)
2927	**154**	Toxic liquid, corrosive, organic, n.o.s.	60 m (200 ft)	0.3 km (0.2 mi)	0.8 km (0.5 mi)	300 m (1000 ft)	1.5 km (1.0 mi)	3.0 km (1.9 mi)
2927	**154**	Toxic liquid, corrosive, organic, n.o.s. (Inhalation Hazard Zone A)						
2927	**154**	Toxic liquid, corrosive, organic, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.4 km (0.3 mi)	0.6 km (0.4 mi)
2929	**131**	Poisonous liquid, flammable, n.o.s.	60 m (200 ft)	0.8 km (0.5 mi)	1.7 km (1.1 mi)	300 m (1000 ft)	4.0 km (2.5 mi)	6.5 km (4.1 mi)
2929	**131**	Poisonous liquid, flammable, n.o.s. (Inhalation Hazard Zone A)						
2929	**131**	Poisonous liquid, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)
2929	**131**	Poisonous liquid, flammable, organic, n.o.s.	30 m (100 ft)	0.4 km (0.3 mi)	1.2 km (0.8 mi)	200 m (600 ft)	2.2 km (1.4 mi)	4.6 km (2.9 mi)
2929	**131**	Poisonous liquid, flammable, organic, n.o.s. (Inhalation Hazard Zone A)						
2929	**131**	Poisonous liquid, flammable, organic, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)

2929	**131**	Toxic liquid, flammable, n.o.s.	60 m	(200 ft)	0.8 km	(0.5 mi)	1.7 km	(1.1 mi)	300 m	(1000 ft)	4.0 km	(2.5 mi)	6.5 km	(4.1 mi)
2929	**131**	Toxic liquid, flammable, n.o.s. (Inhalation Hazard Zone A)												
2929	**131**	Toxic liquid, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	0.7 km	(0.5 mi)
2929	**131**	Toxic liquid, flammable, organic, n.o.s.	30 m	(100 ft)	0.4 km	(0.3 mi)	1.2 km	(0.8 mi)	200 m	(600 ft)	2.2 km	(1.4 mi)	4.6 km	(2.9 mi)
2929	**131**	Toxic liquid, flammable, organic, n.o.s. (Inhalation Hazard Zone A)												
2929	**131**	Toxic liquid, flammable, organic, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	0.7 km	(0.5 mi)
2977	**166**	Radioactive material, Uranium hexafluoride, fissile **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.3 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	2.4 km	(1.5 mi)
2977	**166**	Uranium hexafluoride, fissile containing more than 1% Uranium-235 **(when spilled in water)**												
2978	**166**	Radioactive material, Uranium hexafluoride **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.3 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	2.3 km	(1.5 mi)
2978	**166**	Uranium hexafluoride **(when spilled in water)**												
2978	**166**	Uranium hexafluoride, non-fissile or fissile-excepted **(when spilled in water)**												

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2985	**155**	Chlorosilanes, flammable, corrosive, n.o.s. **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.6 km (1.0 mi)
2985	**155**	Chlorosilanes, n.o.s. **(when spilled in water)**						
2986	**155**	Chlorosilanes, corrosive, flammable, n.o.s. **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.6 km (1.0 mi)
2986	**155**	Chlorosilanes, n.o.s. **(when spilled in water)**						
2987	**156**	Chlorosilanes, corrosive, n.o.s. **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.6 km (1.0 mi)
2987	**156**	Chlorosilanes, n.o.s. **(when spilled in water)**						
2988	**139**	Chlorosilanes, n.o.s. **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.6 km (1.0 mi)
2988	**139**	Chlorosilanes, water-reactive, flammable, corrosive, n.o.s. **(when spilled in water)**						
3023	**131**	2-Methyl-2-heptanethiol	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.2 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.9 km (0.5 mi)
3023	**131**	tert-Octyl mercaptan						
3048	**157**	Aluminum phosphide pesticide **(when spilled in water)**	60 m (200 ft)	0.2 km (0.2 mi)	0.9 km (0.6 mi)	500 m (1500 ft)	2.1 km (1.3 mi)	7.4 km (4.6 mi)

3049	**138**	Metal alkyl halides, water-reactive, n.o.s. **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.4 km	(0.3 mi)	1.3 km	(0.8 mi)
3049	**138**	Metal aryl halides, water-reactive, n.o.s. **(when spilled in water)**												
3052	**135**	Aluminum alkyl halides **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.4 km	(0.3 mi)	1.3 km	(0.8 mi)
3052	**135**	Aluminum alkyl halides, liquid **(when spilled in water)**												
3052	**135**	Aluminum alkyl halides, solid **(when spilled in water)**												
3057	**125**	Trifluoroacetyl chloride	30 m	(100 ft)	0.2 km	(0.1 mi)	1.0 km	(0.6 mi)	800 m	(2500 ft)	4.2 km	(2.7 mi)	11.0+ km	(7.0+ mi)
3079	**131P**	Methacrylonitrile, stabilized	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.4 km	(0.3 mi)	0.8 km	(0.5 mi)
3083	**124**	Perchloryl fluoride	30 m	(100 ft)	0.1 km	(0.1 mi)	0.6 km	(0.4 mi)	400 m	(1250 ft)	2.5 km	(1.6 mi)	7.7 km	(4.8 mi)
3122	**142**	Poisonous liquid, oxidizing, n.o.s.	30 m	(100 ft)	0.4 km	(0.2 mi)	1.4 km	(0.9 mi)	200 m	(600 ft)	2.3 km	(1.4 mi)	5.1 km	(3.2 mi)
3122	**142**	Poisonous liquid, oxidizing, n.o.s. (Inhalation Hazard Zone A)												
3122	**142**	Poisonous liquid, oxidizing, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	60 m	(200 ft)	0.5 km	(0.4 mi)	1.0 km	(0.6 mi)
3122	**142**	Toxic liquid, oxidizing, n.o.s.	30 m	(100 ft)	0.4 km	(0.2 mi)	1.4 km	(0.9 mi)	200 m	(600 ft)	2.3 km	(1.4 mi)	5.1 km	(3.2 mi)
3122	**142**	Toxic liquid, oxidizing, n.o.s. (Inhalation Hazard Zone A)												
3122	**142**	Toxic liquid, oxidizing, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	60 m	(200 ft)	0.5 km	(0.4 mi)	1.0 km	(0.6 mi)

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3123	**139**	Poisonous liquid, water-reactive, n.o.s.	60 m (200 ft)	0.4 km (0.3 mi)	1.3 km (0.8 mi)	200 m (600 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)
3123	**139**	Poisonous liquid, water-reactive, n.o.s. (Inhalation Hazard Zone A)						
3123	**139**	Poisonous liquid, water-reactive, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)
3123	**139**	Poisonous liquid, which in contact with water emits flammable gases, n.o.s.	60 m (200 ft)	0.4 km (0.3 mi)	1.3 km (0.8 mi)	200 m (600 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)
3123	**139**	Poisonous liquid, which in contact with water emits flammable gases, n.o.s. (Inhalation Hazard Zone A)						
3123	**139**	Poisonous liquid, which in contact with water emits flammable gases, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)
3123	**139**	Toxic liquid, water-reactive, n.o.s.	60 m (200 ft)	0.4 km (0.3 mi)	1.3 km (0.8 mi)	200 m (600 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)
3123	**139**	Toxic liquid, water-reactive, n.o.s. (Inhalation Hazard Zone A)						

