



HAZARDOUS MATERIALS

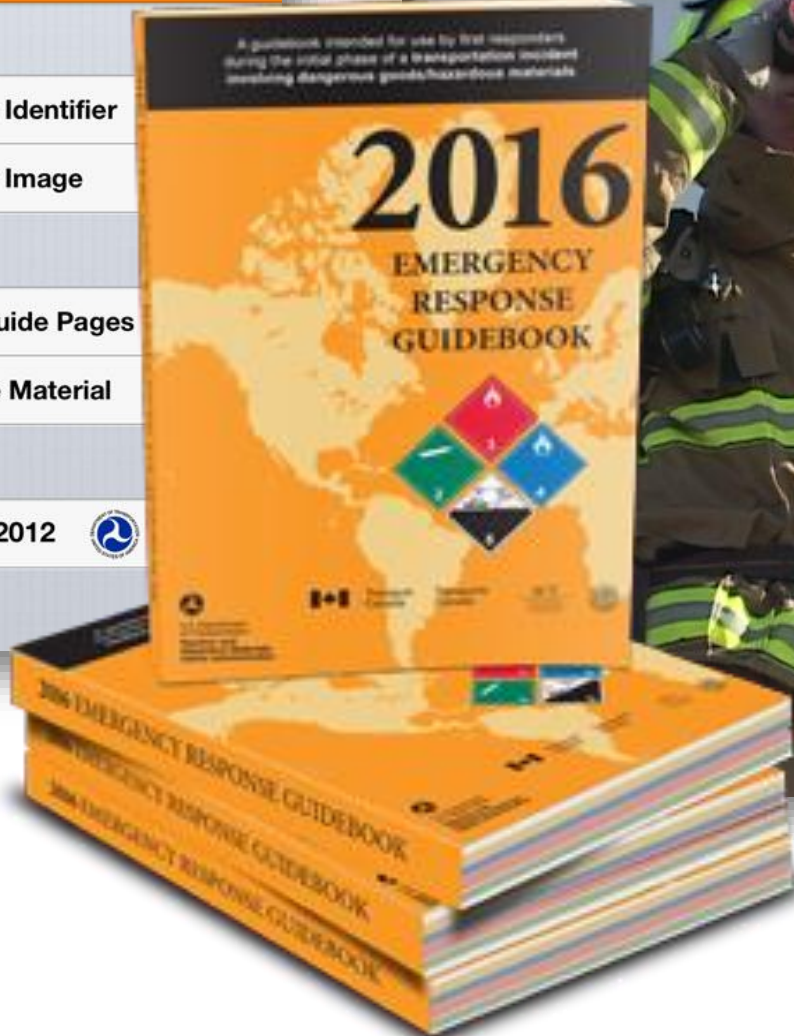
DND Primary Care Paramedicine

Module: 01

Section: 09

- Emergency Response Guidebook
- NFPA 704 System
- GHS system
- Workplace Hazardous Materials Information System
- Material Safety Data Sheet (MSDS)
- Shipping Papers
- Canutec

- Unlike EMS, operations involving hazardous materials tend to move slowly.
- Scene and personal safety take a higher priority.
- Take the time to find out about what you are dealing with, identify the risks and ways to deal with them before entering the scene.



- **ERG - Emergency Response Guidebook**
 - Guide developed jointly by Transport Canada (TC), US Department of Transportation (DOT) and Secretariat of Transport and Communications of Mexico (SCT) to be used by firefighters, police and other emergency services
 - It is primarily a guide to aid first responders in quickly identifying the specific or generic hazards of the material involved and protecting themselves and the general public during the initial response phase.

- Information on about 4000 chemicals
- Not for long-term action plans
- Inappropriate after first 15 minutes
- Breaks hazards down by categorizing them and listing potential dangers

