

CANUTEC Services and the ERG2024

Presented to the 2025 Indigenous Public Safety Conference

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Transport
Canada

Transports
Canada

Canada

Outline



CANUTEC

- Who we are
- What we do
- Emergency information



Emergency Response Guidebook (ERG)

- Overview of the ERG
- Scenarios



Other Information

- CANUTEC and TDG Contacts

Canadian Transport Emergency Centre

- **CANUTEC** is the **Canadian Transport Emergency Centre** operated by the Intermodal Surface Security and Emergency Preparedness (ISSEP) Directorate within Transport Canada.
- It's a national emergency centre in the event of a spill or exposure to **dangerous goods during transport.**
- Since 1979, CANUTEC has been a free nation-wide service operating 24/7.



CANUTEC – Who We Are

Emergency Response Advisors

- Scientists with chemistry, biochemistry, biology and chemical engineering backgrounds.
- Bilingual (English and French)
- Trained as Hazmat specialists
 - Hazmat Technician
 - Tank Car Specialist
 - Highway Emergency Response Specialist



CANUTEC – What We Do

Emergency
Response
Guidebook
(ERG)

Research and
special
projects

TDG
regulations

Plume
dispersion
models

Maintain
technical
databases

Awareness
presentations

Company
Registration

CANUTEC

Safety Data
Sheet (SDS)
Database

Technical advice

Simulations

Communication
information
sharing

Assist general
public

CANUTEC – What We Do

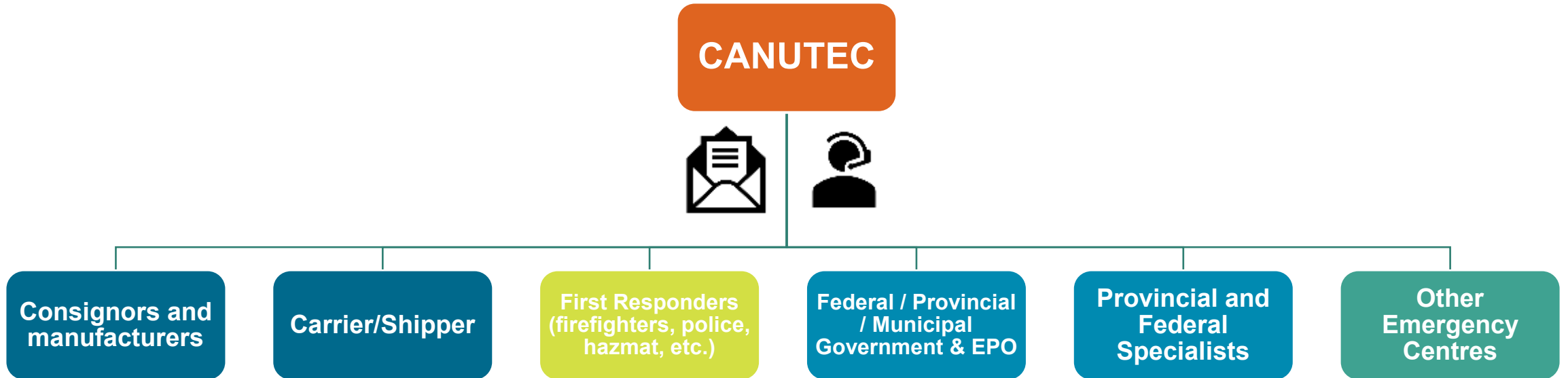
1. Provide technical advice (24/7/365)

- Chemical, physical and toxicological properties
- Product incompatibility
- Immediate public safety actions
- Isolation and evacuation distances
- Potential health effects
- Personal Protective Equipment (PPE) requirements
- Decontamination
- Mitigation techniques
- Protection measures for life, property and environment



CANUTEC – What We Do

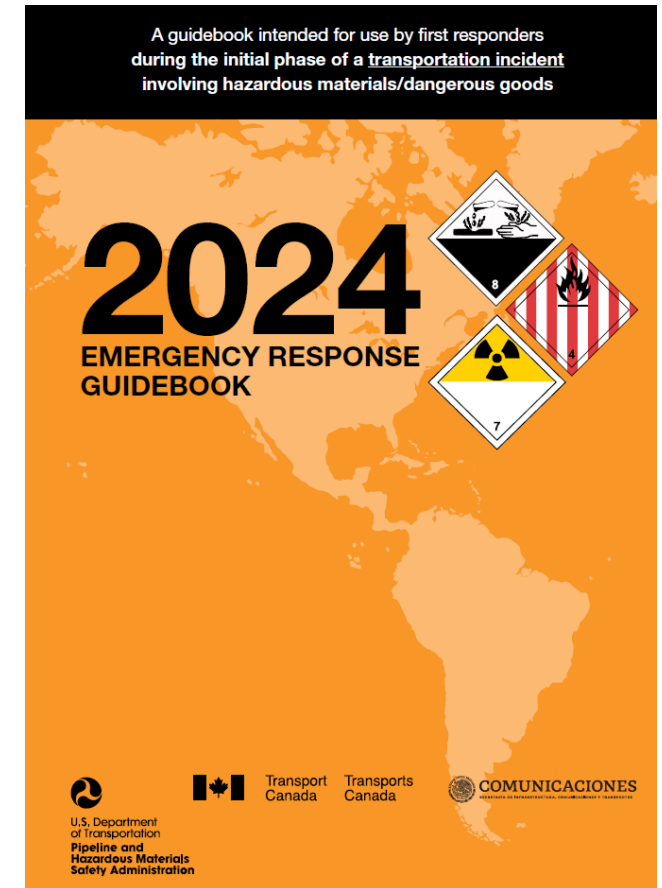
2. Coordinate communications and share information



CANUTEC – What We Do

3. Collaborate with the production of the Emergency Response Guidebook (ERG)

- Tool for use during transportation incidents involving dangerous goods that helps first responders to:
 - protect themselves and the general public during the **initial response phase** of the incident (the first 30 minutes).
- Published every 4 years
- In partnership with the:
 - U.S. Department of Transportation – Pipeline and Hazardous Materials Safety Administration (PHMSA)
 - Secretariat of Infrastructures, Communications and Transport of Mexico (SICT)
 - Chemical Information Center for Emergencies (CIQUIME) of Argentina.



CANUTEC – What We Do

4. Participate in simulations

- CANUTEC provides the opportunity for fire departments, public authorities and industry to practice their emergency response scenarios during their training exercises.
- During these types of calls, the Emergency Response Advisor will assist the person calling and provide advice for each steps of the scenario.
- CANUTEC can help build and plan the scenarios.
- CANUTEC participates in about **350 simulations** per year.

CANUTEC – What We Do

5. Register companies and maintain Safety Data Sheet (SDS) database

- CANUTEC manages close to 4 million SDS in electronic format (~10 000 SDS are received every month)
- Over 5 000 companies are registered with CANUTEC
- Information described and transmitted to emergency response scene
- SDS information is specifically critical for non-transport related incidents



CANUTEC – What We Do

6. Maintain technical databases (CANUTEC Application Suite)

The screenshot displays the NEWCAN application interface, which is a web-based database for chemical information. The interface is divided into several sections:

- Left Sidebar:** Contains navigation links for Newcan, Incidents, CRR, Notifications, Contacts, DC Contractors, Emergency Services, ERAP, Fax Tool, TDQMS, QMSYS, Satisfaction, Regs, and Admin.
- Top Bar:** Includes a search bar and a menu with options like Show All, Home, Add, Delete, Save, Cancel, Print, and List.
- General Substance Information:** Displays details for "Ammonia, anhydrous (Emergency File)". Fields include File No. (N0228), Category (AQUEOUS SOLUTION), Appearance (Ammonia, anhydrous), CAS (7664-41-7), Keywords (Nurse tank, Refrigerant, Fertilizer, Agriculture, Farm, Rodenticide), and Synonyms (N-717, Ammonia Gas, Ammonia Liquid, Ammonia 14N, Hydrogen Nitride, Dihydrogen nitride, Nitrogen trihydride, Ammonium Amide).
- Shipping Details:** A table with columns for UN Number, Shipping Name, Class, and ERG No. The entry shows UN 1002, AMMONIA, ANHYDROUS or ANHYDROUS AMMONIA, Class 2.1 (toxic), and ERG No. 122.
- Information Sources:** A table listing various documents and their titles, such as "Ammonia, anhydrous (AAR Emergency Action Guide)", "Anhydrous Ammonia in Propane Cylinders, Safety Considerations for Mitigation", and "Guide d'Intervention Chimique - CEDRE (Ammoniac), Note 68 pages".
- Phys-Chem Properties and Exposure Limits:** Includes sections for Description (Colorless gas with a sharp, penetrating, intensely irritating odour), Water Reactivity (Dissolves with evolution of heat), Incompatibilities (Reacts with acids, amides, organic peroxides, etc.), and Conditions to Avoid (Heat, fire, and sparks).
- Molecular Structure:** Shows the chemical structure of ammonia (NH₃) and its molecular weight (17.0304).
- Properties:** Lists various physical and chemical properties, including Expansion ratio (800), Odour Threshold (0.037), and Flammability Properties (Low flammability hazard).
- Comments:** A section for user notes and observations.

CANUTEC – What We Do

7. Research related to emergency response topics and dangerous goods

- CANUTEC Articles
- Lithium battery fires
- New emerging trends in PPE and decon procedures

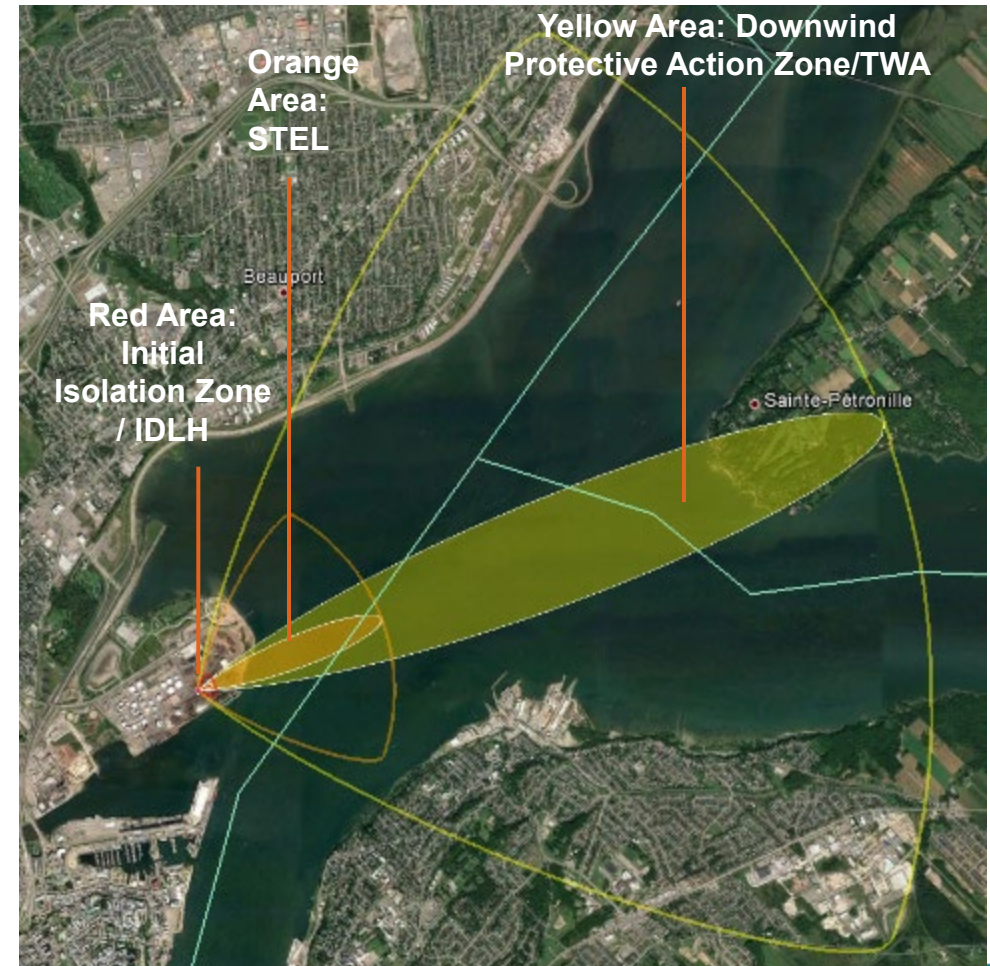
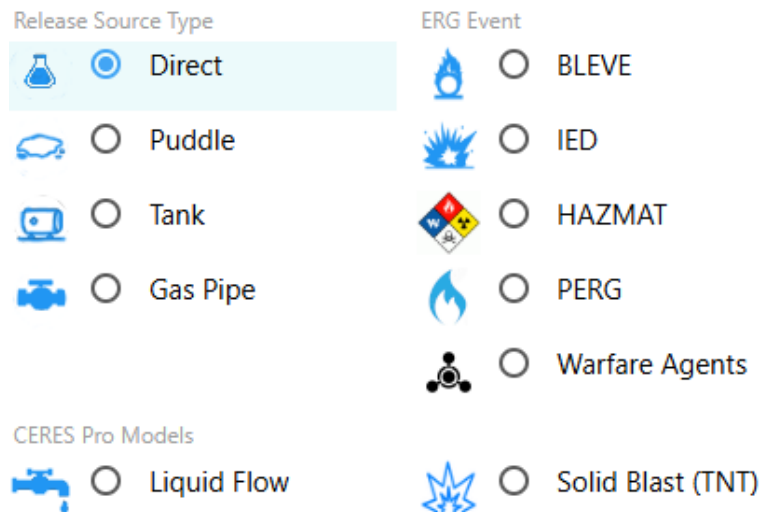
8. Participate in special projects

- Panorama / Roadrunner Exercise (tabletop exercises)
- Dynamic Response
- BLEVE and LNG project
- Jack Rabbit II

CANUTEC – What We do

9. Generate plume dispersion models

- CANUTEC advisors can generate plume dispersion models using software like CERES.