3123	**139**	Toxic liquid, water-reactive, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.2 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	0.7 km	(0.5 mi)
3123	**139**	Toxic liquid, which in contact with water emits flammable gases, n.o.s.	60 m	(200 ft)	0.4 km	(0.3 mi)	1.3 km	(0.8 mi)	200 m	(600 ft)	2.3 km	(1.4 mi)	5.1 km	(3.2 mi)
3123	**139**	Toxic liquid, which in contact with water emits flammable gases, n.o.s. (Inhalation Hazard Zone A)												
3123	**139**	Toxic liquid, which in contact with water emits flammable gases, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.2 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	0.7 km	(0.5 mi)
3160	**119**	Liquefied gas, poisonous, flammable, n.o.s.	100 m	(300 ft)	0.5 km	(0.3 mi)	2.2 km	(1.4 mi)	600 m	(2000 ft)	2.6 km	(1.7 mi)	8.6 km	(5.4 mi)
3160	**119**	Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone A)												
3160	**119**	Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	300 m	(1000 ft)	1.3 km	(0.8 mi)	3.5 km	(2.2 mi)
3160	**119**	Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	200 m	(600 ft)	1.0 km	(0.7 mi)	3.2 km	(2.0 mi)
3160	**119**	Liquefied gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone D)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	200 m	(600 ft)	0.8 km	(0.5 mi)	2.0 km	(1.3 mi)

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3160	**119**	Liquefied gas, toxic, flammable, n.o.s.	100 m (300 ft)	0.5 km (0.3 mi)	2.2 km (1.4 mi)	600 m (2000 ft)	2.6 km (1.7 mi)	8.6 km (5.4 mi)
3160	**119**	Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone A)						
3160	**119**	Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	300 m (1000 ft)	1.3 km (0.8 mi)	3.5 km (2.2 mi)
3160	**119**	Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	200 m (600 ft)	1.0 km (0.7 mi)	3.2 km (2.0 mi)
3160	**119**	Liquefied gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	200 m (600 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)
3162	**123**	Liquefied gas, poisonous, n.o.s.	100 m (300 ft)	0.5 km (0.3 mi)	2.2 km (1.4 mi)	600 m (2000 ft)	3.5 km (2.2 mi)	9.4 km (5.9 mi)
3162	**123**	Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone A)						
3162	**123**	Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.1 mi)	0.8 km (0.5 mi)	300 m (1000 ft)	1.5 km (0.9 mi)	4.6 km (2.9 mi)
3162	**123**	Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	150 m (500 ft)	0.9 km (0.6 mi)	2.8 km (1.7 mi)
3162	**123**	Liquefied gas, poisonous, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)

3162 3162	**123** **123**	Liquefied gas, toxic, n.o.s. Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone A)	100 m	(300 ft)	0.5 km	(0.3 mi)	2.2 km	(1.4 mi)	600 m	(2000 ft)	3.5 km	(2.2 mi)	9.4 km	(5.9 mi)
3162	**123**	Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.2 km	(0.1 mi)	0.8 km	(0.5 mi)	300 m	(1000 ft)	1.5 km	(0.9 mi)	4.6 km	(2.9 mi)
3162	**123**	Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	150 m	(500 ft)	0.9 km	(0.6 mi)	2.8 km	(1.7 mi)
3162	**123**	Liquefied gas, toxic, n.o.s. (Inhalation Hazard Zone D)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	150 m	(500 ft)	0.8 km	(0.5 mi)	2.0 km	(1.3 mi)
3246 3246	**156** **156**	Methanesulfonyl chloride Methanesulphonyl chloride	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.2 km	(0.1 mi)	0.3 km	(0.2 mi)
3275 3275	**131** **131**	Nitriles, poisonous, flammable, n.o.s. Nitriles, toxic, flammable, n.o.s.	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.4 km	(0.3 mi)	0.8 km	(0.5 mi)
3276 3276 3276 3276 3276 3276	**151** **151** **151** **151** **151** **151**	Nitriles, liquid, poisonous, n.o.s. Nitriles, liquid, toxic, n.o.s. Nitriles, poisonous, liquid, n.o.s. Nitriles, poisonous, n.o.s. Nitriles, toxic, liquid, n.o.s. Nitriles, toxic, n.o.s.	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.4 km	(0.3 mi)	0.8 km	(0.5 mi)

"+" means distance can be larger in certain atmospheric conditions

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package) First ISOLATE in all Directions Meters (Feet)	SMALL SPILLS Then PROTECT persons Downwind during- DAY Kilometers (Miles)	SMALL SPILLS Then PROTECT persons Downwind during- NIGHT Kilometers (Miles)	LARGE SPILLS (From a large package or from many small packages) First ISOLATE in all Directions Meters (Feet)	LARGE SPILLS Then PROTECT persons Downwind during- DAY Kilometers (Miles)	LARGE SPILLS Then PROTECT persons Downwind during- NIGHT Kilometers (Miles)
3278	151	Organophosphorus compound, liquid, poisonous, n.o.s.	30 m (100 ft)	0.4 km (0.3 mi)	1.2 km (0.8 mi)	200 m (600 ft)	2.3 km (1.4 mi)	4.3 km (2.7 mi)
3278	151	Organophosphorus compound, liquid, toxic, n.o.s.						
3278	151	Organophosphorus compound, poisonous, liquid, n.o.s.						
3278	151	Organophosphorus compound, poisonous, n.o.s.						
3278	151	Organophosphorus compound, toxic, liquid, n.o.s.						
3278	151	Organophosphorus compound, toxic, n.o.s.						
3279	131	Organophosphorus compound, poisonous, flammable, n.o.s.	30 m (100 ft)	0.4 km (0.3 mi)	1.2 km (0.8 mi)	200 m (600 ft)	2.3 km (1.4 mi)	4.3 km (2.7 mi)
3279	131	Organophosphorus compound, toxic, flammable, n.o.s.						
3280	151	Organoarsenic compound, liquid, n.o.s.	30 m (100 ft)	0.2 km (0.1 mi)	0.8 km (0.5 mi)	150 m (500 ft)	1.8 km (1.1 mi)	4.5 km (2.8 mi)
3280	151	Organoarsenic compound, n.o.s.						
3281	151	Metal carbonyls, liquid, n.o.s.	100 m (300 ft)	1.4 km (0.9 mi)	5.4 km (3.4 mi)	1000 m (3000 ft)	11.0+ km (7.0+ mi)	11.0+ km (7.0+ mi)
3281	151	Metal carbonyls, n.o.s.						

3287 3287	**151** **151**	Poisonous liquid, inorganic, n.o.s. Poisonous liquid, inorganic, n.o.s. (Inhalation Hazard Zone A)	60 m	(200 ft)	0.6 km	(0.4 mi)	2.0 km	(1.2 mi)	300 m	(1000 ft)	2.8 km	(1.8 mi)	6.5 km	(4.0 mi)
3287	**151**	Poisonous liquid, inorganic, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.2 km	(0.1 mi)	0.3 km	(0.2 mi)	100 m	(300 ft)	1.0 km	(0.6 mi)	1.6 km	(1.0 mi)
3287 3287	**151** **151**	Toxic liquid, inorganic, n.o.s. Toxic liquid, inorganic, n.o.s. (Inhalation Hazard Zone A)	60 m	(200 ft)	0.6 km	(0.4 mi)	2.0 km	(1.2 mi)	300 m	(1000 ft)	2.8 km	(1.8 mi)	6.5 km	(4.0 mi)
3287	**151**	Toxic liquid, inorganic, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.2 km	(0.1 mi)	0.3 km	(0.2 mi)	100 m	(300 ft)	1.0 km	(0.6 mi)	1.6 km	(1.0 mi)
3289 3289	**154** **154**	Poisonous liquid, corrosive, inorganic, n.o.s. Poisonous liquid, corrosive, inorganic, n.o.s. (Inhalation Hazard Zone A)	30 m	(100 ft)	0.4 km	(0.2 mi)	1.4 km	(0.9 mi)	200 m	(600 ft)	2.3 km	(1.4 mi)	5.1 km	(3.2 mi)
3289	**154**	Poisonous liquid, corrosive, inorganic, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	100 m	(300 ft)	0.5 km	(0.3 mi)	1.1 km	(0.7 mi)
3289 3289	**154** **154**	Toxic liquid, corrosive, inorganic, n.o.s. Toxic liquid, corrosive, inorganic, n.o.s. (Inhalation Hazard Zone A)	30 m	(100 ft)	0.4 km	(0.2 mi)	1.4 km	(0.9 mi)	200 m	(600 ft)	2.3 km	(1.4 mi)	5.1 km	(3.2 mi)
3289	**154**	Toxic liquid, corrosive, inorganic, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	100 m	(300 ft)	0.5 km	(0.3 mi)	1.1 km	(0.7 mi)