GUIDE 128	FLAMMABLE LIQUIDS (NON-POLAR/WATER-IMMISCIBLE)	ERG2012 ERG2012	FLAMMABLE LIQUIDS (NON-POLAR/WATER-IMMISCIBLE)	GUIDE 128
POTENTIAL HAZARDS		EMERGENCY RESPONSE		
<p>FIRE OR EXPLOSION</p> <ul style="list-style-type: none"> • HIGHLY FLAMMABLE. Will be easily ignited by heat, sparks or flames. • Vapors may form explosive mixtures with air. • Vapors may travel to source of ignition and flash back. • Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks). • Vapor explosion hazard indoors, outdoors or in sewers. • Those substances designated with a (P) may polymerize explosively when heated or involved in a fire. • Runoff to sewer may cause fire or explosion hazard. • Containers may explode when heated. • Many liquids are lighter than water. • Substance may be transported hot. • For UN3195, if Lithium ion batteries are involved, also consult GUIDE 147. • If molten aluminum is involved, refer to GUIDE 169. <p>HEALTH</p> <ul style="list-style-type: none"> • Irritation or contact with material may irritate or burn skin and eyes. • Fire may produce irritating, oxidative and/or toxic gases. • Vapors may cause dizziness or suffocation. • Runoff from fire control or dilution water may cause pollution. <p>PUBLIC SAFETY</p> <ul style="list-style-type: none"> • CALL EMERGENCY RESPONSE (emergency number on Shipping Paper 9 or, 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 50 meters (150 feet) in all directions. • Keep unauthorized personnel away. • Stay upwind. • Keep out of low areas. • Ventilate closed spaces before entering. <p>PROTECTIVE CLOTHING</p> <ul style="list-style-type: none"> • Wear positive pressure self-contained breathing apparatus (SCBA). • Structural firefighters' protective clothing will only provide limited protection. <p>EVACUATION</p> <p>Large Spill</p> <ul style="list-style-type: none"> • Consider initial downwind evacuation for at least 300 meters (1000 feet). <p>Fire</p> <ul style="list-style-type: none"> • If tank, rail car or tank truck 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. 		<p>FIRE</p> <p>CAUTION: All these products have a very low flash point: Use of water spray when fighting fire may be ineffective.</p> <p>CAUTION: For mixtures consisting alcohol or polar solvents, alcohol-resistant foam may be more effective.</p> <p>Small Fire</p> <ul style="list-style-type: none"> • Dry chemical, CO₂ water spray or regular foam. <p>Large Fire</p> <ul style="list-style-type: none"> • Water spray, fog or regular foam. • Do not use straight streams. • Move containers from fire area if you can do it without risk. <p>Fire Involving Tanks or Car/Trailer Loads</p> <ul style="list-style-type: none"> • 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. • 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. <p>SPILL OR LEAK</p> <ul style="list-style-type: none"> • ELIMINATE all ignition sources (no smoking, flames, 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 sewers, basements or confined areas. • A vapor suppressing foam may be used to reduce vapors. • Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. <p>Large Spill</p> <ul style="list-style-type: none"> • Use clean non-sparking tools to collect absorbed material. • Dig for ahead of liquid spill for later disposal. • Water spray may reduce vapor, but may not prevent ignition in closed spaces. <p>FIRST AID</p> <ul style="list-style-type: none"> • Move victim to fresh air. • Call 911 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. • 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. 		

- Organized into four colored sections
 - Yellow: Chemicals listed by UN/ID number
 - Blue: Materials listed alphabetically by name
 - Orange: Hazard class, fire/explosion hazards, health hazards Initial action guides
 - Green: Initial isolation and protective action distances

- Fire or explosion (extremely flammable)
 - Will the substance be easily ignited by heat, sparks or flames.
 - Will it form explosive mixtures with air.
 - Vapors from liquefied gas are initially heavier than air and spread along ground, which may travel to source of ignition and flash back.
 - Containers may explode when heated or ruptured cylinders may rocket.

- Health
 - Vapors may cause dizziness or asphyxiation without warning.
 - Some may be irritating if inhaled at high concentrations.
 - Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
 - Fire may produce irritating and/or toxic gases.

- 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.
 - Isolate spill or leak area immediately for at least 50 to 100 meters (160 to 330 feet) in all directions.
 - Keep unauthorized personnel away.
 - Stay upwind and uphill. Keep out of low areas.
 - Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).

- Protective Clothing
 - Most situations involving hazardous material requires specialized clothing and equipment.
 - Wear positive pressure self-contained breathing apparatus (SCBA) or breathing protection if available.
 - In most cases Paramedics will be in the cold zone, however be aware of the potential for secondary transfer from contaminated patients or equipment.

- Initial isolation, protective action distances
 - Large spill
 - Consider initial downwind evacuation for at least 800 meters (1/2 mile).
 - Fire
 - If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also consider initial evacuation for 1600 meters (1 mile) in all directions.
 - Gases
 - Upwind, uphill up to 1000m

- Indicate hazmat classification
 - Color code
 - Hazard class number
- Some carry a four digit UN number
 - Specific identification number given to a specific chemical
- The absence of a placard does not mean that there is not a hazardous material
























- Vehicles carrying hazardous materials are required to display placards



- Packages and storage containers must be marked

Hazardous Materials Warning Labels

DOMESTIC LABELING


General Guidelines on Use of Labels
 (CFR, Title 49, Transportation, Parts 100-177)