CANUTEC – What We Do

10. CANUTEC can also:

- Provide advice on TDG Regulations
- Prepare and participate in TDG Awareness Sessions
- Assist the public during emergencies





Outline



CANUTEC

- ~~Who we are~~
- ~~What we do~~
- **Emergency information**



Emergency Response Guidebook (ERG)

- Overview of the ERG
- Scenarios



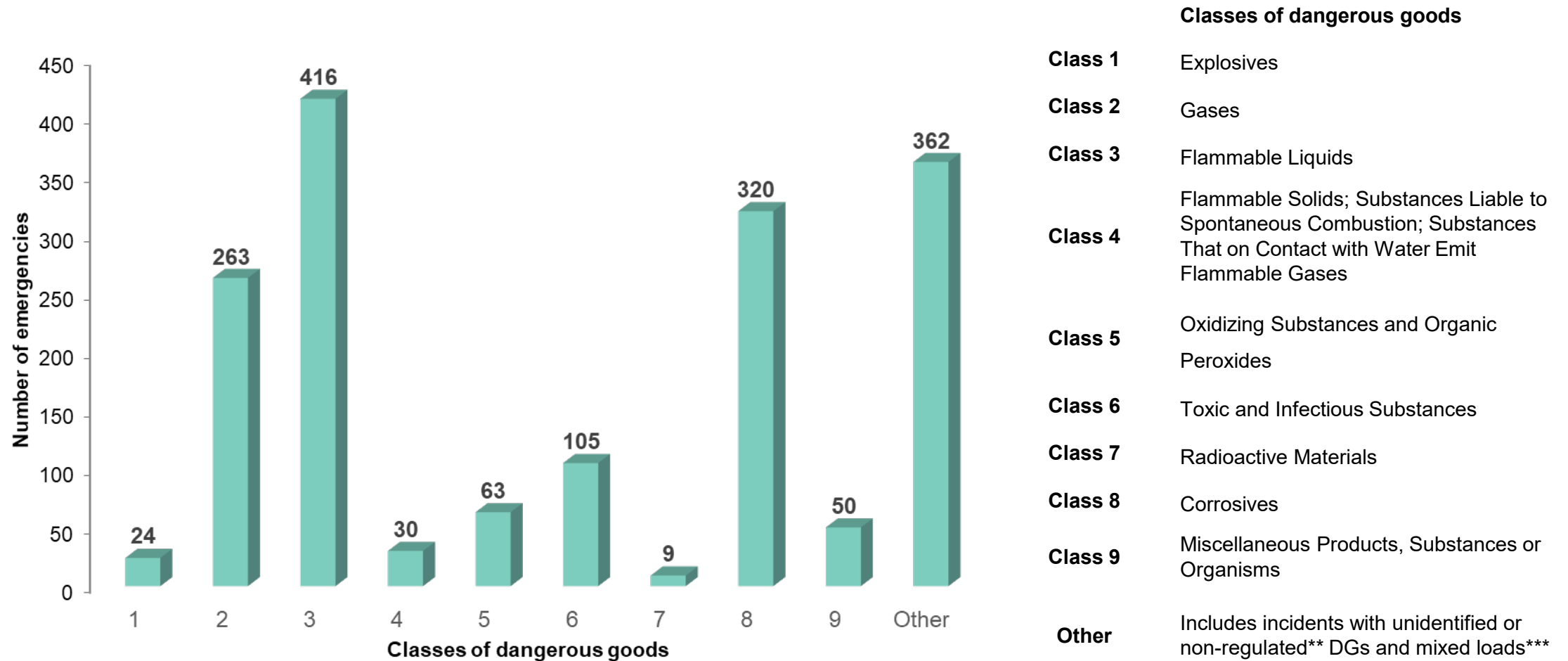
Other Information

- CANUTEC and TDG Contacts

Call Handling Procedures – Article 24

- CANUTEC handles approximately **25,000 communications** and **2,000 emergencies** per year.
- All calls are handled immediately by the advisors, then dealt with according to their priority.
- Timely provision of technical information is critical and requires immediate treatment in emergency situations.
- Due to the **privileged information criteria under the TDG Act, Article 24**, the information received at CANUTEC **cannot be shared or widely disseminated.**

CANUTEC – Emergencies by Class for 2024



2024

EMERGENCY RESPONSE GUIDEBOOK



Emergency Response Guidebook (ERG)

- The ***Emergency Response Guidebook (ERG)*** is a tool for use during a transportation incident involving dangerous goods that helps first responders to:
 - quickly identify the specific or generic hazards of the material(s) involved; and
 - protect themselves and the general public during the ***initial response phase*** of the incident (the first 30 minutes).

**Before an emergency – become familiar with this guidebook!
Without the proper training/equipment, do not take on an offensive role during an incident.**

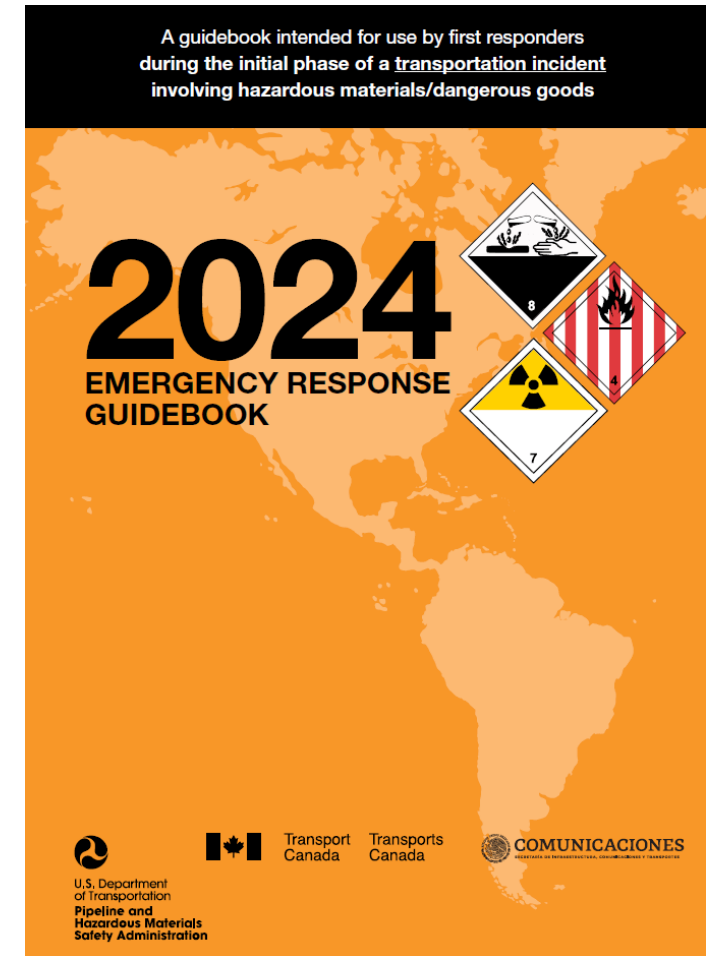
Emergency Response Guidebook (ERG)

The **Emergency Response Guidebook (ERG)** is prepared by:

CANUTEC / Transport Canada

In partnership with the:

- U.S. Department of Transportation – Pipeline and Hazardous Materials Safety Administration (PHMSA)
- Secretariat of Infrastructures, Communications and Transport of Mexico (SICT)
- Chemical Information Center for Emergencies (CIQUIME) of Argentina.



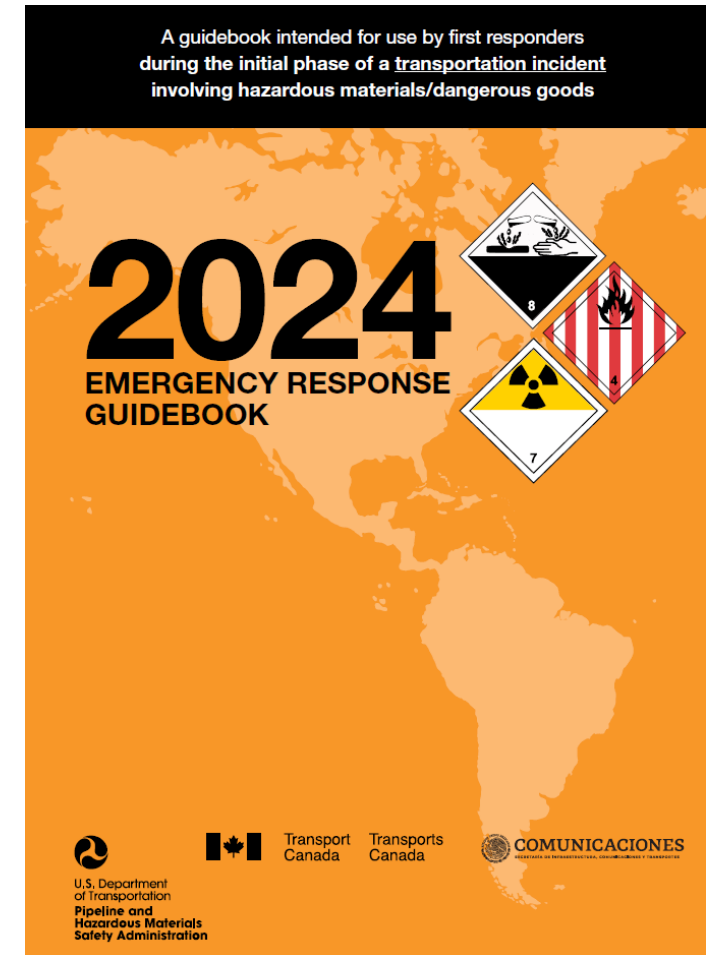
Emergency Response Guidebook (ERG)

The ERG is published every **4 years**. It is available in:

- Paper format;
- PDF format;
- Online version;
- Mobile App for smartphones (Android, Apple).