"+" means distance can be larger in certain atmospheric conditions

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package) First ISOLATE in all Directions Meters	(Feet)	Then PROTECT persons Downwind during- DAY Kilometers	(Miles)	NIGHT Kilometers	(Miles)	LARGE SPILLS (From a large package or from many small packages) First ISOLATE in all Directions Meters	(Feet)	Then PROTECT persons Downwind during- DAY Kilometers	(Miles)	NIGHT Kilometers	(Miles)
3294	**131**	Hydrogen cyanide, solution in alcohol, with not more than 45% Hydrogen cyanide	60 m	(200 ft)	0.2 km	(0.1 mi)	0.4 km	(0.2 mi)	200 m	(600 ft)	0.7 km	(0.4 mi)	2.0 km	(1.2 mi)
3300	**119P**	Carbon dioxide and Ethylene oxide mixture, with more than 87% Ethylene oxide	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	150 m	(500 ft)	0.9 km	(0.5 mi)	2.0 km	(1.3 mi)
3300	**119P**	Ethylene oxide and Carbon dioxide mixture, with more than 87% Ethylene oxide												
3303	**124**	Compressed gas, poisonous, oxidizing, n.o.s.	60 m	(200 ft)	0.4 km	(0.3 mi)	2.1 km	(1.3 mi)	600 m	(2000 ft)	2.6 km	(1.7 mi)	8.6 km	(5.4 mi)
3303	**124**	Compressed gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone A)												
3303	**124**	Compressed gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone B)	60 m	(200 ft)	0.3 km	(0.2 mi)	1.1 km	(0.7 mi)	400 m	(1250 ft)	2.5 km	(1.5 mi)	6.7 km	(4.2 mi)
3303	**124**	Compressed gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	200 m	(600 ft)	0.9 km	(0.6 mi)	2.8 km	(1.7 mi)
3303	**124**	Compressed gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone D)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	200 m	(600 ft)	0.7 km	(0.4 mi)	2.0 km	(1.3 mi)

3303	**124**	Compressed gas, toxic, oxidizing, n.o.s.	60 m	(200 ft)	0.4 km	(0.3 mi)	2.1 km	(1.3 mi)	600 m	(2000 ft)	2.6 km	(1.7 mi)	8.6 km	(5.4 mi)
3303	**124**	Compressed gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone A)												
3303	**124**	Compressed gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone B)	60 m	(200 ft)	0.3 km	(0.2 mi)	1.1 km	(0.7 mi)	400 m	(1250 ft)	2.5 km	(1.5 mi)	6.7 km	(4.2 mi)
3303	**124**	Compressed gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	200 m	(600 ft)	0.9 km	(0.6 mi)	2.8 km	(1.7 mi)
3303	**124**	Compressed gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone D)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	200 m	(600 ft)	0.7 km	(0.4 mi)	2.0 km	(1.3 mi)
3304	**123**	Compressed gas, poisonous, corrosive, n.o.s.	100 m	(300 ft)	0.5 km	(0.4 mi)	2.6 km	(1.6 mi)	600 m	(2000 ft)	3.5 km	(2.2 mi)	9.4 km	(5.9 mi)
3304	**123**	Compressed gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone A)												
3304	**123**	Compressed gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone B)	60 m	(200 ft)	0.3 km	(0.2 mi)	1.2 km	(0.8 mi)	300 m	(1000 ft)	1.5 km	(0.9 mi)	4.6 km	(2.9 mi)
3304	**123**	Compressed gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	150 m	(500 ft)	0.9 km	(0.6 mi)	2.8 km	(1.7 mi)
3304	**123**	Compressed gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	150 m	(500 ft)	0.8 km	(0.5 mi)	2.0 km	(1.3 mi)

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TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package) First ISOLATE in all Directions Meters (Feet)	SMALL SPILLS Then PROTECT persons Downwind during- DAY Kilometers (Miles)	SMALL SPILLS Then PROTECT persons Downwind during- NIGHT Kilometers (Miles)	LARGE SPILLS (From a large package or from many small packages) First ISOLATE in all Directions Meters (Feet)	LARGE SPILLS Then PROTECT persons Downwind during- DAY Kilometers (Miles)	LARGE SPILLS Then PROTECT persons Downwind during- NIGHT Kilometers (Miles)
3304	**123**	Compressed gas, toxic, corrosive, n.o.s.	100 m (300 ft)	0.5 km (0.4 mi)	2.6 km (1.6 mi)	600 m (2000 ft)	3.5 km (2.2 mi)	9.4 km (5.9 mi)
3304	**123**	Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone A)						
3304	**123**	Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone B)	60 m (200 ft)	0.3 km (0.2 mi)	1.2 km (0.8 mi)	300 m (1000 ft)	1.5 km (0.9 mi)	4.6 km (2.9 mi)
3304	**123**	Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	150 m (500 ft)	0.9 km (0.6 mi)	2.8 km (1.7 mi)
3304	**123**	Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)
3305	**119**	Compressed gas, poisonous, flammable, corrosive, n.o.s.	100 m (300 ft)	0.5 km (0.4 mi)	2.6 km (1.6 mi)	600 m (2000 ft)	3.5 km (2.2 mi)	9.4 km (5.9 mi)
3305	**119**	Compressed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)						
3305	**119**	Compressed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	60 m (200 ft)	0.3 km (0.2 mi)	1.2 km (0.8 mi)	300 m (1000 ft)	1.5 km (0.9 mi)	4.6 km (2.9 mi)

3305	**119**	Compressed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	200 m	(600 ft)	0.9 km	(0.6 mi)	2.8 km	(1.7 mi)
3305	**119**	Compressed gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	200 m	(600 ft)	0.8 km	(0.5 mi)	2.0 km	(1.3 mi)
3305	**119**	Compressed gas, toxic, flammable, corrosive, n.o.s.	100 m	(300 ft)	0.5 km	(0.4 mi)	2.6 km	(1.6 mi)	600 m	(2000 ft)	3.5 km	(2.2 mi)	9.4 km	(5.9 mi)
3305	**119**	Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)												
3305	**119**	Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	60 m	(200 ft)	0.3 km	(0.2 mi)	1.2 km	(0.8 mi)	300 m	(1000 ft)	1.5 km	(0.9 mi)	4.6 km	(2.9 mi)
3305	**119**	Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	200 m	(600 ft)	0.9 km	(0.6 mi)	2.8 km	(1.7 mi)
3305	**119**	Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	200 m	(600 ft)	0.8 km	(0.5 mi)	2.0 km	(1.3 mi)
3306	**124**	Compressed gas, poisonous, oxidizing, corrosive, n.o.s.	100 m	(300 ft)	0.5 km	(0.4 mi)	2.6 km	(1.6 mi)	600 m	(2000 ft)	3.5 km	(2.2 mi)	9.4 km	(5.9 mi)
3306	**124**	Compressed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone A)												
3306	**124**	Compressed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone B)	60 m	(200 ft)	0.3 km	(0.2 mi)	1.1 km	(0.7 mi)	400 m	(1250 ft)	2.5 km	(1.5 mi)	6.7 km	(4.2 mi)
3306	**124**	Compressed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	200 m	(600 ft)	0.9 km	(0.6 mi)	2.8 km	(1.7 mi)