- Labels illustrated above are normally for *domestic shipments*. However, some air carriers may require the use of International Civil Aviation Organization (ICAO) labels.
- Domestic Warning Labels may display UN Class Number, Division Number (and Compatibility Group for Explosives only) [Sec. 172.407(g)].
- Any person who offers a hazardous material for transportation **MUST** label the package, if required [Sec. 172.400(a)].
- The Hazardous Materials Tables, Sec. 172.101 and 172.102, identify the proper label(s) for the hazardous materials listed.
- Label(s), when required, must be printed on or affixed to the surface of the package near the proper shipping name [Sec. 172.406(a)].
- When two or more different labels are required, display them next to each other [Sec. 172.406(c)].
- Labels may be affixed to packages (even when not required by regulations) provided each label represents a hazard of the material in the package [Sec. 172.401].


Check the Appropriate Regulations
 Domestic or International Shipment


Additional Markings and Labels


HANDLING LABELS



 Cargo Aircraft Only
 172.402(b)



 172.316


 172.312(a)(3)


 Bung Label
 172.402(e)



 INNER PACKAGES
 COMPLY WITH
 PRESCRIBED
 SPECIFICATIONS
 173.25(a)(4)



 Fumigation
 173.9


 EMPTY
 173.427

Here are a few additional markings and labels pertaining to the transport of hazardous materials. The section number shown with each item refers to the appropriate section in the HMR. The Hazardous Materials Tables, Section 172.101 and 172.102, identify the proper shipping name, hazard class, identification number, required label(s) and packaging sections.

Poisonous Materials


 172.505


 172.301

Materials which meet the inhalation toxicity criteria specified in Section 173.3a(b)(2), have additional "communication standards" prescribed by the HMR. First, the words "Poison-Inhalation Hazard" must be entered on the shipping paper, as required by Section 172.203(k)(4), for any primary capacity units with a capacity greater than one liter. Second, packages of 110 gallons or less capacity must be marked "Inhalation Hazard" in accordance with Section 172.301(a). Lastly, transport vehicles, freight containers and portable tanks subject to the shipping paper requirements contained in Section 172.203(k)(4) must be placarded with POISON placards in addition to the placards required by Section 172.504. For additional information and exceptions to these communication requirements, see the referenced sections in the HMR.

Keep a copy of the Transport Canada Emergency Response Guidebook handy!

FIGURE 3-30A Transport Canada requires packages and storage containers to be marked with specific hazard labels.

- Display placards must be placed on the outside of vehicles



FIGURE 3-30B Transport Canada also requires display placards to be placed on the outside of vehicles.

D.O.T. PLACARD CHART HM-206



- 1 EXPLOSIVES
- 2 GAS
- 3 LIQUID
- 4 SOLID
- 5.1 OXIDIZER
- 5.2 ORGANIC PEROXIDE
- 6 POISON / TOXIC
- 7 RADIOACTIVE
- 8 CORROSIVE
- 9 MISC. DANGEROUS GOODS

CHEMICAL NAME	UN/NA NO.	PLACARD STYLE	HAZARD CLASS OR DIVISION
ACETIC ACID SOLUTION ~8% acid	UN2730	CORROSIVE	8
ACETONE	UN1900	FLAMMABLE LIQUID	3
ACETYLENE, dissolved	UN1051	FLAMMABLE GAS	2.1
ASB, compressed	UN1002	NON-FLAMMABLE GAS	2.2
ASB, refrigerated liquid	UN1053	NON-FLAMMABLE GAS	2.2
ALCOHOL BEVERAGES	UN2895	FLAMMABLE LIQUID	3
ALCOHOLS, N.O.S.	UN1987	FLAMMABLE LIQUID	3
ALCOHOLS, toxic, flammable, N.O.S.	UN1988	FLAMMABLE LIQUID	3
AMMONIA, anhydrous (liquefied)	UN1029	NON-FLAMMABLE GAS	2.2
AMMONIUM NITRATE FERTILIZERS	UN2067	OXIDIZER	5.1
AMMONIUM, practice	UN2020	EXPLOSIVE 1.4	1.4
AMPHIPHILIC liquid	UN1983	FLAMMABLE LIQUID	3
ARSENIC acid, liquid	UN1553	POISON INHAL. HAZ.	6.1
ARSENIC ACID, solid	UN1554	POISON INHAL. HAZ.	6.1
ASPHALT, at or above flash point	NA1900	FLAMMABLE LIQUID	3
BATTERIES, wet, filled with acid	UN2794	CORROSIVE	8
BATTERY FLUID, acid	UN2796	CORROSIVE	8
BENZENE	UN1114	FLAMMABLE LIQUID	3
BLACK POWDER, compressed or solid	UN0028	EXPLOSIVE	1.1
BLACK POWDER, granule or in a unit	UN0027	EXPLOSIVE	1.1
BUTANE	UN1011	FLAMMABLE GAS	2.1
BUTANOLS	UN1120	FLAMMABLE LIQUID	3
BUTYL ACETATES	UN1123	FLAMMABLE LIQUID	3
CALCIUM	UN1401	DANG. WHEN WET	4.3
CALCIUM CHLORIDE	UN1402	OXIDIZER	5.1
CALCIUM OXIDE	UN1910	CORROSIVE	8
CALCIUM NITRATE	UN1404	OXIDIZER	5.1
CARBON DIOXIDE, refrigerated liquid	UN1817	NON-FLAMMABLE GAS	2.2
CARBON DIOXIDE, solid (dry ice)	UN1845	MISC. DANG. GOODS	9
CARBON MONOXIDE, compressed	UN1016	POISON GAS	2.3
CARBON TETRACHLORIDE	UN1946	POISON INHAL. HAZ.	6.1
CAUSTIC ALKALI LIQUIDS, N.O.S.	UN1719	CORROSIVE	8
CHLORINE	UN1017	POISON GAS	2.3
COAL TAR, distillates	UN1136	FLAMMABLE LIQUID	3
COMBUSTIBLE LIQUID, N.O.S.	NA1983	COMBUSTIBLE LIQUID	3