Training material is available on **CANUTEC's website**:

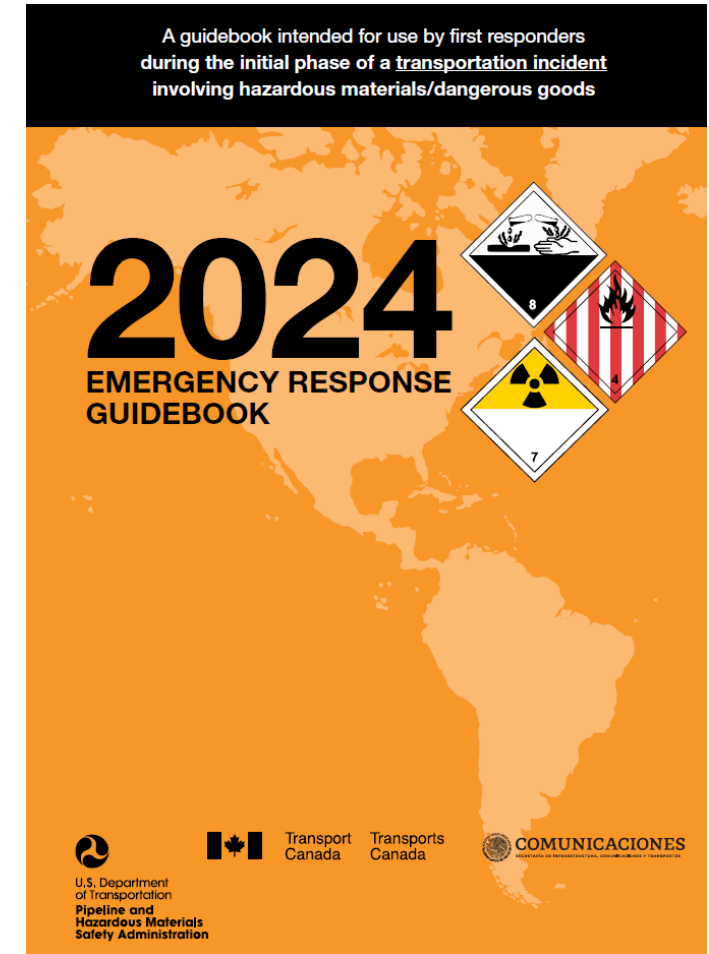
- Training package;
- Awareness video;
- Summary of the changes made to the 2024 edition.



Emergency Response Guidebook (ERG)

How to obtain free paper copies:

- Paper copies of the ERG2024 are distributed for free to Canadian First Responders from public emergency services (police, fire department, ambulance services, etc.).
- The distribution policy can be found at the following website: [Emergency response guidebook: paper copy](#)
- To order free paper copies, please submit your request by [filling the ERG order form](#).



Overview of the ERG

The main sections are:

- Flowchart (How to use the ERG)
- Table of Markings, Labels and Placards
- Rail Car Identification Chart
- Road Trailer Identification Chart
- **YELLOW** section (list of materials by **ID [UN] number**)
- **BLUE** section (list of materials by **name**)
- **ORANGE** section (appropriate emergency response guides)
- **GREEN** section (initial isolation and protective action distances for **green highlighted** substances)

YELLOW Section

- The substances are listed in numerical order of their 4-digit ID (UN) numbers.
- The ID (UN) number is followed by the 3-digit Guide number (**ORANGE** section) and the name of the material.
- Some substances are **highlighted in green**, and you may need to refer to the **GREEN** section for initial isolation and protective action distances.

ID No.	Guide No.	Name of Material	ID No.	Guide No.	Name of Material
1490	140	Potassium permanganate	1544	151	Alkaloid salts, solid, n.o.s. (poisonous)
1491	144	Potassium peroxide	1545	131	Allyl isothiocyanate, stabilized
1492	140	Potassium persulfate	1546	151	Ammonium arsenate
1492	140	Potassium persulphate	1547	153	Aniline
1493	140	Silver nitrate	1548	153	Aniline hydrochloride
1494	140	Sodium bromate	1549	157	Antimony compound, inorganic, solid, n.o.s.
1495	140	Sodium chlorate	1550	151	Antimony lactate
1496	143	Sodium chlorite	1551	151	Antimony potassium tartrate
1498	140	Sodium nitrate	1553	154	Arsenic acid, liquid
1499	140	Sodium nitrate and potassium nitrate mixture	1554	154	Arsenic acid, solid
1500	141	Sodium nitrite	1555	151	Arsenic bromide
1502	140	Sodium perchlorate	1556	152	Arsenic compound, liquid, n.o.s.
1503	140	Sodium permanganate	1556	152	Methyldichloroarsine
1504	144	Sodium peroxide	1557	152	Arsenic compound, solid, n.o.s.
1505	140	Sodium persulfate	1558	152	Arsenic
1505	140	Sodium persulphate	1559	151	Arsenic pentoxide
1506	143	Strontium chlorate	1560	157	Arsenic chloride
1507	140	Strontium nitrate	1560	157	Arsenic trichloride
1508	140	Strontium perchlorate	1561	151	Arsenic trioxide
1509	143	Strontium peroxide	1562	152	Arsenical dust
1510	143	Tetranitromethane	1564	154	Barium compound, n.o.s.
1511	140	Urea hydrogen peroxide	1565	157	Barium cyanide
1512	140	Zinc ammonium nitrite	1566	154	Beryllium compound, n.o.s.
1513	140	Zinc chlorate	1567	134	Beryllium powder
1514	140	Zinc nitrate	1569	131	Bromoacetone
1515	140	Zinc permanganate	1570	151	Brucine
1516	143	Zinc peroxide	1571	113	Barium azide, wetted with not less than 50% water
1517	113	Zirconium picramate, wetted with not less than 20% water	1572	151	Cacodylic acid
1541	156	Acetone cyanohydrin, stabilized	1573	151	Calcium arsenate
1544	151	Alkaloids, solid, n.o.s. (poisonous)			

YELLOW Section – Overview Question

You are facing spill of UN1823. What is the name of the material for UN1823 and what Guide number should you refer to?

- a) Sodium hydride, 138
- b) Sodium hydroxide, solution, 154
- c) Sodium hydrosulphite, 135
- d) Sodium hydroxide, solid, 154

YELLOW Section – Overview Answer

You are facing spill of UN1823. What is the name of the material for UN1823 and what Guide number should you refer to?

- a) Sodium hydride, 138
- b) Sodium hydroxide, solution, 154
- c) Sodium hydrosulphite, 135
- d) **Sodium hydroxide, solid, 154**

ID No.	Guide No.	Name of Material	ID No.	Guide No.	Name of Material
1789	157	Muriatic acid	1813	154	Potassium hydroxide, solid
1790	157	Hydrofluoric acid	1814	154	Caustic potash, solution
1791	154	Hypochlorite solution	1814	154	Potassium hydroxide, solution
1791	154	Sodium hypochlorite	1815	155	Propionyl chloride
1792	157	Iodine monochloride, solid	1816	155	Propyltrichlorosilane
1793	153	Isopropyl acid phosphate	1817	137	Pyrosulfuryl chloride
1794	154	Lead sulfate, with more than 3% free acid	1817	137	Pyrosulphuryl chloride
1794	154	Lead sulphate, with more than 3% free acid	1818	157	Silicon tetrachloride
1796	157	Nitrating acid mixture with more than 50% nitric acid	1819	154	Sodium aluminate, solution
1796	157	Nitrating acid mixture with not more than 50% nitric acid	1823	154	Caustic soda, solid
1798	157	Aqua regia	1823	154	Sodium hydroxide, solid
1798	157	Nitrohydrochloric acid	1824	154	Caustic soda, solution
1799	156	Nonyltrichlorosilane	1824	154	Sodium hydroxide, solution
1800	156	Octadecyltrichlorosilane	1825	157	Sodium monoxide
			1826	157	Nitrating acid mixture, spent, with more than 50% nitric acid

BLUE Section

- The substances are listed in alphabetical order of the material name.
- The name of the material is followed by the 3-digit Guide number (**ORANGE** section) and the ID (UN) number.
- Some substances are highlighted in green, and you may need to refer to the **GREEN** section for initial isolation and protective action distances.

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Bromoform	159	2515	n-Butyl formate	129	1128
1-Bromo-3-methylbutane	130	2341	tert-Butyl hypochlorite	135	3255
Bromomethylpropanes	130	2342	N,n-Butylimidazole	152	2690
2-Bromo-2-nitropropane-1,3-diol	133	3241	n-Butyl isocyanate	155P	2485
2-Bromopentane	130	2343	tert-Butyl isocyanate	155	2484
Bromopropanes	129	2344	Butyl mercaptan	130	2347
3-Bromopropyne	130	2345	n-Butyl methacrylate, stabilized	130P	2227
Bromotrifluoroethylene	116	2419	Butyl methyl ether	127	2350
Bromotrifluoromethane	126	1009	Butyl nitrites	129	2351
Brucine	151	1570	Butyl propionates	130	1914
Butadienes, stabilized	116P	1010	Butyltoluenes	152	2667
Butadienes and hydrocarbon mixture, stabilized	116P	1010	Butyltrichlorosilane	155	1747
Butane	115	1011	5-tert-Butyl-2,4,6-trinitro-m-xylene	149	2956
Butane	115	1075	Butyl vinyl ether, stabilized	127P	2352
Butanedione	127	2346	1,4-Butynediol	153	2716
Butanols	129	1120	Butyraldehyde	129P	1129
Butyl acetates	129	1123	Butyraldoxime	129	2840
Butyl acid phosphate	153	1718	Butyric acid	153	2820
Butyl acrylates, stabilized	129P	2348	Butyric anhydride	156	2739
n-Butylamine	132	1125	Butyronitrile	131	2411
N-Butylaniline	153	2738	Butyryl chloride	155	2353
Butylbenzenes	128	2709	Cacodylic acid	151	1572
n-Butyl bromide	130	1126	Cadmium compound	154	2570
n-Butyl chloride	130	1127	Caesium	138	1407
n-Butyl chloroformate	155	2743	Caesium hydroxide	157	2682
tert-Butylcyclohexyl chloroformate	156	2747	Caesium hydroxide, solution	154	2681
Butylene	115	1012	Caesium nitrate	140	1451
Butylene	115	1075	Calcium	138	1401
1,2-Butylene oxide, stabilized	127P	3022	Calcium, pyrophoric	135	1855
Butyl ethers	128	1149	Calcium alloys, pyrophoric	135	1855

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BLUE Section – Overview Question

You are facing a sulfuric acid spill (concentration 50%). What is the Guide number and what is the ID (UN) number for that sulfuric acid solution?

BLUE Section – Overview Answer

You are facing a sulfuric acid spill (concentration 50%). What is the Guide number and what is the ID (UN) number for that sulfuric acid solution?

GUIDE 157, UN2796

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Sulphur, molten	133	2448	Tetraethylenepentamine	153	2320
Sulphur chlorides	137	1828	Tetraethyl silicate	129	1292
Sulphur dioxide	125	1079	1,1,1,2-Tetrafluoroethane	126	3159
Sulphur hexafluoride	126	1080	Tetrafluoroethylene, stabilized	116P	1081
Sulphuric acid	137	1830	Tetrafluoromethane	126	1982
Sulphuric acid, fuming	137	1831	1,2,3,6-Tetrahydrobenzaldehyde	129	2498
Sulphuric acid, spent	137	1832	Tetrahydrofuran	127	2056
Sulphuric acid, with more than 51% acid	137	1830	Tetrahydrofurfurylamine	129	2943
Sulphuric acid, with not more than 51% acid	157	2796	Tetrahydrophthalic anhydrides	156	2698
Sulphuric acid and hydrofluoric acid mixture	157	1786	1,2,3,6-Tetrahydropyridine	129	2410
Sulphurous acid	154	1833	Tetrahydrothiophene	130	2412

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ORANGE Section – General First Aid