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ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package) First ISOLATE in all Directions Meters (Feet)	SMALL SPILLS Then PROTECT persons Downwind during- DAY Kilometers (Miles)	SMALL SPILLS Then PROTECT persons Downwind during- NIGHT Kilometers (Miles)	LARGE SPILLS (From a large package or from many small packages) First ISOLATE in all Directions Meters (Feet)	LARGE SPILLS Then PROTECT persons Downwind during- DAY Kilometers (Miles)	LARGE SPILLS Then PROTECT persons Downwind during- NIGHT Kilometers (Miles)
3306	**124**	Compressed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	200 m (600 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)
3306	**124**	Compressed gas, toxic, oxidizing, corrosive, n.o.s.	100 m (300 ft)	0.5 km (0.4 mi)	2.6 km (1.6 mi)	600 m (2000 ft)	3.5 km (2.2 mi)	9.4 km (5.9 mi)
3306	**124**	Compressed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone A)						
3306	**124**	Compressed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone B)	60 m (200 ft)	0.3 km (0.2 mi)	1.1 km (0.7 mi)	400 m (1250 ft)	2.5 km (1.5 mi)	6.7 km (4.2 mi)
3306	**124**	Compressed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	200 m (600 ft)	0.9 km (0.6 mi)	2.8 km (1.7 mi)
3306	**124**	Compressed gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	200 m (600 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)
3307	**124**	Liquefied gas, poisonous, oxidizing, n.o.s.	60 m (200 ft)	0.4 km (0.3 mi)	2.1 km (1.3 mi)	600 m (2000 ft)	2.6 km (1.7 mi)	8.6 km (5.4 mi)
3307	**124**	Liquefied gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone A)						

3307	**124**	Liquefied gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone B)	60 m	(200 ft)	0.3 km	(0.2 mi)	1.1 km	(0.7 mi)	400 m	(1250 ft)	2.5 km	(1.5 mi)	6.7 km	(4.2 mi)
3307	**124**	Liquefied gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	200 m	(600 ft)	0.9 km	(0.6 mi)	2.8 km	(1.7 mi)
3307	**124**	Liquefied gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone D)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	200 m	(600 ft)	0.7 km	(0.4 mi)	2.0 km	(1.3 mi)
3307	**124**	Liquefied gas, toxic, oxidizing, n.o.s.	60 m	(200 ft)	0.4 km	(0.3 mi)	2.1 km	(1.3 mi)	600 m	(2000 ft)	2.6 km	(1.7 mi)	8.6 km	(5.4 mi)
3307	**124**	Liquefied gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone A)												
3307	**124**	Liquefied gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone B)	60 m	(200 ft)	0.3 km	(0.2 mi)	1.1 km	(0.7 mi)	400 m	(1250 ft)	2.5 km	(1.5 mi)	6.7 km	(4.2 mi)
3307	**124**	Liquefied gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	200 m	(600 ft)	0.9 km	(0.6 mi)	2.8 km	(1.7 mi)
3307	**124**	Liquefied gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone D)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	200 m	(600 ft)	0.7 km	(0.4 mi)	2.0 km	(1.3 mi)
3308	**123**	Liquefied gas, poisonous, corrosive, n.o.s.	100 m	(300 ft)	0.5 km	(0.4 mi)	2.6 km	(1.6 mi)	600 m	(2000 ft)	3.5 km	(2.2 mi)	9.4 km	(5.9 mi)
3308	**123**	Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone A)												

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TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package) First ISOLATE in all Directions Meters (Feet)	SMALL SPILLS Then PROTECT persons Downwind during- DAY Kilometers (Miles)	SMALL SPILLS Then PROTECT persons Downwind during- NIGHT Kilometers (Miles)	LARGE SPILLS (From a large package or from many small packages) First ISOLATE in all Directions Meters (Feet)	LARGE SPILLS Then PROTECT persons Downwind during- DAY Kilometers (Miles)	LARGE SPILLS Then PROTECT persons Downwind during- NIGHT Kilometers (Miles)
3308	**123**	Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone B)	60 m (200 ft)	0.3 km (0.2 mi)	1.2 km (0.8 mi)	300 m (1000 ft)	1.5 km (0.9 mi)	4.6 km (2.9 mi)
3308	**123**	Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	150 m (500 ft)	0.9 km (0.6 mi)	2.8 km (1.7 mi)
3308	**123**	Liquefied gas, poisonous, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)
3308	**123**	Liquefied gas, toxic, corrosive, n.o.s.	100 m (300 ft)	0.5 km (0.4 mi)	2.6 km (1.6 mi)	600 m (2000 ft)	3.5 km (2.2 mi)	9.4 km (5.9 mi)
3308	**123**	Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone A)						
3308	**123**	Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone B)	60 m (200 ft)	0.3 km (0.2 mi)	1.2 km (0.8 mi)	300 m (1000 ft)	1.5 km (0.9 mi)	4.6 km (2.9 mi)
3308	**123**	Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	150 m (500 ft)	0.9 km (0.6 mi)	2.8 km (1.7 mi)
3308	**123**	Liquefied gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)

3309 3309	**119** **119**	Liquefied gas, poisonous, flammable, corrosive, n.o.s. Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)	100 m	(300 ft)	0.5 km	(0.4 mi)	2.6 km	(1.6 mi)	600 m	(2000 ft)	3.5 km	(2.2 mi)	9.4 km	(5.9 mi)
3309	**119**	Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	60 m	(200 ft)	0.3 km	(0.2 mi)	1.2 km	(0.8 mi)	300 m	(1000 ft)	1.5 km	(0.9 mi)	4.6 km	(2.9 mi)
3309	**119**	Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	200 m	(600 ft)	0.9 km	(0.6 mi)	2.8 km	(1.7 mi)
3309	**119**	Liquefied gas, poisonous, flammable, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	200 m	(600 ft)	0.8 km	(0.5 mi)	2.0 km	(1.3 mi)
3309 3309	**119** **119**	Liquefied gas, toxic, flammable, corrosive, n.o.s. Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)	100 m	(300 ft)	0.5 km	(0.4 mi)	2.6 km	(1.6 mi)	600 m	(2000 ft)	3.5 km	(2.2 mi)	9.4 km	(5.9 mi)
3309	**119**	Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	60 m	(200 ft)	0.3 km	(0.2 mi)	1.2 km	(0.8 mi)	300 m	(1000 ft)	1.5 km	(0.9 mi)	4.6 km	(2.9 mi)
3309	**119**	Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	200 m	(600 ft)	0.9 km	(0.6 mi)	2.8 km	(1.7 mi)
3309	**119**	Liquefied gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	200 m	(600 ft)	0.8 km	(0.5 mi)	2.0 km	(1.3 mi)

"+" means distance can be larger in certain atmospheric conditions

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package) First ISOLATE in all Directions Meters (Feet)	SMALL SPILLS Then PROTECT persons Downwind during- DAY Kilometers (Miles)	SMALL SPILLS Then PROTECT persons Downwind during- NIGHT Kilometers (Miles)	LARGE SPILLS (From a large package or from many small packages) First ISOLATE in all Directions Meters (Feet)	LARGE SPILLS Then PROTECT persons Downwind during- DAY Kilometers (Miles)	LARGE SPILLS Then PROTECT persons Downwind during- NIGHT Kilometers (Miles)
3310	**124**	Liquefied gas, poisonous, oxidizing, corrosive, n.o.s.	100 m (300 ft)	0.5 km (0.4 mi)	2.6 km (1.6 mi)	600 m (2000 ft)	3.5 km (2.2 mi)	9.4 km (5.9 mi)
3310	**124**	Liquefied gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone A)						
3310	**124**	Liquefied gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone B)	60 m (200 ft)	0.3 km (0.2 mi)	1.1 km (0.7 mi)	400 m (1250 ft)	2.5 km (1.5 mi)	6.7 km (4.2 mi)
3310	**124**	Liquefied gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	200 m (600 ft)	0.9 km (0.6 mi)	2.8 km (1.7 mi)
3310	**124**	Liquefied gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	200 m (600 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)
3310	**124**	Liquefied gas, toxic, oxidizing, corrosive, n.o.s.	100 m (300 ft)	0.5 km (0.4 mi)	2.6 km (1.6 mi)	600 m (2000 ft)	3.5 km (2.2 mi)	9.4 km (5.9 mi)
3310	**124**	Liquefied gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone A)						
3310	**124**	Liquefied gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone B)	60 m (200 ft)	0.3 km (0.2 mi)	1.1 km (0.7 mi)	400 m (1250 ft)	2.5 km (1.5 mi)	6.7 km (4.2 mi)