CHEMICAL NAME	UN/NA NO.	PLACARD STYLE	HAZARD CLASS OR DIVISION
CORROSIVE LIQUID, N.O.S.	UN1789	CORROSIVE	8
CROTYLWAXENE	UN1144	FLAMMABLE LIQUID	3
DENATURED ALCOHOL	NA1987	FLAMMABLE LIQUID	3
DIESEL FUEL	NA1983	FLAMMABLE LIQUID	3
DIPNICTIC ACID, liquid, corrosive, N.O.S.	UN1903	CORROSIVE	8
DISINFECTANTS, solid, toxic, N.O.S.	UN1901	POISON INHAL. HAZ.	6.1
ETHANOL OR ETHYL ALCOHOL	UN1170	FLAMMABLE LIQUID	3
ETHYL METHYL KETONE	UN1193	FLAMMABLE LIQUID	3
FERRIC CHLORIDE, solution	UN2092	CORROSIVE	8
FIRE EXT. CHARGES, corrosive, liquid	UN1774	CORROSIVE	8
FINE EXTINGUISHERS	UN1044	NON-FLAMMABLE GAS	2.2
FLAMMABLE LIQUID, N.O.S.	UN1983	FLAMMABLE LIQUID	3
FORMALDEHYDE SOLUTION ~20%	UN2209	CORROSIVE	8
FUEL, AVIATION TURBINE ENGINE	UN1983	FLAMMABLE LIQUID	3
FUEL OIL, (W, 1, 2, 4, 5, or 16)	NA1983	FLAMMABLE LIQUID	3
GASOLINE	UN1203	FLAMMABLE LIQUID	3
HEATING OIL, light	UN1202	FLAMMABLE LIQUID	3
HELM, compressed	UN1040	NON-FLAMMABLE GAS	2.2
HELM, refrigerated liquid	UN1063	NON-FLAMMABLE GAS	2.2
HEPTANES	UN1206	FLAMMABLE LIQUID	3
HEXANES	UN1208	FLAMMABLE LIQUID	3
HYDROCHLORIC ACID	UN1789	CORROSIVE	8
HYDROFLUORIC ACID	UN1790	CORROSIVE	8
HYDROGEN, compressed	UN1040	FLAMMABLE GAS	2.1
HYDROGEN FLUORIDE, anhydrous	UN1062	CORROSIVE	8
HYDROGEN SULFIDE	UN1963	POISON GAS	2.3
HYPOCHLORITE SOLUTIONS	UN1791	CORROSIVE	8
ISOPROPANOL (ISOPROPYL ALCOHOL)	UN1219	FLAMMABLE LIQUID	3
KEROSENE	UN1223	FLAMMABLE LIQUID	3
LIGHTERS, fueled by gas	UN1987	FLAMMABLE GAS	2.1
LIQUEFIED PETROLEUM GAS (LPG)	UN1075	FLAMMABLE GAS	2.1
MAGNESIUM PEROXIDE	UN1476	OXIDIZER	5.1
METHANE, compressed or sat. gas cong.	UN1971	FLAMMABLE GAS	2.1
METHANE, refrigerated liquid	UN1972	FLAMMABLE GAS	2.1
METHANOL	UN1230	FLAMMABLE LIQUID	3