GENERAL FIRST AID

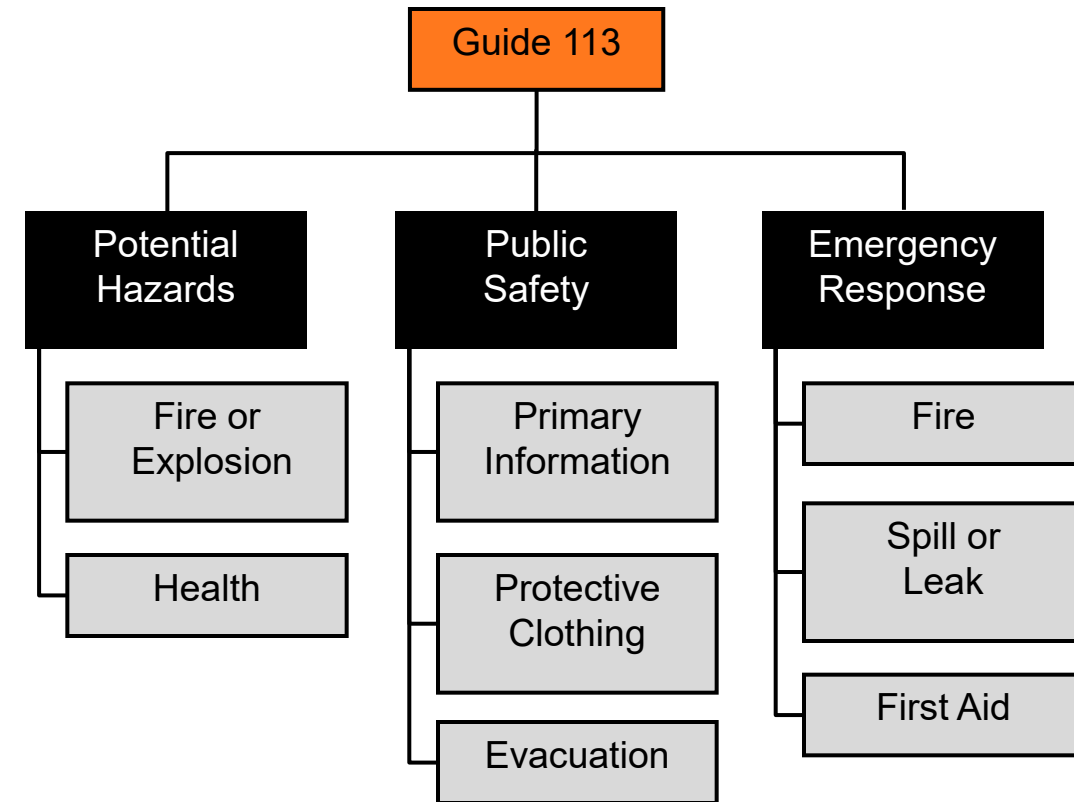
- Call 911 or emergency medical service.
- Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and avoid contamination.
- Move victim to fresh air if it can be done safely.
- Administer oxygen if breathing is difficult.
- If victim is not breathing:
 - DO NOT perform mouth-to-mouth resuscitation; the victim may have ingested or inhaled the substance.
 - If equipped and pulse detected, wash face and mouth, then give artificial respiration using a proper respiratory medical device (bag-valve mask, pocket mask equipped with a one-way valve or other device).
 - If no pulse detected or no respiratory medical device available, provide continuous compressions. Conduct a pulse check every two minutes or monitor for any signs of spontaneous respirations.
- Remove and isolate contaminated clothing and shoes.
- For minor skin contact, avoid spreading material on unaffected skin.
- In case of contact with substance, remove immediately by flushing skin or eyes with running water for at least 20 minutes.
- For severe burns, immediate medical attention is required.
- Effects of exposure (inhalation, ingestion, or skin contact) to substance may be delayed.
- Keep victim calm and warm.
- Keep victim under observation.
- For further assistance, contact your local Poison Control Center.
- **Note:** Basic Life Support (BLS) and Advanced Life Support (ALS) should be done by trained professionals.

- General first aid guidance is now found in a new section situated before Guide 111 since the ERG2024.

ORANGE Section

- Each guide in the **ORANGE** section:
 - applies to a group of materials with similar chemical and toxicological characteristics.
 - recommends safety and emergency response procedures to protect yourself and the public.
- There are three main parts in each guide.

In **Potential Hazards**, depending on the primary hazard for the substances, the subsection **Fire or Explosion** or **Health** will appear first (see *next slide*).



ORANGE Section

GUIDE 113 FLAMMABLE MATERIALS (WET/DESENSITIZED EXPLOSIVE)	FLAMMABLE MATERIALS (WET/DESENSITIZED EXPLOSIVE) GUIDE 113
POTENTIAL HAZARDS FIRE OR EXPLOSION - Flammable/combustible material. - May be ignited by heat, sparks or flames. DRIED OUT material may explode if exposed to heat, flame, friction or shock; treat as an explosive (GUIDE 112). - Keep material wet with water or treat as an explosive (GUIDE 112). - Runoff to sewer may create fire or explosion hazard. HEALTH - Some are toxic and may be fatal if inhaled, ingested or absorbed through skin. Specifically, Dinitrophenol, wetted (UN1320); Dinitrophenolates, wetted (UN1321), Sodium dinitro-o-cresolate, wetted (UN1348); and Barium azide, wetted (UN1571) are known to be toxic. - Contact may cause burns to skin and eyes. - Fire may produce irritating, corrosive and/or toxic gases. - Runoff from fire control or dilution water may cause environmental contamination. PUBLIC SAFETY CALL 911. Then call emergency response telephone number on shipping paper. If shipping paper not available or no answer, refer to appropriate telephone number listed on the inside back cover. - Keep unauthorized personnel away. - Stay upwind, uphill and/or upstream. - Ventilate closed spaces before entering, but only if properly trained and equipped. PROTECTIVE CLOTHING - Wear positive pressure self-contained breathing apparatus (SCBA). - Structural firefighters' protective clothing provides thermal protection but only limited chemical protection. EVACUATION Immediate precautionary measure - Isolate spill or leak area immediately for at least 100 meters (330 feet) in all directions. Large Spill - Consider initial evacuation for 500 meters (1/3 mile) in all directions. Fire - If tank, rail tank car or highway tank is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.	EMERGENCY RESPONSE FIRE CARGO Fire DO NOT fight fire when fire reaches cargo! Cargo may EXPLODE! - Stop all traffic and clear the area for at least 1600 meters (1 mile) in all directions and let burn. - Do not move cargo or vehicle if cargo has been exposed to heat. TIRE or VEHICLE Fire - Use plenty of water - FLOOD it! If water is not available, use CO₂, dry chemical or dirt. - If possible, and WITHOUT RISK, use unmanned master stream devices or monitor nozzles from maximum distance to prevent fire from spreading to cargo area. - Pay special attention to tire fires as re-ignition may occur. Stand by, at a safe distance, with extinguisher ready for possible re-ignition. SPILL OR LEAK - ELIMINATE all ignition sources (no smoking, flares, sparks or flames) from immediate area. - All equipment used when handling the product must be grounded. - Do not touch or walk through spilled material. Small Spill - Flush area with large amounts of water. Large Spill - Wet down with water and dike for later disposal. - KEEP "WETTED" PRODUCT WET BY SLOWLY ADDING FLOODING QUANTITIES OF WATER. FIRST AID Refer to the "General First Aid" section.

Primary Hazard: Fire or Explosion

Secondary Hazard: Health

 In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping paper and/or the "ERAP" section.

ORANGE Section

The **Potential Hazard** section provides:

- Information on health and fire / explosion

The **Public Safety** section provides:

- General info on protective clothing and respiratory protection;
- The **Evacuation** subsection provides:
 - Immediate isolation distance, regardless of the quantity involved;
 - A suggested evacuation perimeter for large spill or fire situations AND/OR a reference to **Table 1** - Initial Isolation and Protective Action Distances (**GREEN** section).

ORANGE Section

The **Emergency Response** section provides:

- Emergency response actions to mitigate the incident;
- Instructions to follow in case of a fire;
- Actions to be taken in case of a spill/leak;
- Specific first aid guidance for a product or a guide.

Note: A *how to use the orange guides* section is situated at the start of the orange section (right before the general first aid).

GREEN Section

If the material is highlighted in green in the **YELLOW** and **BLUE** sections, you may need to refer to the **GREEN** section.

1836	137	Thionyl chloride
1837	157	Thiophosphoryl chloride
1838	137	Titanium tetrachloride
1839	153	Trichloroacetic acid

Isopropyl chloroformate	155	2407
Isopropyl 2-chloropropionate	129	2934
Isopropyl isobutyrate	127	2406
Isopropyl isocyanate	155P	2483

The **GREEN** section of the ERG consists of three parts:

TABLE 1 - Initial Isolation and Protective Action Distances;

TABLE 2 - Water-Reactive Materials which Produce Toxic Gases;

TABLE 3 - Initial Isolation and Protective Action Distances for Large Spills for Different Quantities of Six Common Toxic by Inhalation (TIH) Gases.

GREEN Section – Table 1

TABLE 1 - Initial Isolation and Protective Action Distances suggests distances to protect people from vapours resulting from spills involving dangerous goods that are:

- **Toxic by inhalation (TIH);**
- **Materials that produce toxic gases upon contact with water.**

In this table, the substances are in numerical order of their ID (UN) numbers. Some materials indicate to refer to **Table 3** for more information.

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TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

ID No.	Guide No.	Name of Material	SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)							
			First ISOLATE in all Directions		Then PROTECT persons Downwind during		First ISOLATE in all Directions		Then PROTECT persons Downwind during					
			Meters	(Feet)	DAY Kilometers (Miles)	NIGHT Kilometers (Miles)	Meters	(Feet)	DAY Kilometers (Miles)	NIGHT Kilometers (Miles)				
1005	125	Ammonia, anhydrous	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	Refer to Table 3					
1005	125	Anhydrous ammonia												
1008	125	Boron trifluoride	30 m	(100 ft)	0.2 km	(0.1 mi)	0.7 km	(0.5 mi)	400 m	(1250 ft)	2.4 km	(1.5 mi)	4.7 km	(2.9 mi)
1008	125	Boron trifluoride, compressed												
1016	119	Carbon monoxide, compressed	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	200 m	(600 ft)	1.2 km	(0.7 mi)	3.9 km	(2.4 mi)

GREEN Section – Table 1

Table 1 provides, for **small** and **large** spills, suggested distances for:

- The Initial Isolation Zone; and
- The Protective Action Zone for **day** and **night**.

The distances show the areas likely to be affected during the first 30 minutes after the materials are spilled, and this distance could increase with time.

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

			SMALL SPILLS (From a small package or small leak from a large package)						LARGE SPILLS (From a large package or from many small packages)					
ID No.	Guide No.	Name of Material	First ISOLATE in all Directions		Then PROTECT persons Downwind during				First ISOLATE in all Directions		Then PROTECT persons Downwind during			
			Meters	(Feet)	DAY		NIGHT		Meters	(Feet)	DAY		NIGHT	
					Kilometers	(Miles)	Kilometers	(Miles)			Kilometers	(Miles)	Kilometers	(Miles)
1005	125	Ammonia, anhydrous	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	Refer to Table 3					
1005	125	Anhydrous ammonia												
1008	125	Boron trifluoride	30 m	(100 ft)	0.2 km	(0.1 mi)	0.7 km	(0.5 mi)	400 m	(1250 ft)	2.4 km	(1.5 mi)	4.7 km	(2.9 mi)
1008	125	Boron trifluoride, compressed												
1016	119	Carbon monoxide, compressed	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	200 m	(600 ft)	1.2 km	(0.7 mi)	3.9 km	(2.4 mi)

Table 1 – Small and Large Spills

For the purpose of the ERG, the definitions are as follows:

- Small spill: Quantities that are 208 liters or less. This generally corresponds to a spill from a single small package (for example, a drum), a small cylinder, or a small leak from a large package.
- Large spill: Quantities that are greater than 208 liters. This usually involves a spill from a large package, or multiple spills from many small packages.

Table 1 – Initial Isolation Zone

The distances for the initial isolation zone are found in **Table 1** under “First Isolate”.

- This distance defines the radius of a zone (Initial Isolation Zone) surrounding the spill in **ALL DIRECTIONS**.
- The public within this zone should be evacuated.
- Protective clothing and respiratory protection are required.