3310	**124**	Liquefied gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	200 m	(600 ft)	0.9 km	(0.6 mi)	2.8 km	(1.7 mi)
3310	**124**	Liquefied gas, toxic, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone D)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	200 m	(600 ft)	0.8 km	(0.5 mi)	2.0 km	(1.3 mi)
3318	**125**	Ammonia solution, with more than 50% Ammonia	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	150 m	(500 ft)	0.8 km	(0.5 mi)	2.0 km	(1.3 mi)
3355	**119**	Insecticide gas, poisonous, flammable, n.o.s.	100 m	(300 ft)	0.5 km	(0.3 mi)	2.2 km	(1.4 mi)	600 m	(2000 ft)	2.6 km	(1.7 mi)	8.6 km	(5.4 mi)
3355	**119**	Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone A)												
3355	**119**	Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	300 m	(1000 ft)	1.3 km	(0.8 mi)	3.5 km	(2.2 mi)
3355	**119**	Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone C)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	200 m	(600 ft)	1.0 km	(0.7 mi)	3.2 km	(2.0 mi)
3355	**119**	Insecticide gas, poisonous, flammable, n.o.s. (Inhalation Hazard Zone D)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	200 m	(600 ft)	0.8 km	(0.5 mi)	2.0 km	(1.3 mi)
3355	**119**	Insecticide gas, toxic, flammable, n.o.s.	100 m	(300 ft)	0.5 km	(0.3 mi)	2.2 km	(1.4 mi)	600 m	(2000 ft)	2.6 km	(1.7 mi)	8.6 km	(5.4 mi)
3355	**119**	Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone A)												
3355	**119**	Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	300 m	(1000 ft)	1.3 km	(0.8 mi)	3.5 km	(2.2 mi)

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TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package) First ISOLATE in all Directions Meters (Feet)	SMALL SPILLS Then PROTECT persons Downwind during- DAY Kilometers (Miles)	SMALL SPILLS Then PROTECT persons Downwind during- NIGHT Kilometers (Miles)	LARGE SPILLS (From a large package or from many small packages) First ISOLATE in all Directions Meters (Feet)	LARGE SPILLS Then PROTECT persons Downwind during- DAY Kilometers (Miles)	LARGE SPILLS Then PROTECT persons Downwind during- NIGHT Kilometers (Miles)
3355	**119**	Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone C)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	200 m (600 ft)	1.0 km (0.7 mi)	3.2 km (2.0 mi)
3355	**119**	Insecticide gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone D)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	200 m (600 ft)	0.8 km (0.5 mi)	2.0 km (1.3 mi)
3361	**156**	Chlorosilanes, poisonous, corrosive, n.o.s. **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.6 km (1.0 mi)
3361	**156**	Chlorosilanes, toxic, corrosive, n.o.s. **(when spilled in water)**						
3362	**155**	Chlorosilanes, poisonous, corrosive, flammable, n.o.s. **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	1.6 km (1.0 mi)
3362	**155**	Chlorosilanes, toxic, corrosive, flammable, n.o.s. **(when spilled in water)**						
3381	**151**	Poisonous by inhalation liquid, n.o.s. (Inhalation Hazard Zone A)	60 m (200 ft)	0.4 km (0.3 mi)	1.3 km (0.8 mi)	200 m (600 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)
3381	**151**	Toxic by inhalation liquid, n.o.s. (Inhalation Hazard Zone A)						

3382	**151**	Poisonous by inhalation liquid, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.2 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	0.7 km	(0.5 mi)
3382	**151**	Toxic by inhalation liquid, n.o.s. (Inhalation Hazard Zone B)												
3383	**131**	Poisonous by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone A)	60 m	(200 ft)	0.8 km	(0.5 mi)	1.7 km	(1.1 mi)	300 m	(1000 ft)	4.0 km	(2.5 mi)	6.5 km	(4.1 mi)
3383	**131**	Toxic by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone A)												
3384	**131**	Poisonous by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	0.7 km	(0.5 mi)
3384	**131**	Toxic by inhalation liquid, flammable, n.o.s. (Inhalation Hazard Zone B)												
3385	**139**	Poisonous by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone A)	60 m	(200 ft)	0.4 km	(0.3 mi)	1.3 km	(0.8 mi)	200 m	(600 ft)	2.3 km	(1.4 mi)	5.1 km	(3.2 mi)
3385	**139**	Toxic by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone A)												
3386	**139**	Poisonous by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.2 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	0.7 km	(0.5 mi)
3386	**139**	Toxic by inhalation liquid, water-reactive, n.o.s. (Inhalation Hazard Zone B)												

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3387	**142**	Poisonous by inhalation liquid, oxidizing, n.o.s. (Inhalation Hazard Zone A)	30 m (100 ft)	0.4 km (0.2 mi)	1.4 km (0.9 mi)	200 m (600 ft)	2.3 km (1.4 mi)	5.1 km (3.2 mi)
3387	**142**	Toxic by inhalation liquid, oxidizing, n.o.s. (Inhalation Hazard Zone A)						
3388	**142**	Poisonous by inhalation liquid, oxidizing, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.5 km (0.4 mi)	1.0 km (0.6 mi)
3388	**142**	Toxic by inhalation liquid, oxidizing, n.o.s. (Inhalation Hazard Zone B)						
3389	**154**	Poisonous by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone A)	60 m (200 ft)	0.4 km (0.2 mi)	0.9 km (0.6 mi)	200 m (600 ft)	1.5 km (1.0 mi)	3.0 km (1.9 mi)
3389	**154**	Toxic by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone A)						
3390	**154**	Poisonous by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.4 km (0.3 mi)	0.7 km (0.4 mi)
3390	**154**	Toxic by inhalation liquid, corrosive, n.o.s. (Inhalation Hazard Zone B)						

3456	**157**	Nitrosylsulfuric acid, solid **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.5 km	(0.3 mi)	200 m	(600 ft)	0.7 km	(0.5 mi)	2.5 km	(1.6 mi)
3456	**157**	Nitrosylsulphuric acid, solid **(when spilled in water)**												
3461	**135**	Aluminum alkyl halides, solid **(when spilled in water)**	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.4 km	(0.3 mi)	1.3 km	(0.8 mi)
3488	**131**	Poisonous by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)	60 m	(200 ft)	0.8 km	(0.5 mi)	1.7 km	(1.1 mi)	300 m	(1000 ft)	4.0 km	(2.5 mi)	6.5 km	(4.1 mi)
3488	**131**	Toxic by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)												
3489	**131**	Poisonous by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	0.7 km	(0.5 mi)
3489	**131**	Toxic by inhalation liquid, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)												
3490	**155**	Poisonous by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone A)	60 m	(200 ft)	0.8 km	(0.5 mi)	1.7 km	(1.1 mi)	300 m	(1000 ft)	4.0 km	(2.5 mi)	6.5 km	(4.1 mi)
3490	**155**	Toxic by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone A)												
3491	**155**	Poisonous by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	0.7 km	(0.5 mi)
3491	**155**	Toxic by inhalation liquid, water-reactive, flammable, n.o.s. (Inhalation Hazard Zone B)												