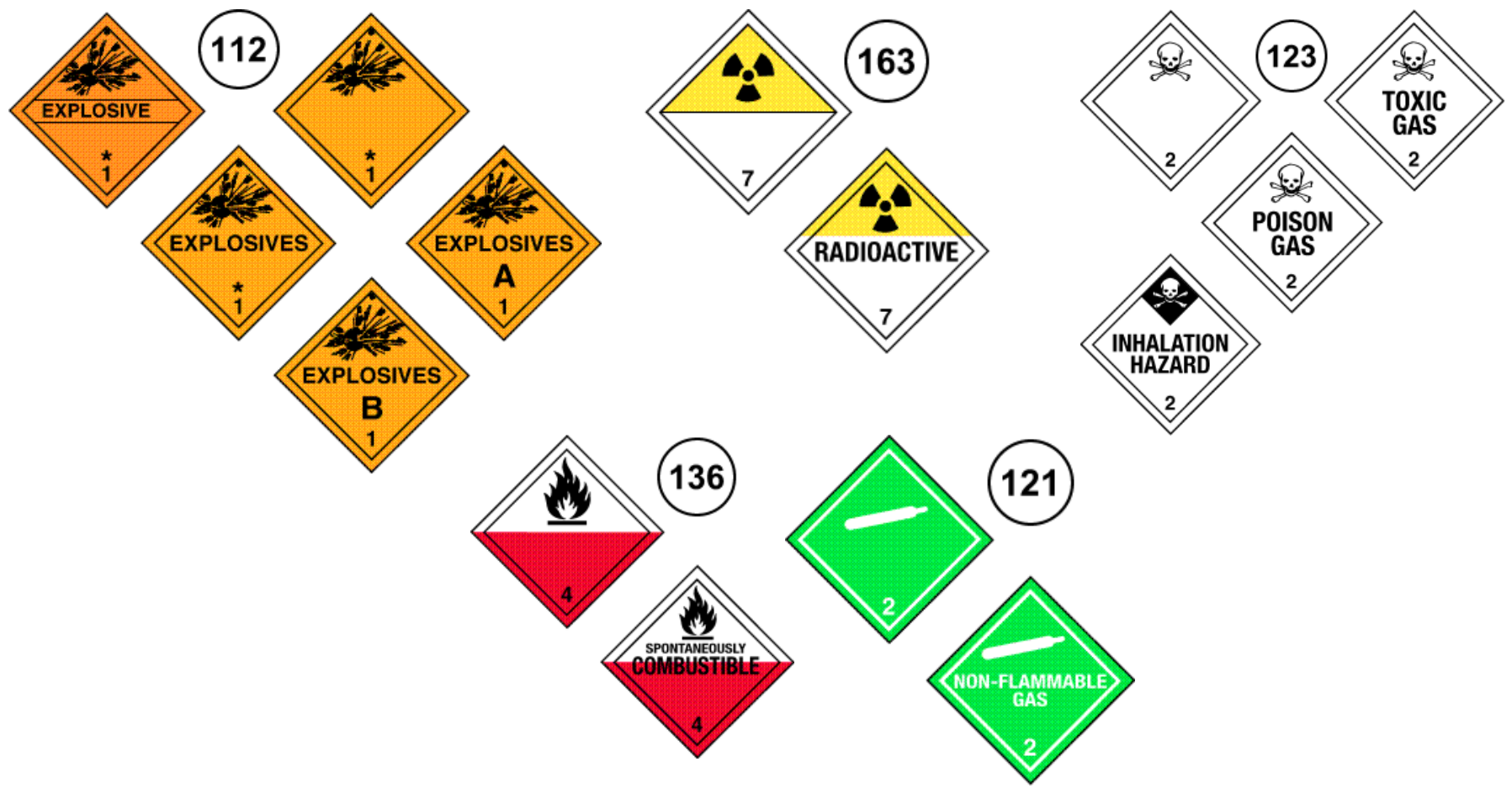
CHEMICAL NAME	UN/NA NO.	PLACARD STYLE	HAZARD CLASS OR DIVISION
METHYL METHYL KETONE	UN1246	FLAMMABLE LIQUID	3
MOOTONE	UN1954	POISON INHAL. HAZ.	6.1
NITRIC ACID	UN2021	CORROSIVE	8
NITROGEN, compressed	UN1066	NON-FLAMMABLE GAS	2.2
NITROGEN, refrigerated liquid	UN1077	NON-FLAMMABLE GAS	2.2
OXYGEN, compressed	UN1072	NON-FLAMMABLE GAS	2.2
OXYGEN, refrigerated liquid	UN1073	NON-FLAMMABLE GAS	2.2
PAINT RELATED MATERIAL	UN1263	FLAMMABLE LIQUID	3
PESTICIDES, liquid, toxic, N.O.S.	UN2090	POISON INHAL. HAZ.	6.1
PESTICIDES, solid, toxic, N.O.S.	UN2088	POISON INHAL. HAZ.	6.1
PETROLEUM CRUISE OIL	NA1270	FLAMMABLE LIQUID	3
PETROLEUM OIL	NA1270	FLAMMABLE LIQUID	3
PHOSPHORIC ACID SOLUTION	UN1985	CORROSIVE	8
POLYCHLORINATED BIPHENYLS, liquid	UN2215	MISC. DANG. GOODS	9
POLYCHLORINATED BIPHENYLS, solid	UN2432	MISC. DANG. GOODS	9
POTASSIUM	UN2257	DANG. WHEN WET	4.3
POTASSIUM HYDROXIDE, solution	UN1914	CORROSIVE	8
PRINTING INK	UN1978	FLAMMABLE LIQUID	3
PROPANE	UN1028	NON-FLAMMABLE GAS	2.2
R12 (DICHLORODIFLUOROMETHANE)	UN1028	NON-FLAMMABLE GAS	2.2
REFRIGERANT GASES, N.O.S.	UN1078	NON-FLAMMABLE GAS	2.2
RESIN SOLUTION	UN1986	FLAMMABLE LIQUID	3
SODIUM HYDROXIDE SOLUTION	UN1924	CORROSIVE	8
SODIUM NITRATE	UN1488	OXIDIZER	5.1
SODIUM PEROXIDE	UN1934	OXIDIZER	5.1
STYRENE MONOMER, inhibited	UN2055	FLAMMABLE LIQUID	3
SULFUR, molten	NA2448	MISC. DANG. GOODS	9
SULFUR DIOXIDE	UN1079	POISON GAS	2.3
SULFURIC ACID, ~91% ACID	UN1830	CORROSIVE	8
SULFURIC ACID, spent	UN1832	CORROSIVE	8
TOLUENE	UN1294	FLAMMABLE LIQUID	3
TRIMETHYLAMINE	UN1296	FLAMMABLE LIQUID	3
TURPENTINE	UN1299	FLAMMABLE LIQUID	3
VINYL ACETATE, inhibited	UN1301	FLAMMABLE LIQUID	3
XYLENES	UN1207	FLAMMABLE LIQUID	3