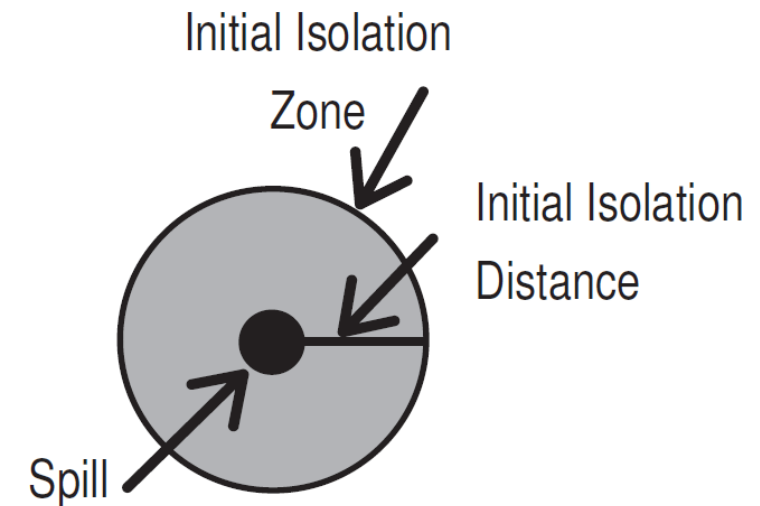
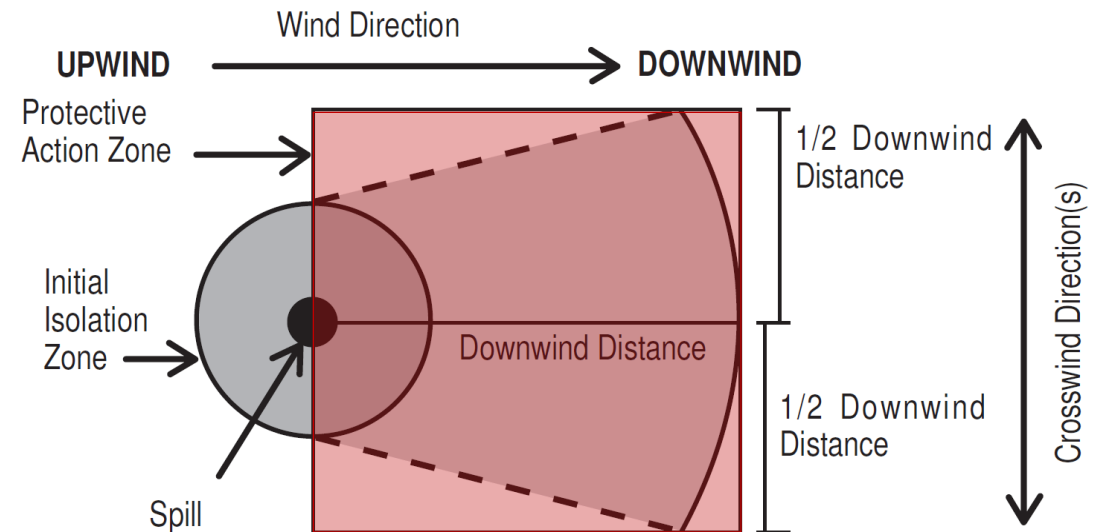


Table 1 – Protective Action Zone

The distances for the protective action zone are found in **Table 1** under “Then Protect”.

- This distance defines an area **DOWNWIND** from the incident in which people are at risk of harmful exposure.
- The responders must choose a protective action:
 - Evacuation;
 - Shelter-in-place; or
 - A combination of both.



For practical purposes, the Protective Action Zone is a square, whose length and width are the same as the distance shown in **Table 1**.

Table 1 – Protective Action Zone

The protective action distances are divided into **daytime** and **nighttime** because the atmospheric conditions will affect the size of the hazardous area.

- **Day:** after sunrise, before sunset
- **Night:** between sunset and sunrise

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

			SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)							
			First ISOLATE in all Directions		Then PROTECT persons Downwind during		First ISOLATE in all Directions		Then PROTECT persons Downwind during					
ID No.	Guide No.	Name of Material	Meters	(Feet)	DAY	NIGHT	Meters	(Feet)	DAY	NIGHT				
					Kilometers (Miles)	Kilometers (Miles)			Kilometers (Miles)	Kilometers (Miles)				
1005	125	Ammonia, anhydrous	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	Refer to Table 3					
1005	125	Anhydrous ammonia												
1008	125	Boron trifluoride	30 m	(100 ft)	0.2 km	(0.1 mi)	0.7 km	(0.5 mi)	400 m	(1250 ft)	2.4 km	(1.5 mi)	4.7 km	(2.9 mi)
1008	125	Boron trifluoride, compressed												
1016	119	Carbon monoxide, compressed	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	200 m	(600 ft)	1.2 km	(0.7 mi)	3.9 km	(2.4 mi)

GREEN Section – Table 1

- In **Table 1**, some material might have **(when spilled water)** added to the name.
- This means those substances are water-reactive and release TIH gases when spilled in water. **Table 2** provides more information.

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

			SMALL SPILLS				LARGE SPILLS			
			(From a small package or small leak from a large package)				(From a large package or from many small packages)			
ID No.	Guide No.	Name of Material	First ISOLATE		Then PROTECT		First ISOLATE		Then PROTECT	
			in all Directions		persons Downwind during		in all Directions		persons Downwind during	
					DAY	NIGHT			DAY	NIGHT
			Meters	(Feet)	Kilometers (Miles)	Kilometers (Miles)	Meters	(Feet)	Kilometers (Miles)	Kilometers (Miles)
1242	139	Methyldichlorosilane (when spilled in water)	30 m	(100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m	(200 ft)	0.5 km (0.4 mi)	1.7 km (1.1 mi)
1244	131	Methylhydrazine	30 m	(100 ft)	0.3 km (0.2 mi)	0.6 km (0.4 mi)	150 m	(500 ft)	1.5 km (0.9 mi)	2.2 km (1.4 mi)
1250	155	Methyltrichlorosilane (when spilled in water)	30 m	(100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m	(200 ft)	0.6 km (0.4 mi)	1.9 km (1.2 mi)
1251	131P	Methyl vinyl ketone, stabilized	100 m	(300 ft)	0.3 km (0.2 mi)	0.7 km (0.5 mi)	800 m	(2500 ft)	1.7 km (1.1 mi)	2.8 km (1.8 mi)

GREEN Section – Table 1

Important: Some water-reactive materials are also TIH materials themselves and release TIH gases when spilled in water (e.g., UN1741 – Boron trichloride). In these instances, two entries are found in **Table 1**:

- One for **(when spilled on land)**;
- The other for **(when spilled in water)**.

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)	0.1 km (0.1 mi)	0.2 km (0.1 mi)
1726	137	Aluminum chloride, 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)	0.4 km (0.2 mi)	1.5 km (1.0 mi)
1728	156	Amyltrichlorosilane (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)	1.2 km (0.7 mi)
1732	157	Antimony pentafluoride (when spilled in water)	30 m (100 ft)					0 km (1.9 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)	1.3 km (0.8 mi)
1741	125	Boron trichloride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.2 mi)	100 m (300 ft)	0.9 km (0.6 mi)	2.8 km (1.7 mi)

TIH and Water-Reactive material

GREEN Section – Table 1

- If the water-reactive material only has one entry in **Table 1** for **(when spilled in water)** and the product is **NOT** spilled in water, the **GREEN** section does not apply. Use the distances in the appropriate **ORANGE** guide (e.g., UN1717 – Acetyl chloride).

1716	156	Acetyl bromide (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)
1717	155	Acetyl chloride (when spilled in water)	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m (200 ft)	0.7 km (0.4 mi)	2.0 km (1.2 mi)
1722	155	Allyl chlorocarbonate	100 m (300 ft)	0.8 km (0.2 mi)	0.8 km (0.5 mi)	400 m (1250 ft)	1.5 km (0.9 mi)	2.4 km (1.5 mi)
1722	155	Allyl chloroformate						
1724	155	Allyltrichlorosilane, stabilized (when spilled in water)	30 m (100 ft)					0.8 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)	0.1 km (0.1 mi)	0.2 km (0.1 mi)
1726	137	Aluminum chloride, 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)	0.4 km (0.2 mi)	1.5 km (1.0 mi)

Not a TIH, only Water-Reactive material

GREEN Section – Table 2

TABLE 2 - Water-Reactive Materials which Produce Toxic Gases contains:

- A list of materials that produce large amounts of Toxic Inhalation Hazard (TIH) gases when spilled in water and identifies the TIH gases produced.
- The substances are presented in numerical order of their ID (UN) numbers
- These water-reactive materials are easily identified in **Table 1** as their name is immediately followed by **(when spilled in water)**.

TABLE2 - WATER-REACTIVE MATERIALS WHICH PRODUCE TOXIC GASES

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

ID No.	Guide No.	Name of Material	TIH Gas(es) Produced
1162	155	Dimethyldichlorosilane	HCl
1183	139	Ethylchlorosilane	HCl
1196	155	Ethyltrichlorosilane	HCl
1242	139	Methylchlorosilane	HCl
1250	155	Methyltrichlorosilane	HCl
1295	139	Trichlorosilane	HCl
1298	155	Trimethylchlorosilane	HCl
1305	155P	Vinyltrichlorosilane	HCl
1340	139	Phosphorus pentasulfide, free from yellow and white phosphorus	H ₂ S
1340	139	Phosphorus pentasulphide, free from yellow and white phosphorus	H ₂ S
1360	139	Calcium phosphide	PH ₃
1384	135	Sodium dithionite	H ₂ S SO ₂
1384	135	Sodium hydrosulfite	H ₂ S SO ₂
1384	135	Sodium hydrosulphite	H ₂ S SO ₂
1390	139	Alkali metal amides	NH ₃
1397	139	Aluminum phosphide	PH ₃
1419	139	Magnesium aluminum phosphide	PH ₃
1432	139	Sodium phosphide	PH ₃
1541	156	Acetone cyanohydrin, stabilized	HCN
1680	157	Potassium cyanide, solid	HCN
1689	157	Sodium cyanide, solid	HCN
1716	156	Acetyl bromide	HBr
1717	155	Acetyl chloride	HCl
1724	155	Allyltrichlorosilane, stabilized	HCl

Chemical Symbols for TIH (PIH in the US) Gases:

Br ₂	Bromine	HF	Hydrogen fluoride	NO ₂	Nitrogen dioxide
Cl ₂	Chlorine	HI	Hydrogen iodide	PH ₃	Phosphine
HBr	Hydrogen bromide	H ₂ S	Hydrogen sulfide	SO ₂	Sulfur dioxide
HCl	Hydrogen chloride	H ₂ S	Hydrogen sulphide	SO ₂	Sulphur dioxide
HCN	Hydrogen cyanide	NH ₃	Ammonia		

TABLE 2

GREEN Section – Table 2

Important:

The TIH gases produced, indicated in **Table 2**, are for information purposes only. These TIH gases have already been taken into consideration in the distances of **Table 1**.

For example, **Table 2** indicates that UN1162 - **dimethyldichlorosilane**, when spilled in water, will generate HCl (hydrogen chloride gas). In **Table 1**, you must refer to the distances for **dimethyldichlorosilane** and not the distances for hydrogen chloride gas.

GREEN Section – Overview Question

- You are facing a large spill of methyl iodide from a railcar. What are the distance for “first Isolate in all directions” and “to protect the persons downwind” during the daytime?
 - a) 50m, 800m
 - b) 100m, 300m
 - c) 50m, 300m
 - d) 25m, 100m

GREEN Section – Overview Answer

- You are facing a large spill of methyl iodide from a railcar. What are the distance for “first Isolate in all directions” and “to protect the persons downwind” during the daytime?

a) 50m, 800m

b) 100m, 300m

c) 50m, 300m

d) 25m, 100m

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

			SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)							
ID No.	Guide No.	Name of Material	First ISOLATE in all Directions		Then PROTECT persons Downwind during				First ISOLATE in all Directions		Then PROTECT persons Downwind during			
					DAY		NIGHT				DAY		NIGHT	
			Meters	(Feet)	Kilometers	(Miles)	Kilometers	(Miles)	Meters	(Feet)	Kilometers	(Miles)	Kilometers	(Miles)
2548	124	Chlorine pentafluoride	100 m	(300 ft)	0.5 km	(0.3 mi)	2.5 km	(1.6 mi)	800 m	(2500 ft)	5.1 km	(3.2 mi)	11.0+ km	(7.0+ mi)
2605	155	Methoxymethyl isocyanate	30 m	(100 ft)	0.2 km	(0.1 mi)	0.2 km	(0.2 mi)	60 m	(200 ft)	0.7 km	(0.4 mi)	0.9 km	(0.6 mi)
2606	155	Methyl orthosilicate	30 m	(100 ft)	0.2 km	(0.1 mi)	0.3 km	(0.2 mi)	60 m	(200 ft)	0.7 km	(0.5 mi)	1.1 km	(0.7 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	(0.4 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)	0.3 km	(0.2 mi)
2668	131	Chloroacetonitrile	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	30 m	(100 ft)	0.3 km	(0.2 mi)	0.4 km	(0.2 mi)
2676	119	Stibine	60 m	(200 ft)	0.3 km	(0.2 mi)	1.6 km	(1.0 mi)	200 m	(600 ft)	1.3 km	(0.8 mi)	4.1 km	(2.6 mi)

GREEN Section – Overview Question

- You are facing a 75 L spill of UN1838. The product is spilling into a large puddle of water. What is the distance for “first Isolate in all directions” and “to protect the persons downwind” during the nighttime? What will happen when the product reaches the water?