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3492	**131**	Poisonous by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone A)	60 m (200 ft)	0.8 km (0.5 mi)	1.7 km (1.1 mi)	300 m (1000 ft)	4.0 km (2.5 mi)	6.5 km (4.1 mi)
3492	**131**	Toxic by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone A)						
3493	**131**	Poisonous by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone B)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)
3493	**131**	Toxic by inhalation liquid, corrosive, flammable, n.o.s. (Inhalation Hazard Zone B)						
3494	**131**	Petroleum sour crude oil, flammable, toxic	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.5 km (0.3 mi)	0.7 km (0.5 mi)
9191	**143**	Chlorine dioxide, hydrate, frozen **(when spilled in water)**	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.2 km (0.2 mi)	0.6 km (0.4 mi)
9202	**168**	Carbon monoxide, refrigerated liquid (cryogenic liquid)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	200 m (600 ft)	1.2 km (0.8 mi)	4.8 km (3.0 mi)
9206	**137**	Methyl phosphonic dichloride	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.4 km (0.3 mi)	0.6 km (0.4 mi)
9263	**156**	Chloropivaloyl chloride	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	0.3 km (0.2 mi)
9264	**151**	3,5-Dichloro-2,4,6-trifluoropyridine	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	30 m (100 ft)	0.3 km (0.2 mi)	0.3 km (0.2 mi)

9269	**132**	Trimethoxysilane	30 m	(100 ft)	0.2 km	(0.1 mi)	0.5 km	(0.3 mi)	100 m	(300 ft)	0.9 km	(0.6 mi)	1.9 km	(1.2 mi)

See Next Page for Table of Water-Reactive Materials Which Produce Toxic Gases

"+" means distance can be larger in certain atmospheric conditions

HOW TO USE TABLE 2 – WATER-REACTIVE MATERIALS WHICH PRODUCE TOXIC GASES

Table 2 lists materials which produce large amounts of Toxic Inhalation Hazard (TIH) gases when spilled in water and identifies the TIH gases produced.

The materials are listed by ID number order.

These Water Reactive materials are easily identified in Table 1 as their name is immediately followed by (**when spilled in water**).

Note: Some Water Reactive materials are also TIH materials themselves (e.g., Bromine trifluoride (1746), Thionyl chloride (1836), etc.). In these instances, two entries are provided in **Table 1** for land-based and water-based spills. If the Water Reactive material **is NOT** a TIH and this material **is NOT** spilled in water, **Table 1** and **Table 2** do not apply and safety distances will be found within the appropriate orange guide.

TABLE 2 - WATER-REACTIVE MATERIALS WHICH PRODUCE TOXIC GASES

Materials Which Produce Large Amounts of Toxic-by-Inhalation (TIH) Gas(es)
When Spilled in Water

ID No.	Guide No.	Name of Material	TIH Gas(es) Produced
1162	155	Dimethyldichlorosilane	HCl
1183	139	Ethyldichlorosilane	HCl
1196	155	Ethyltrichlorosilane	HCl
1242	139	Methyldichlorosilane	HCl
1250	155	Methyltrichlorosilane	HCl
1295	139	Trichlorosilane	HCl
1298	155	Trimethylchlorosilane	HCl
1305	155P	Vinyltrichlorosilane	HCl
1305	155P	Vinyltrichlorosilane, stabilized	HCl
1340	139	Phosphorus pentasulfide, free from yellow and white Phosphorus	H_2S
1340	139	Phosphorus pentasulphide, free from yellow and white Phosphorus	H_2S
1360	139	Calcium phosphide	PH_3
1384	135	Sodium dithionite	H_2S SO_2
1384	135	Sodium hydrosulfite	H_2S SO_2
1384	135	Sodium hydrosulphite	H_2S SO_2
1397	139	Aluminum phosphide	PH_3
1419	139	Magnesium aluminum phosphide	PH_3
1432	139	Sodium phosphide	PH_3
1541	155	Acetone cyanohydrin, stabilized	HCN
1680	157	Potassium cyanide	HCN
1680	157	Potassium cyanide, solid	HCN
1689	157	Sodium cyanide	HCN
1689	157	Sodium cyanide, solid	HCN

Chemical Symbols for TIH Gases:

Br_2	Bromine	HF	Hydrogen fluoride	NO_2	Nitrogen dioxide
Cl_2	Chlorine	HI	Hydrogen iodide	PH_3	Phosphine
HBr	Hydrogen bromide	H_2S	Hydrogen sulfide	SO_2	Sulfur dioxide
HCl	Hydrogen chloride	H_2S	Hydrogen sulphide	SO_2	Sulphur dioxide
HCN	Hydrogen cyanide	NH_3	Ammonia		

TABLE 2 - WATER-REACTIVE MATERIALS WHICH PRODUCE TOXIC GASES

Materials Which Produce Large Amounts of Toxic-by-Inhalation (TIH) Gas(es)
When Spilled in Water

ID No.	Guide No.	Name of Material	TIH Gas(es) Produced
1716	156	Acetyl bromide	HBr
1717	155	Acetyl chloride	HCl
1724	155	Allyltrichlorosilane, stabilized	HCl
1725	137	Aluminum bromide, anhydrous	HBr
1726	137	Aluminum chloride, anhydrous	HCl
1728	155	Amyltrichlorosilane	HCl
1732	157	Antimony pentafluoride	HF
1741	125	Boron trichloride	HCl
1745	144	Bromine pentafluoride	HF Br_2
1746	144	Bromine trifluoride	HF Br_2
1747	155	Butyltrichlorosilane	HCl
1752	156	Chloroacetyl chloride	HCl
1753	156	Chlorophenyltrichlorosilane	HCl
1754	137	Chlorosulfonic acid	HCl
1754	137	Chlorosulfonic acid and Sulfur trioxide mixture	HCl
1754	137	Chlorosulphonic acid	HCl
1754	137	Chlorosulphonic acid and Sulphur trioxide mixture	HCl
1754	137	Sulfur trioxide and Chlorosulfonic acid	HCl
1754	137	Sulphur trioxide and Chlorosulphonic acid	HCl
1758	137	Chromium oxychloride	HCl
1762	156	Cyclohexenyltrichlorosilane	HCl
1763	156	Cyclohexyltrichlorosilane	HCl
1765	156	Dichloroacetyl chloride	HCl

Chemical Symbols for TIH Gases:

Br_2	Bromine	HF	Hydrogen fluoride	NO_2	Nitrogen dioxide
Cl_2	Chlorine	HI	Hydrogen iodide	PH_3	Phosphine
HBr	Hydrogen bromide	H_2S	Hydrogen sulfide	SO_2	Sulfur dioxide
HCl	Hydrogen chloride	H_2S	Hydrogen sulphide	SO_2	Sulphur dioxide
HCN	Hydrogen cyanide	NH_3	Ammonia		

Use this list only when material is spilled in water.