HAZARD CLASS 1.1	HAZARD CLASS 1.2
COMPATIBILITY GROUP A, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z	COMPATIBILITY GROUP E, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z

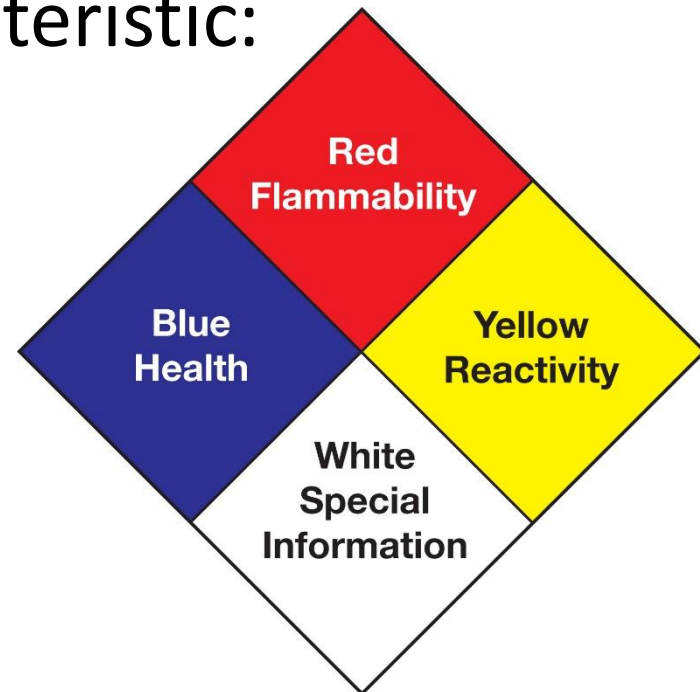
HAZARD CLASS 1.3	HAZARD CLASS 1.4	HAZARD CLASS 1.5	HAZARD CLASS 1.6	HAZARD CLASS 2	HAZARD CLASS 2	HAZARD CLASS 2	HAZARD CLASS 2	HAZARD CLASS 2	HAZARD CLASS 3	HAZARD CLASS 3
HAZARD CLASS 3	HAZARD CLASS 3	HAZARD CLASS 4	HAZARD CLASS 4	HAZARD CLASS 4	HAZARD CLASS 5	HAZARD CLASS 5	HAZARD CLASS 5	HAZARD CLASS 6	HAZARD CLASS 6	HAZARD CLASS 6
HAZARD CLASS 6	HAZARD CLASS 7	HAZARD CLASS 8	HAZARD CLASS 9	HAZARD CLASS 2	HAZARD CLASS 2	HAZARD CLASS 2	HAZARD CLASS 2	HAZARD CLASS 3	HAZARD CLASS 3	HAZARD CLASS 4
HAZARD CLASS 4	HAZARD CLASS 4	HAZARD CLASS 5	HAZARD CLASS 5	HAZARD CLASS 5	HAZARD CLASS 6	HAZARD CLASS 6	HAZARD CLASS 8	HAZARD CLASS 9	ELEVATED TEMPERATURE	MIXED LOADS
HAZARD CLASS 4	HAZARD CLASS 4	HAZARD CLASS 5	HAZARD CLASS 5	HAZARD CLASS 5	HAZARD CLASS 6	HAZARD CLASS 6	HAZARD CLASS 8	HAZARD CLASS 9	ELEVATED TEMPERATURE	MIXED LOADS