GREEN Section – Overview Answer

- You are facing a 75 L spill of UN1838. The product is spilling into a large puddle of water. What is the distance for “first Isolate in all directions” and “to protect the persons downwind” during the nighttime? What will happen when the product reaches the water?

a) 30 m, 200m (0.2 km)

(Table 1)

b) HCl (hydrogen chloride)
will be released (Tableau 2)

TABLE 2 - WATER-REACTIVE MATERIALS WHICH PRODUCE TOXIC GASES			
Materials Which Produce Large Amounts of Toxic-by-Inhalation (TIH) (PIH in the US) Gas(es) When Spilled in Water			
ID No.	Guide No.	Name of Material	TIH Gas(es) Produced
1834	137	Sulphuryl chloride	HCl
1838	137	Thionyl chloride	HCl, SO ₂
1838	137	Titanium tetrachloride	HCl
1898	156	Acetyl iodide	HI
1923	135	Calcium dithionite	H ₂ S, SO ₂
1923	135	Calcium hydrosulfite	H ₂ S, SO ₂
1923	135	Calcium hydrosulphite	H ₂ S, SO ₂
1929	135	Potassium dithionite	H ₂ S, SO ₂
1929	135	Potassium hydrosulfite	H ₂ S, SO ₂
1929	135	Potassium hydrosulphite	H ₂ S, SO ₂

Chemical Symbols for TIH (PIH in the US) Gases:					
Br ₂	Bromine	HF	Hydrogen fluoride	NO ₂	Nitrogen dioxide
Cl ₂	Chlorine	HI	Hydrogen iodide	PH ₃	Phosphine
HBr	Hydrogen bromide	H ₂ S	Hydrogen sulfide	SO ₂	Sulfur dioxide
HCl	Hydrogen chloride	H ₂ S	Hydrogen sulphide	SO ₂	Sulphur dioxide
HCN	Hydrogen cyanide	NH ₃	Ammonia		

GREEN Section – Overview Question

- You are facing a large spill sodium hydrosulphite from a railcar. The solid material is going directly on dry pavement. What is the distance for “first Isolate in all directions”?
- a) 50 m
 - b) 25 m
 - c) 60 m
 - d) 30 m

GREEN Section – Overview Answer

- You are facing a large spill sodium hydrosulphite from a railcar. The solid material is going directly on dry pavement. What is the distance for “first Isolate in all directions”?

a) 50 m

b) 25 m

c) 60 m

d) 30 m

1380	135	Pentaborane	6
1384	135	Sodium dithionite (when spilled in water)	3
1384	135	Sodium hydrosulfite (when spilled in water)	
1384	135	Sodium hydrosulphite (when spilled in water)	



GUIDE SUBSTANCES - SPONTANEOUSLY COMBUSTIBLE
135

- Structural firefighters protective clothing provides thermal protection but only limited chemical protection.

EVACUATION

Immediate precautionary measure

- Isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.

Spill

- For highlighted materials: see Table 1 - Initial Isolation and Protective Action Distances.
- For non-highlighted materials: increase the immediate precautionary measure distance, in the downwind direction, as necessary.

Fire

- If tank, rail tank car or highway tank is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

GREEN Section – Overview Question

- You have set an isolation perimeter of 25 m for the large sodium hydrosulphite spill. However, it starts raining. How would you adjust your isolation perimeter?

GREEN Section – Overview Answer

- You have set an isolation perimeter of 25 m for the large sodium hydrosulphite spill. However, it starts raining. How would you adjust your isolation perimeter?
- **Your perimeter would increase to 60 m initially, with a downwind protection depending on the time of day**

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

			SMALL SPILLS (From a small package or small leak from a large package)						LARGE SPILLS (From a large package or from many small packages)					
ID No.	Guide No.	Name of Material	First ISOLATE in all Directions		Then PROTECT persons Downwind during				First ISOLATE in all Directions		Then PROTECT persons Downwind during			
			Meters	(Feet)	DAY		NIGHT		Meters	(Feet)	DAY		NIGHT	
					Kilometers	(Miles)	Kilometers	(Miles)			Kilometers	(Miles)	Kilometers	(Miles)
1380	135	Pentaborane	60 m	(200 ft)	0.6 km	(0.4 mi)	2.0 km	(1.3 mi)	300 m	(1000 ft)	3.0 km	(1.9 mi)	6.5 km	(4.1 mi)
1384	135	Sodium dithionite (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)	2.1 km	(1.3 mi)
1384	135	Sodium hydrosulfite (when spilled in water)												
1384	135	Sodium hydrosulphite (when spilled in water)												

GREEN Section – Table 1 reference to Table 3

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TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

			SMALL SPILLS (From a small package or small leak from a large package)					LARGE SPILLS (From a large package or from many small packages)						
ID No.	Guide No.	Name of Material	First ISOLATE in all Directions		Then PROTECT persons Downwind during				First ISOLATE in all Directions		Then PROTECT persons Downwind during			
			Meters	(Feet)	DAY Kilometers (Miles)	NIGHT Kilometers (Miles)	Meters	(Feet)	DAY Kilometers (Miles)	NIGHT Kilometers (Miles)				
1005	125	Ammonia, anhydrous	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	Refer to Table 3					
1005	125	Anhydrous ammonia	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)						
1008	125	Boron trifluoride	30 m	(100 ft)	0.2 km	(0.1 mi)	0.7 km	(0.5 mi)	400 m	(1250 ft)	2.4 km	(1.5 mi)	4.7 km	(2.9 mi)
1008	125	Boron trifluoride, compressed	30 m	(100 ft)	0.2 km	(0.1 mi)	0.7 km	(0.5 mi)	400 m	(1250 ft)	2.4 km	(1.5 mi)	4.7 km	(2.9 mi)
1016	119	Carbon monoxide, compressed	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	200 m	(600 ft)	1.2 km	(0.7 mi)	3.9 km	(2.4 mi)
1017	124	Chlorine	60 m	(200 ft)	0.3 km	(0.2 mi)	1.5 km	(0.9 mi)	Refer to Table 3					
1026	119	Cyanogen	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.3 mi)	60 m	(200 ft)	0.3 km	(0.2 mi)	1.1 km	(0.7 mi)
1040	119P	Ethylene oxide	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.2 mi)	Refer to Table 3					
1040	119P	Ethylene oxide with nitrogen	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.2 mi)						
1045	124	Fluorine, compressed	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)
1048	125	Hydrogen bromide, anhydrous	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.2 mi)	150 m	(500 ft)	1.0 km	(0.7 mi)	3.2 km	(2.0 mi)
1050	125	Hydrogen chloride, anhydrous	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	Refer to Table 3					
1051	117P	Hydrogen cyanide, stabilized	60 m	(200 ft)	0.2 km	(0.1 mi)	0.7 km	(0.4 mi)	200 m	(600 ft)	0.7 km	(0.5 mi)	1.8 km	(1.1 mi)
1052	125	Hydrogen fluoride, anhydrous	30 m	(100 ft)	0.1 km	(0.1 mi)	0.5 km	(0.3 mi)	Refer to Table 3					
1053	117	Hydrogen sulfide	30 m	(100 ft)	0.1 km	(0.1 mi)	0.5 km	(0.3 mi)	400 m	(1250 ft)	2.4 km	(1.5 mi)	6.3 km	(4.0 mi)
1053	117	Hydrogen sulphide	30 m	(100 ft)	0.1 km	(0.1 mi)	0.5 km	(0.3 mi)	400 m	(1250 ft)	2.4 km	(1.5 mi)	6.3 km	(4.0 mi)
1061	118	Methylamine, anhydrous	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	200 m	(600 ft)	0.6 km	(0.4 mi)	2.1 km	(1.3 mi)
1062	123	Methyl bromide	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	150 m	(500 ft)	0.3 km	(0.2 mi)	0.7 km	(0.5 mi)
1064	117	Methyl mercaptan	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	200 m	(600 ft)	1.3 km	(0.8 mi)	3.9 km	(2.4 mi)
1067	124	Dinitrogen tetroxide	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.3 mi)	400 m	(1250 ft)	1.4 km	(0.9 mi)	3.3 km	(2.1 mi)
1067	124	Nitrogen dioxide												

In **Table 1**, some materials indicate to refer to **Table 3** for more information for a **LARGE SPILL**.

GREEN Section – Table 1 reference to Table 3

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TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

			SMALL SPILLS (From a small package or small leak from a large package)					LARGE SPILLS (From a large package or from many small packages)						
ID No.	Guide No.	Name of Material	First ISOLATE in all Directions		Then PROTECT persons Downwind during				First ISOLATE in all Directions		Then PROTECT persons Downwind during			
			Meters	(Feet)	DAY Kilometers	(Miles)	NIGHT Kilometers	(Miles)	Meters	(Feet)	DAY Kilometers	(Miles)	NIGHT Kilometers	(Miles)
1005	125	Ammonia, anhydrous	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	Refer to Table 3					
1005	125	Anhydrous ammonia	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	400 m (1250 ft)		2.4 km (1.5 mi)	4.7 km (2.9 mi)		
1008	125	Boron trifluoride	30 m	(100 ft)	0.2 km	(0.1 mi)	0.7 km	(0.5 mi)	400 m (1250 ft)		2.4 km (1.5 mi)	4.7 km (2.9 mi)		
1008	125	Boron trifluoride, compressed	30 m	(100 ft)	0.2 km	(0.1 mi)	0.7 km	(0.5 mi)	400 m (1250 ft)		2.4 km (1.5 mi)	4.7 km (2.9 mi)		
1016	119	Carbon monoxide, compressed	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	200 m (600 ft)		1.2 km (0.7 mi)	3.9 km (2.4 mi)		
1017	124	Chlorine	60 m	(200 ft)	0.3 km	(0.2 mi)	1.5 km	(0.9 mi)	Refer to Table 3					
1026	119	Cyanogen	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.3 mi)	60 m (200 ft)		0.3 km (0.2 mi)	1.1 km (0.7 mi)		
1040	119P	Ethylene oxide	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.2 mi)	Refer to Table 3					
1040	119P	Ethylene oxide with nitrogen	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.2 mi)	Refer to Table 3					
1045	124	Fluorine, compressed	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)		
1048	125	Hydrogen bromide, anhydrous	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.2 mi)	150 m (500 ft)		1.0 km (0.7 mi)	3.2 km (2.0 mi)		
1050	125	Hydrogen chloride, anhydrous	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	Refer to Table 3					
1051	117P	Hydrogen cyanide, stabilized	60 m	(200 ft)	0.2 km	(0.1 mi)	0.7 km	(0.4 mi)	200 m (600 ft)		0.7 km (0.5 mi)	1.8 km (1.1 mi)		
1052	125	Hydrogen fluoride, anhydrous	30 m	(100 ft)	0.1 km	(0.1 mi)	0.5 km	(0.3 mi)	Refer to Table 3					
1053	117	Hydrogen sulfide	30 m	(100 ft)	0.1 km	(0.1 mi)	0.5 km	(0.3 mi)	400 m (1250 ft)		2.4 km (1.5 mi)	6.3 km (4.0 mi)		
1053	117	Hydrogen sulphide	30 m	(100 ft)	0.1 km	(0.1 mi)	0.5 km	(0.3 mi)	400 m (1250 ft)		2.4 km (1.5 mi)	6.3 km (4.0 mi)		
1061	118	Methylamine, anhydrous	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	200 m (600 ft)		0.6 km (0.4 mi)	2.1 km (1.3 mi)		
1062	123	Methyl bromide	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	150 m (500 ft)		0.3 km (0.2 mi)	0.7 km (0.5 mi)		
1064	117	Methyl mercaptan	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	200 m (600 ft)		1.3 km (0.8 mi)	3.9 km (2.4 mi)		
1067	124	Dinitrogen tetroxide	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.3 mi)	400 m (1250 ft)		1.4 km (0.9 mi)	3.3 km (2.1 mi)		
1067	124	Nitrogen dioxide												

In **Table 1**, some materials indicate to refer to **Table 3** for more information for a **LARGE SPILL**.