TABLE 2 - WATER-REACTIVE MATERIALS WHICH PRODUCE TOXIC GASES

Materials Which Produce Large Amounts of Toxic-by-Inhalation (TIH) Gas(es)
When Spilled in Water

ID No.	Guide No.	Name of Material	TIH Gas(es) Produced
1766	156	Dichlorophenyltrichlorosilane	HCl
1767	155	Diethyldichlorosilane	HCl
1769	156	Diphenyldichlorosilane	HCl
1771	156	Dodecyltrichlorosilane	HCl
1777	137	Fluorosulfonic acid	HF
1777	137	Fluorosulphonic acid	HF
1781	156	Hexadecyltrichlorosilane	HCl
1784	156	Hexyltrichlorosilane	HCl
1799	156	Nonyltrichlorosilane	HCl
1800	156	Octadecyltrichlorosilane	HCl
1801	156	Octyltrichlorosilane	HCl
1804	156	Phenyltrichlorosilane	HCl
1806	137	Phosphorus pentachloride	HCl
1808	137	Phosphorus tribromide	HBr
1809	137	Phosphorus trichloride	HCl
1810	137	Phosphorus oxychloride	HCl
1815	132	Propionyl chloride	HCl
1816	155	Propyltrichlorosilane	HCl
1818	157	Silicon tetrachloride	HCl
1828	137	Sulfur chlorides	HCl SO_2 H_2S
1828	137	Sulphur chlorides	HCl SO_2 H_2S
1834	137	Sulfuryl chloride	HCl
1834	137	Sulphuryl chloride	HCl

Chemical Symbols for TIH Gases:

Br_2	Bromine	HF	Hydrogen fluoride	NO_2	Nitrogen dioxide
Cl_2	Chlorine	HI	Hydrogen iodide	PH_3	Phosphine
HBr	Hydrogen bromide	H_2S	Hydrogen sulfide	SO_2	Sulfur dioxide
HCl	Hydrogen chloride	H_2S	Hydrogen sulphide	SO_2	Sulphur dioxide
HCN	Hydrogen cyanide	NH_3	Ammonia		

TABLE 2 - WATER-REACTIVE MATERIALS WHICH PRODUCE TOXIC GASES

Materials Which Produce Large Amounts of Toxic-by-Inhalation (TIH) Gas(es)
When Spilled in Water

ID No.	Guide No.	Name of Material	TIH Gas(es) Produced
1836	137	Thionyl chloride	HCl SO_2
1838	137	Titanium tetrachloride	HCl
1898	156	Acetyl iodide	HI
1923	135	Calcium dithionite	H_2S SO_2
1923	135	Calcium hydrosulfite	H_2S SO_2
1923	135	Calcium hydrosulphite	H_2S SO_2
1929	135	Potassium dithionite	H_2S SO_2
1929	135	Potassium hydrosulfite	H_2S SO_2
1929	135	Potassium hydrosulphite	H_2S SO_2
1931	171	Zinc dithionite	H_2S SO_2
1931	171	Zinc hydrosulfite	H_2S SO_2
1931	171	Zinc hydrosulphite	H_2S SO_2
2004	135	Magnesium diamide	NH_3
2011	139	Magnesium phosphide	PH_3
2012	139	Potassium phosphide	PH_3
2013	139	Strontium phosphide	PH_3
2308	157	Nitrosylsulfuric acid	NO_2
2308	157	Nitrosylsulfuric acid, liquid	NO_2
2308	157	Nitrosylsulfuric acid, solid	NO_2
2308	157	Nitrosylsulphuric acid	NO_2
2308	157	Nitrosylsulphuric acid, liquid	NO_2
2308	157	Nitrosylsulphuric acid, solid	NO_2
2353	132	Butyryl chloride	HCl

Chemical Symbols for TIH Gases:

Br_2	Bromine	HF	Hydrogen fluoride	NO_2	Nitrogen dioxide
Cl_2	Chlorine	HI	Hydrogen iodide	PH_3	Phosphine
HBr	Hydrogen bromide	H_2S	Hydrogen sulfide	SO_2	Sulfur dioxide
HCl	Hydrogen chloride	H_2S	Hydrogen sulphide	SO_2	Sulphur dioxide
HCN	Hydrogen cyanide	NH_3	Ammonia		

Use this list only when material is spilled in water.

TABLE2 - WATER-REACTIVE MATERIALS WHICH PRODUCE TOXIC GASES

Materials Which Produce Large Amounts of Toxic-by-Inhalation (TIH) Gas(es)
When Spilled in Water

ID No.	Guide No.	Name of Material	TIH Gas(es) Produced
2395	132	Isobutyryl chloride	HCl
2434	156	Dibenzyldichlorosilane	HCl
2435	156	Ethylphenyldichlorosilane	HCl
2437	156	Methylphenyldichlorosilane	HCl
2495	144	Iodine pentafluoride	HF
2691	137	Phosphorus pentabromide	HBr
2692	157	Boron tribromide	HBr
2806	138	Lithium nitride	NH_3
2977	166	Radioactive material, Uranium hexafluoride, fissile	HF
2977	166	Uranium hexafluoride, fissile containing more than 1% Uranium-235	HF
2978	166	Radioactive material, Uranium hexafluoride	HF
2978	166	Uranium hexafluoride	HF
2978	166	Uranium hexafluoride, non fissile or fissile-excepted	HF
2985	155	Chlorosilanes, flammable, corrosive, n.o.s	HCl
2985	155	Chlorosilanes, n.o.s	HCl
2986	155	Chlorosilanes, corrosive, flammable, n.o.s	HCl
2986	155	Chlorosilanes, n.o.s	HCl
2987	156	Chlorosilanes, corrosive, n.o.s	HCl
2987	156	Chlorosilanes, n.o.s	HCl
2988	139	Chlorosilanes, n.o.s	HCl
2988	139	Chlorosilanes, water-reactive, flammable, corrosive, n.o.s.	HCl
3048	157	Aluminum phosphide pesticide	PH_3

Chemical Symbols for TIH Gases:

Br_2	Bromine	HF	Hydrogen fluoride	NO_2	Nitrogen dioxide
Cl_2	Chlorine	HI	Hydrogen iodide	PH_3	Phosphine
HBr	Hydrogen bromide	H_2S	Hydrogen sulfide	SO_2	Sulfur dioxide
HCl	Hydrogen chloride	H_2S	Hydrogen sulphide	SO_2	Sulphur dioxide
HCN	Hydrogen cyanide	NH_3	Ammonia		

TABLE 2 - WATER-REACTIVE MATERIALS WHICH PRODUCE TOXIC GASES

Materials Which Produce Large Amounts of Toxic-by-Inhalation (TIH) Gas(es)
When Spilled in Water

ID No.	Guide No.	Name of Material	TIH Gas(es) Produced
3049	138	Metal alkyl halides, water-reactive, n.o.s	HCl
3049	138	Metal aryl halides, water-reactive, n.o.s	HCl
3052	135	Aluminum alkyl halide	HCl
3052	135	Aluminum alkyl halides, liquid	HCl
3052	135	Aluminum alkyl halides, solid	HCl
3361	156	Chlorosilanes, poisonous, corrosive, n.o.s.	HCl
3361	156	Chlorosilanes, toxic, corrosive, n.o.s.	HCl
3362	155	Chlorosilanes, poisonous, corrosive, flammable, n.o.s.	HCl
3362	155	Chlorosilanes, toxic, corrosive, flammable, n.o.s.	HCl
3456	157	Nitrosylsulfuric acid, solid	NO_2
3456	157	Nitrosylsulphuric acid, solid	NO_2
3461	135	Aluminum alkyl halides, solid	HCl
9191	143	Chlorine dioxide, hydrate, frozen	Cl_2

Chemical Symbols for TIH Gases:

Br_2	Bromine	HF	Hydrogen fluoride	NO_2	Nitrogen dioxide
Cl_2	Chlorine	HI	Hydrogen iodide	PH_3	Phosphine
HBr	Hydrogen bromide	H_2S	Hydrogen sulfide	SO_2	Sulfur dioxide
HCl	Hydrogen chloride	H_2S	Hydrogen sulphide	SO_2	Sulphur dioxide
HCN	Hydrogen cyanide	NH_3	Ammonia		

Use this list only when material is spilled in water.

NOTES

HOW TO USE TABLE 3 – INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES FOR DIFFERENT QUANTITIES OF SIX COMMON TIH GASES

Table 3 lists Toxic Inhalation Hazard materials that may be more commonly encountered.