PLEASE NOTE: WHILE THE INFORMATION PRESENTED HERE IS BELIEVED TO BE ACCURATE AND IN COMPLIANCE WITH PRESENT D.O.T. FEDERAL REGISTER HM-206 PLACARD STANDARDS, WE ASSUME NO RESPONSIBILITY FOR THE ACCURACY, COMPLETENESS OR SUITABILITY OF ITS END USE. ©2006 S&S

1. Explosives
2. Gases
3. Flammable liquids
4. Flammable solids
5. Oxidizing
6. Poisonous
7. Radioactive
8. Corrosives
9. Miscellaneous dangerous goods



- Identifies hazardous materials at a fixed site
- System is designed for fixed-facility use.
- Each color used in the diamond represents a particular property or characteristic:
 - Red (Flammability)
 - Blue (Health hazard)
 - Yellow (Reactivity)
 - White (Specific information)



QUICK REFERENCE TO NFPA 704 IDENTIFICATION SYSTEM

FIRE HAZARDS

- (This square is color-coded red.)
- 4 Extremely flammable
 - 3 Ignites at normal temperature
 - 2 Ignites when moderately heated
 - 1 Must be preheated to burn
 - 0 Will not burn

HEALTH HAZARDS

- (This square is color-coded blue.)
- 4 Too dangerous to enter -- vapor or liquid
 - 3 Extremely dangerous -- use full protective clothing
 - 2 Hazardous -- use breathing apparatus
 - 1 Slightly hazardous
 - 0 Like ordinary material

REACTIVITY (STABILITY) HAZARDS

- (This square is color-coded yellow.)
- 4 May detonate -- evacuate area if materials are exposed to fire
 - 3 Strong shock or heat may detonate -- use monitors
 - 2 Violent chemical change possible -- use hose from distance
 - 1 Unstable if heated -- use normal precaution
 - 0 Normally stable

SPECIAL HAZARDS











- (This square is color-coded white.)
- | | |
|------|--------------|
| OXY | Oxidizer |
| ACID | Acid |
| ALK | Alkali |
| COR | Corrosive |
| W | Use NO WATER |

Source: Benedetti, Robert P., rev.; "Identification of the Hazards of Materials" in Fire Protection Handbook, Seventeenth Edition; National Fire Protection Association; July 1991; pp. 9-144 - 9-145.

- Canada has also adopted the GHS system
- Will not replace WHMIS but will update the following:
 - Pictograms
 - Labels
 - MSDS
 - Classification requirements
- Helping regulatory alignment with other countries and to help standardize the information



- Most pictograms have a distinctive red border
- Inside this border is a symbol that represents the potential hazard (e.g., fire, health hazard, corrosive, etc.)

	Exploding bomb (for explosion or reactivity hazards)		Flame (for fire hazards)		Flame over circle (for oxidizing hazards)
	Gas cylinder (for gases under pressure)		Corrosion (for corrosive damage to metals, as well as skin, eyes)		Skull and Crossbones (can cause death or toxicity with short exposure to small amounts)
	Health hazard (may cause or suspected of causing serious health effects)		Exclamation mark (may cause less serious health effects or damage the ozone layer*)		Environment* (may cause damage to the aquatic environment)
	Biohazardous Infectious Materials (for organisms or toxins that can cause diseases in people or animals)				

* The GHS system also defines an Environmental hazards group. This group (and its classes) was not adopted in WHMIS 2015. However, you may see the environmental classes listed on labels and Safety Data Sheets (SDSs). Including information about environmental hazards is allowed by WHMIS 2015.