GREEN Section – Table 3

TABLE 3 - Initial Isolation and Protective Action Distances for Large Spills for Different Quantities of Six Common TIH Gases contains:

- A sub-list of toxic inhalation hazard materials found in **Table 1** that may be more commonly encountered.
- The materials are:
 - UN1005 - Ammonia, anhydrous / Anhydrous ammonia
 - UN1017 - Chlorine
 - UN1040 - Ethylene oxide and Ethylene oxide with nitrogen
 - UN1050 - Hydrogen chloride, anhydrous and UN2186 - Hydrogen chloride, refrigerated liquid
 - UN1052 - Hydrogen fluoride, anhydrous
 - UN1079 - Sulfur dioxide / Sulphur dioxide

GREEN Section – Table 3

TABLE 3 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES FOR LARGE SPILLS FOR DIFFERENT QUANTITIES OF SIX COMMON TIH (PIH IN THE US) GASES

	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)	Kilometers (Miles)	Kilometers (Miles)	Kilometers (Miles)	Kilometers (Miles)	Kilometers (Miles)	Kilometers (Miles)	Kilometers (Miles)	Kilometers (Miles)	Kilometers (Miles)
TRANSPORT CONTAINER	UN1005 Ammonia, anhydrous / Anhydrous ammonia: Large Spills										
Rail tank car	300	(1000)	1.6 (1.0)	1.2 (0.8)	1.0 (0.6)	4.1 (2.6)	2.1 (1.3)	1.3 (0.8)			
Highway tank truck or trailer	150	(500)	0.8 (0.5)	0.5 (0.3)	0.4 (0.3)	1.8 (1.1)	0.7 (0.4)	0.6 (0.4)			
Agricultural nurse tank	60	(200)	0.5 (0.3)	0.3 (0.2)	0.3 (0.2)	1.4 (0.9)	0.3 (0.2)	0.3 (0.2)			
Multiple small cylinders	30	(100)	0.3 (0.2)	0.2 (0.1)	0.1 (0.1)	0.7 (0.5)	0.3 (0.2)	0.2 (0.1)			
TRANSPORT CONTAINER	UN1017 Chlorine: Large Spills										
Rail tank car	1000	(3000)	9.6 (6.0)	6.3 (3.9)	5.1 (3.2)	11.0+ (7.0+)	8.9 (5.6)	6.5 (4.1)			
Highway tank truck or trailer	600	(2000)	5.6 (3.5)	3.3 (2.1)	2.5 (1.6)	6.4 (4.0)	4.7 (2.9)	3.8 (2.4)			
Multiple ton cylinders	300	(1000)	1.9 (1.2)	1.3 (0.8)	1.0 (0.6)	3.5 (2.2)	2.3 (1.4)	1.3 (0.8)			
Multiple small cylinders or single ton cylinder	150	(500)	1.3 (0.9)	0.7 (0.5)	0.5 (0.3)	2.4 (1.5)	1.2 (0.8)	0.6 (0.4)			

Table 3 provides initial isolation and protective action distances for **LARGE SPILLS**. The table is split by :

- different container types then,
- daytime and nighttime situations and,
- different wind speeds.

TABLE 3

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

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Table of Markings, Labels and Placards and Initial Response Guide to Use On-scene.....8

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Additional Sections



White Section (Part 1)



Yellow Section



Blue Section



Orange Section



Green Section



White Section (Part 2)

Outline



CANUTEC

- ~~- Who we are~~
- ~~- What we do~~
- ~~- Emergency information~~



Emergency Response Guidebook (ERG)

- ~~- Overview of the ERG~~
- Scenarios**



Other Information

- CANUTEC and TDG Contacts

Scenario Guidelines

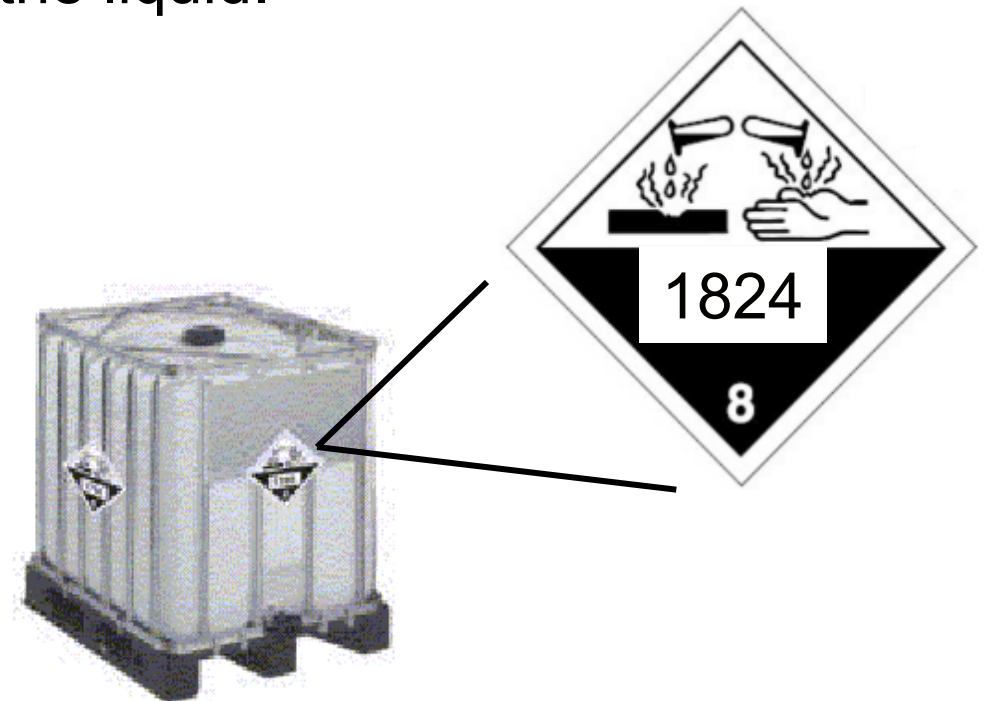
For each of the following scenarios:

1. Identify the product in the **YELLOW** or **BLUE** Sections;
2. Find the appropriate Guide in the **ORANGE** Section;
3. Identify the suggested distances in the **ORANGE** and/or **GREEN** Sections;
4. Describe the main characteristics and hazards of the substance.

Scenario 1

A 1000-litre tote container filled with UN1824 was puncture by a forklift and is leaking. The forklift driver was exposed to the liquid.

1. What product is leaking?
2. Where do you find the first aid recommendations?
3. What extinguishing agent can be used if there is a small fire?



Scenario 1 – Solution

- The ID (UN) number is 1824 and it is a corrosive product (Class 8 placard);
- In the **YELLOW** section, this product corresponds to *Caustic soda, solution* or *Sodium hydroxide, solution* and refers to **Guide 154**;

1824	154	Caustic soda, solution
1824	154	Sodium hydroxide, solution

- There is no danger of polymerization (no “**P**”);
- The substance is not highlighted in green; therefore, the **GREEN** section does not apply.

Scenario 1 – Solution

SUBSTANCES - TOXIC AND/OR CORROSIVE (Non-Combustible)		GUIDE 154
EMERGENCY RESPONSE		
FIRE		
Small Fire		
• Dry chemical, CO₂ or water spray.		
Large Fire		
• Dry chemical, CO₂, alcohol-resistant foam or water spray. • If it can be done safely, move undamaged containers away from the area around the fire. • Dike runoff from fire control for later disposal.		
Fire Involving Tanks, Rail Tank Cars or Highway Tanks		
• Fight fire from maximum distance or use unmanned master stream devices 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 in direct contact with flames.		
SPILL OR LEAK		
• ELIMINATE all ignition sources (no smoking, flares, sparks or flames) from 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		
Refer to the "General First Aid" section.		
Specific First Aid:		
• For corrosives, in case of contact, immediately flush skin or eyes with running water for at least 30 minutes. Additional flushing may be required.		

FIRST AID can be found in **Guide 154** under **EMERGENCY RESPONSE**

- Also refer to the "General First Aid" section

Scenario 1 – Solution

In case of a fire, use the suggested extinguishing agents found in **Guide 154** under **FIRE**.

FIRE

Small Fire

- Dry chemical, CO₂ or water spray.

Large Fire

- Dry chemical, CO₂, alcohol-resistant foam or water spray.
- If it can be done safely, move undamaged containers away from the area around the fire.
- Dike runoff from fire control for later disposal.

Fire Involving Tanks, Rail Tank Cars or Highway Tanks

- Fight fire from maximum distance or use unmanned master stream devices 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 in direct contact with flames.

Scenario 2

A rail tank car is leaking during the day, at a well-known facility in your area, where chlorine rail cars are the only dangerous goods being handled. A residential area is nearby.



Source: KTVI-TV St. Louis, Missouri, USA

1. What is the UN number for chlorine?
2. What are your isolation distances?

Scenario 2 – Solution

- The product involved is *Chlorine*;
- In the **BLUE** section, this product indicates that the ID (UN) number is 1017 and refers to **Guide 124**;

Chlorine	124	1017
----------	-----	------

- There is no danger of polymerization (no “**P**”);
- The substance is **highlighted in green**; therefore, since there is a spill (and no fire), the initial isolation and protective action distances must be taken from **Table 1**.

Scenario 2 – Solution

Table 1 - Initial Isolation and Protective Action Distances for UN1017 - Chlorine shows that for large spills, **Table 3** must be consulted for isolation and protective action distances.

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES										
ID No. Guide No. Name of Material			SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)			
			First ISOLATE in all Directions Meters (Feet)		Then PROTECT persons Downwind during		First ISOLATE in all Directions Meters (Feet)		Then PROTECT persons Downwind during	
					DAY	NIGHT			DAY	NIGHT
			Kilometers (Miles)	Kilometers (Miles)	Kilometers (Miles)	Kilometers (Miles)				
1017	124	Chlorine	60 m (200 ft)	0.3 km (0.2 mi)	1.5 km (0.9 mi)	Refer to Table 3				

Scenario 2 – Solution

For a rail car, the initial isolation distance (*First Isolate*) suggested in **Table 3** is 1000 metres. The protective action distances (*Then Protect*) must be taken during the day, depending on the wind speed (9.6 km, 6.3 km or 5.1 km).

TABLE 3 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES FOR LARGE SPILLS FOR DIFFERENT QUANTITIES OF SIX COMMON TIH (PIH IN THE US) GASES										
	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)	Kilometers (Miles)	Kilometers (Miles)	Kilometers (Miles)	Kilometers (Miles)	Kilometers (Miles)	Kilometers (Miles)	Kilometers (Miles)	Kilometers (Miles)
TRANSPORT CONTAINER	UN1017 Chlorine: Large Spills									
Rail tank car	1000	(3000)	9.6 (6.0)	6.3 (3.9)	5.1 (3.2)	11.0+ (7.0+)	8.9 (5.6)	6.5 (4.1)		
Highway tank truck or trailer	600	(2000)	5.6 (3.5)	3.3 (2.1)	2.5 (1.6)	6.4 (4.0)	4.7 (2.9)	3.8 (2.4)		
Multiple ton cylinders	300	(1000)	1.9 (1.2)	1.3 (0.8)	1.0 (0.6)	3.5 (2.2)	2.3 (1.4)	1.3 (0.8)		
Multiple small cylinders or single ton cylinder	150	(500)	1.3 (0.9)	0.7 (0.5)	0.5 (0.3)	2.4 (1.5)	1.2 (0.8)	0.6 (0.4)		

Scenario 2 – Solution

Main characteristics and hazards of the substance are also found in **Guide 124** under **POTENTIAL HAZARDS**.