The selected materials are:

- Ammonia (UN1005)
- Chlorine (UN1017)
- Ethylene oxide (UN1040)
- Hydrogen chloride (UN1050) and Hydrogen chloride, refrigerated liquid (UN2186)
- Hydrogen fluoride (UN1052)
- Sulfur dioxide/Sulphur dioxide (UN1079)

The materials are presented in alphabetical order and provide Initial Isolation and Protective Action Distances for large spills (more than 208 liters or 55 US gallons) involving different container types (therefore different volume capacities) for day time and night time situations and different wind speeds.

TABLE 3 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES FOR DIFFERENT QUANTITIES OF SIX COMMON TIH GASES

TRANSPORT CONTAINER	First ISOLATE in all Directions		Then PROTECT persons Downwind during								
			DAY						NIGHT		
			Low wind (< 6 mph = < 10 km/h)		Moderate wind (6-12 mph = 10 - 20 km/h)		High wind (> 12 mph = > 20 km/h)		Low wind (< 6 mph = < 10 km/h)		Moderate wind (6-12 mph = 10 - 20 km/h)		High wind (> 12 mph = > 20 km/h)	
	Meters	(Feet)	Km	(Miles)	Km	(Miles)	Km	(Miles)	Km	(Miles)	Km	(Miles)	Km	(Miles)
UN1005 Ammonia, anhydrous: Large Spills														
Rail tank car	300	(1000)	2.3	(1.4)	1.3	(0.8)	1.0	(0.6)	6.3	(3.9)	2.6	(1.6)	1.3	(0.8)
Highway tank truck or trailer	125	(400)	1.0	(0.6)	0.5	(0.3)	0.3	(0.2)	2.6	(1.6)	0.8	(0.5)	0.5	(0.3)
Agricultural nurse tank	60	(200)	0.6	(0.4)	0.3	(0.2)	0.3	(0.2)	1.5	(0.9)	0.5	(0.3)	0.3	(0.2)
Multiple small cylinders	30	(100)	0.3	(0.2)	0.2	(0.1)	0.2	(0.1)	0.8	(0.5)	0.3	(0.2)	0.2	(0.1)
UN1017 Chlorine: Large Spills														
Rail tank car	1000	(3000)	11+	(7+)	9.0	(5.6)	5.5	(3.4)	11+	(7+)	11+	(7+)	7.1	(4.4)
Highway tank truck or trailer	1000	(3000)	10.6	(6.6)	3.5	(2.2)	2.9	(1.8)	11+	(7+)	5.5	(3.4)	4.2	(2.6)
Multiple ton cylinders	400	(1250)	4.0	(2.5)	1.5	(0.9)	1.1	(0.7)	7.9	(4.9)	2.7	(1.7)	1.5	(0.9)
Multiple small cylinders or single ton cylinder	250	(800)	2.6	(1.6)	1.0	(0.6)	0.8	(0.5)	5.6	(3.5)	1.8	(1.1)	0.8	(0.5)

"+" means distance can be larger in certain atmospheric conditions

TRANSPORT CONTAINER	First ISOLATE in all Directions		Then **PROTECT** persons Downwind during									
			DAY						NIGHT			
			Low wind (< 6 mph = < 10 km/h)		Moderate wind (6-12 mph = 10 - 20 km/h)		High wind (> 12 mph = > 20 km/h)		Low wind (< 6 mph = < 10 km/h)		Moderate wind (6-12 mph = 10 - 20 km/h)		High wind (> 12 mph = > 20 km/h)	
	Meters	(Feet)	Km	(Miles)	Km	(Miles)	Km	(Miles)	Km	(Miles)	Km	(Miles)	Km	(Miles)
UN1040 Ethylene oxide: Large Spills														
Rail tank car	200	(600)	1.4	(0.9)	0.8	(0.5)	0.6	(0.4)	4.0	(2.5)	1.4	(0.9)	0.8	(0.5)
Highway tank truck or trailer	100	(300)	0.8	(0.5)	0.5	(0.3)	0.3	(0.2)	2.1	(1.3)	0.6	(0.4)	0.5	(0.3)
Multiple small cylinders or single ton cylinder	30	(100)	0.3	(0.2)	0.2	(0.1)	0.2	(0.1)	0.8	(0.5)	0.3	(0.2)	0.2	(0.1)
TRANSPORT CONTAINER	**UN1050 Hydrogen chloride: Large Spills UN2186 Hydrogen chloride, refrigerated liquid: Large Spills**													
Rail tank car	600	(2000)	6.1	(3.8)	2.3	(1.4)	1.8	(1.1)	11+	(7+)	4.0	(2.5)	2.6	(1.6)
Highway tank truck or trailer	300	(1000)	3.1	(1.9)	1.1	(0.7)	0.8	(0.5)	7.4	(4.6)	2.1	(1.3)	1.0	(0.6)
Multiple ton cylinders	60	(200)	0.6	(0.4)	0.3	(0.2)	0.2	(0.1)	1.8	(1.1)	0.3	(0.2)	0.2	(0.1)
Multiple small cylinders or single ton cylinder	45	(150)	0.5	(0.3)	0.2	(0.1)	0.2	(0.1)	1.5	(0.9)	0.3	(0.2)	0.2	(0.1)

TRANSPORT CONTAINER	First ISOLATE in all Directions		Then **PROTECT** persons Downwind during								
			DAY						NIGHT		
			Low wind (< 6 mph = < 10 km/h)		Moderate wind (6-12 mph = 10 - 20 km/h)		High wind (> 12 mph = > 20 km/h)		Low wind (< 6 mph = < 10 km/h)		Moderate wind (6-12 mph = 10 - 20 km/h)		High wind (> 12 mph = > 20 km/h)	
	Meters	(Feet)	Km	(Miles)	Km	(Miles)	Km	(Miles)	Km	(Miles)	Km	(Miles)	Km	(Miles)
UN1052 Hydrogen fluoride: Large Spills														
Rail tank car	400	(1250)	3.2	(2.0)	1.9	(1.2)	1.6	(1.0)	7.9	(4.9)	3.1	(1.9)	1.9	(1.2)
Highway tank truck or trailer	210	(700)	1.9	(1.2)	1.0	(0.6)	0.8	(0.5)	3.9	(2.4)	1.6	(1.0)	1.0	(0.6)
Multiple small cylinders or single ton cylinder	100	(300)	0.8	(0.5)	0.3	(0.2)	0.3	(0.2)	1.6	(1.0)	0.5	(0.3)	0.3	(0.2)
UN1079 Sulfur dioxide/Sulphur dioxide: Large Spills														
Rail tank car	1000	(3000)	11+	(7+)	11+	(7+)	7.6	(4.7)	11+	(7+)	11+	(7+)	10.8	(6.7)
Highway tank truck or trailer	1000	(3000)	11+	(7+)	7.6	(4.7)	5.1	(3.2)	11+	(7+)	10	(6.2)	6.1	(3.8)
Multiple ton cylinders	600	(2000)	7.1	(4.4)	2.7	(1.7)	1.9	(1.2)	10.5	(6.5)	4.7	(2.9)	2.9	(1.8)
Multiple small cylinders or single ton cylinder	300	(1000)	5.3	(3.3)	1.6	(1.0)	1.1	(0.7)	7.9	(4.9)	2.7	(1.7)	1.5	(0.9)

"+" means distance can be larger in certain atmospheric conditions

Appendix D

Situation / Response Checklist

Please ensure you note the following details:

- ☐ Location of incident,
- ☐ Time and date of the incident,
- ☐ Nature of the incident,
- ☐ Cause of the incident (according to Driver)
- ☐ Likely cause of the incident (according to prime contractor)
- ☐ Nature dangerous goods being transported when the incident occurred, including:
  - ☐ Dangerous Goods classification
  - ☐ Quantity of materials being transported
- ☐ Measures taken to control any leak, spill or accidental escape of dangerous goods and any fire or explosion arising out of the incident,
- ☐ Measures taken after the incident in relation to the dangerous goods involved in the incident.