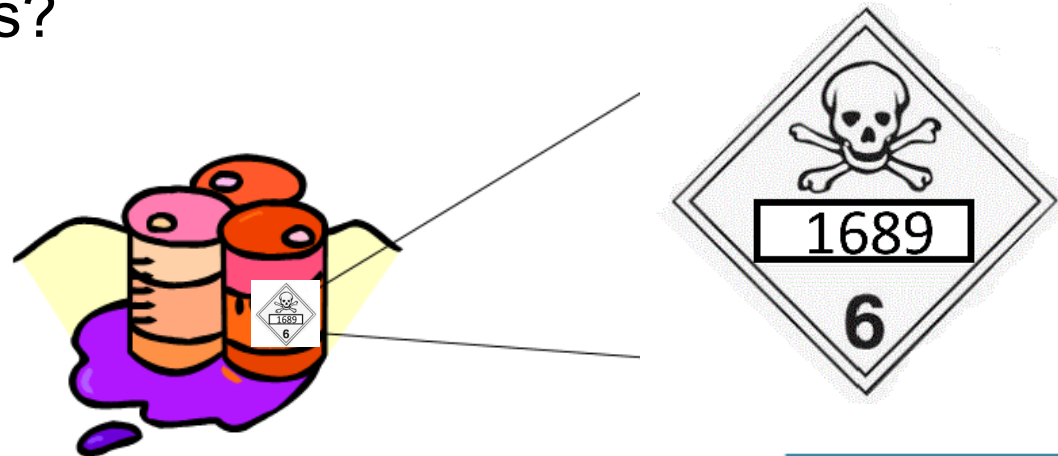
Given that the primary danger associated with Chlorine is health, the **HEALTH** section precedes the **FIRE OR EXPLOSION** section.

GUIDE 124	GASES - TOXIC AND/OR CORROSIVE - OXIDIZING
POTENTIAL HAZARDS	
HEALTH	
• TOXIC and/or CORROSIVE; may be fatal if inhaled or absorbed through skin. • Fire will produce irritating, corrosive and/or toxic gases. • Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite. • Runoff from fire control or dilution water may cause environmental contamination.	
FIRE OR EXPLOSION	
• Substance does not burn but will support combustion. • Vapors from liquefied gas are initially heavier than air and spread along ground. • These are strong oxidizers and will react vigorously or explosively with many materials including fuels. • May ignite combustibles (wood, paper, oil, clothing, etc.). • Some will react violently with air, moist air and/or water. • 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.	

Scenario 3

A drum containing this substance is punctured and is leaking on the ground.

1. What is the main danger with this product and where would find this information?
2. What are the isolation distances?



Scenario 3 – Solution

- The ID (UN) number is 1689 and it is a toxic substance (Class 6.1 label);
- In the **YELLOW** section, this product is *Sodium cyanide, solid* and refers to **Guide 157**;

1689 157 Sodium cyanide, solid

- There is no danger of polymerization (no “P”);
- The substance is highlighted in green; may need to refer to **GREEN** section.

Scenario 3 – Solution

Since the product is spilled on the ground, the distance in **Table 1** DO NOT APPLY. In this case, **Table 1** should only be consulted if the product is spilled in water.

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES										
ID No.	Guide No.	Name of Material	SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)			
			First ISOLATE in all Directions		Then PROTECT persons Downwind during		First ISOLATE in all Directions		Then PROTECT persons Downwind during	
			Meters	(Feet)	DAY Kilometers (Miles)	NIGHT Kilometers (Miles)	Meters	(Feet)	DAY Kilometers (Miles)	NIGHT Kilometers (Miles)
1689	157	Sodium cyanide, solid (when spilled in water)	30 m	(100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m	(200 ft)	0.2 km (0.2 mi)	0.9 km (0.6 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)	0.6 km (0.4 mi)
1716	156	Acetyl bromide (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)
1717	155	Acetyl chloride (when spilled in water)	30 m	(100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m	(200 ft)	0.7 km (0.4 mi)	2.0 km (1.2 mi)
1722	155	Allyl chlorocarbonate	100 m	(300 ft)	0.3 km (0.2 mi)	0.8 km (0.5 mi)	400 m	(1250 ft)	1.5 km (0.9 mi)	2.4 km (1.5 mi)
1722	155	Allyl chloroformate								

Scenario 3 – Solution

- For UN1689, **Table 1** suggests distances specifically **when the product is spilled in water**. This was not the case, the suggested distances found in **Guide 157** under **EVACUATION** must be used.

EVACUATION

Immediate precautionary measure

- Isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.

Spill

- For **highlighted materials**: see Table 1 - Initial Isolation and Protective Action Distances.
- For non-highlighted materials: increase the immediate precautionary measure distance, in the downwind direction, as necessary.

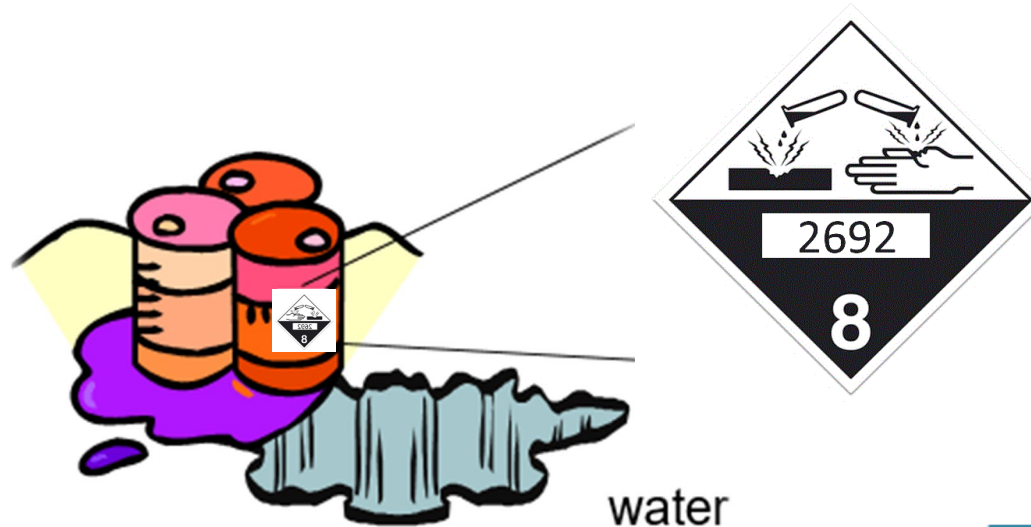
Fire

- If tank, rail tank car or highway tank is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

Scenario 4

Three drums are leaking in a puddle of water. Fumes are evolving from the spill in contact with the water.

1. What is the evolving gas?
2. What are your isolation distances for a large spill?



Scenario 4 – Solution

- **Table 2** will indicate the TIH gases produced;
- For UN2692, the gas produced is *HBr (Hydrogen bromide)*.

TABLE2 - WATER-REACTIVE MATERIALS WHICH PRODUCE TOXIC GASES

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

ID No.	Guide No.	Name of Material	TIH Gas(es) Produced
2692	157	Boron tribromide	HBr

Scenario 4 – Solution

- In the **YELLOW** section, this product is *boron tribromide* and refers to **Guide 157**;

2692 157 Boron tribromide

- There is no danger of polymerization (no “P”);
- The substance is highlighted in green

Scenario 4 – Solution

- In **Table 1**, UN2692 has two entries; **(when spilled on land)** and **(when spilled in water)**
- Since the product is leaking in a puddle of water, **Table 1 (when spilled in water)** will have to be used for suggested isolation and protective action distances.

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES										
ID No.	Guide No.	Name of Material	SMALL SPILLS (From a small package or small leak from a large package)				LARGE SPILLS (From a large package or from many small packages)			
			First ISOLATE in all Directions		Then PROTECT persons Downwind during		First ISOLATE in all Directions		Then PROTECT persons Downwind during	
			Meters	(Feet)	DAY Kilometers (Miles)	NIGHT Kilometers (Miles)	Meters	(Feet)	DAY Kilometers (Miles)	NIGHT Kilometers (Miles)
2692	157	Boron tribromide (when spilled on land)	30 m	(100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	30 m	(100 ft)	0.2 km (0.1 mi)	0.4 km (0.3 mi)
2692	157	Boron tribromide (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)	1.4 km (0.9 mi)

Scenario 4 – Solution

IMPORTANT:

The TIH gases produced, indicated in **Table 2**, are for information purposes only. These TIH gases have already been taken into consideration in the distances of **Table 1**.

For UN2692, in **Table 1**, you must refer to the distances for ***Boron tribromide*** and not the distances for *Hydrogen bromide gas (HBr)*.

Scenario 4 – Solution

Main characteristics and hazards of the substance are found in **Guide 157** under **POTENTIAL HAZARDS**.

Given that the primary danger associated with Sodium cyanide, solid is health (toxic), the **HEALTH** section precedes the **FIRE OR EXPLOSION** section.

GUIDE 157	SUBSTANCES - TOXIC AND/OR CORROSIVE (NON-COMBUSTIBLE/WATER-SENSITIVE)
POTENTIAL HAZARDS	
HEALTH	
• TOXIC and/or CORROSIVE; inhalation, ingestion or contact (skin, eyes) with vapors, dusts or substance may cause severe injury, burns or death. • Reaction with water or moist air may release toxic, corrosive or flammable gases. • Reaction with water may generate much heat that will increase the concentration of fumes in the air. • Fire will produce irritating, corrosive and/or toxic gases. • Runoff from fire control or dilution water may be corrosive and/or toxic and cause environmental contamination.	
FIRE OR EXPLOSION	
• Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes. • UN1802, UN2032, UN3084, UN3093, UN1796 (above 50%), UN1826 (above 50%), and UN2031 (above 65%) may act as oxidizers. Also consult GUIDE 140. • Vapors may accumulate in confined areas (basement, tanks, hopper/tank cars, etc.). • Substance may react with water (some violently), releasing corrosive and/or toxic gases and runoff. • Corrosives in contact with metals may evolve flammable hydrogen gas. • Containers may explode when heated or if contaminated with water.	

Outline



CANUTEC

- Who we are
- What we do
- Emergency information



Emergency Response Guidebook (ERG)

- Overview of the ERG
- Scenarios



Other Information

- **CANUTEC and TDG Contacts**

CANUTEC

- In case of an emergency, you can call CANUTEC, 24/7, at:
 - **1-888-CAN-UTEC (1-888-226-8832)**, or
 - **(613) 996-6666**, or
 - ***666** on a cellular (Canada only).
- In a non-emergency situation (for example a simulation), please call the information line available 24/7 at **(613) 992-4624**.
- You can reach us by email: **CANUTEC@tc.gc.ca**
- For more information, visit: **<https://tc.canada.ca/en/dangerous-goods/canutec>**

CANUTEC Registration Services

- Manage the CANUTEC Registration System (CRS)
- How to contact the registration team:
 - By phone: 1-613-947-5048
 - Toll-free: 1-888-706-0195
 - By email: canutec.services@tc.gc.ca

TDG Contacts

TDG Regional Offices		
Region	Telephone Number	Email address
Atlantic	1-866-814-1477	TDG-TMDAtlantic@tc.gc.ca
Quebec	1-514-633-3400	TMD-TDG.Quebec@tc.gc.ca
Ontario	1-416-973-1868	TDG-TMDOntario@tc.gc.ca
Prairie & Northern	1-888-463-0521	TDG-TMDPNR@tc.gc.ca
Pacific	1-604-666-2955	TDGPacific-TMDPacifique@tc.gc.ca
General TDG information: TDG-TMD@tc.gc.ca Safety Awareness Team: TC.TDGSafetyAwareness-SensibilisationalasecuriteduTMD.TC@tc.gc.ca Response Operations Team (ERAP Program): TC.ChiefResponseOperations-ChefOperationsDeReponse.TC@tc.gc.ca		
Websites: https://tc.canada.ca/en/dangerous-goods https://tc.canada.ca/en/dangerous-goods/emergency-response-assistance-plans-eraps		

Thank you!
Questions?



Feedback

2025 Indigenous Public Safety
Conference - October , 2025



Link here: <https://forms.office.com/r/mBFGnfLA0p>