From this:

Canada Workplace

EU Workplace, Consumer

Transportation

Canada Consumer



To this:



Transportation



Workplace

- GHS (WHMIS 2015) applies two major groups of hazards.
- Each Group includes hazard classes that have specific hazardous properties
- Hazard Groups
 - Physical hazard groups
 - Health hazard groups

- Flammable gases
- Flammable aerosols
- Oxidizing gases
- Gases under pressure
- Flammable liquids
- Flammable solids
- Self-reactive substances and mixtures
- Pyrophoric liquids
- Pyrophoric solids
- Self-heating substances and mixtures
- Substances and mixtures which emit flammable gases when mixed with H₂O
- Oxidizing liquids
- Oxidizing solids
- Organic peroxides
- Corrosive to metals
- Combustible dusts
- Simple asphyxiants
- Pyrophoric gases
- Physical hazards not otherwise classified

- Acute toxicity
- Skin corrosion/irritation
- Serious eye damage/eye irritation
- Respiratory or skin sensitization
- Germ cell mutagenicity
- Carcinogenicity
- Reproductive toxicity
- Specific target organ toxicity – single exposure
- Specific target organ toxicity – repeated exposure
- Aspiration hazard
- Biohazardous infectious materials
- Health hazards not otherwise classified

- The Workplace Hazardous Materials Information System (WHMIS) is Canada's National hazard communication standard.
- The key elements of the system are cautionary labeling of containers of WHMIS "controlled products", the provision of material safety data sheets (MSDSs) and worker education and training programs.

MATERIAL SAFETY DATA SHEET

DATE OF PREPARATION: 01/16/13

I. General Information

CHEMICAL NAME & SYNONYM:		TRADE NAME:	PET URINE NEUTRALIZER
CHEMICAL FAMILY:	Synthetic Detergent	FORMULA:	Proprietary
PROPER DOT SHIPPING NAME:	Cleaning Compound, Liquid	DOT HAZARD CLASSIFICATION:	None
SUPPLIER:	ZEOFILL INC. 9241 7TH AVE Hesperia, Ca 92345	SUPPLIER'S PHONE NUMBER:	1-888-926-4785
		24-HOUR EMERGENCY PHONE NUMBER:	1-800-535-5053

II. Ingredients

PRINCIPAL COMPONENTS	CAS #	THRESHOLD LIMIT VALUE (UNITS)
MUTANT BACTERIA STRAIN	N/A	N/A
NONIONIC SURFACTANT	90-164-59	N/A
WATER	7732-18-5	N/A
OPACIFIER	N/A	N/A
FRAGRANCE	N/A	N/A

III. Physical Data

BOILING POINT (°F):	212°F	SPECIFIC GRAVITY (H₂O=1):	1.0
VAPOR PRESSURE (MM HG):	N/A	PERCENT VOLATILE (%):	~100.0
VAPOR DENSITY (AIR=1):	>1	EVAPORATION RATE (WATER = 1):	<1
SOLUBILITY IN WATER:	Complete	pH:	7
APPEARANCE AND ODOR: Opaque white liquid with characteristic odor			

IV. Fire & Explosion Hazard Data

FLASH POINT (TEST METHOD):	NONE (TCC)	LOWER EXPLOSIVE LIMIT (LEL):	N/A
AUTO IGNITION TEMPERATURE:	NONE	UPPER EXPLOSIVE LIMIT (UEL):	N/A
EXTINGUISHING MEDIA:	Water, Dry Chemical, CO ₂		
SPECIAL FIRE FIGHTING PROCEDURES:	NONE		
UNUSUAL FIRE & EXPLOSION HAZARDS:	NONE		

V. Health Hazard Data

OSHA-ACGIH THRESHOLD LIMIT VALUE:	N/A	CARCINOGEN - IARC PROGRAM:	None
CARCINOGEN - NTP PROGRAM:	None		
SYMPTOMS OF EXPOSURE:	Skin & Eye Irritation		
Medical Conditions Aggravated by Exposure:	None		
PRIMARY ROUTES OF ENTRY:	Skin, Eyes, Nose, Mouth		
EMERGENCY FIRST AID:			
Skin:	Flush with water. See a physician.		
Eyes:	Flush with water for 15 minutes. See a physician.		
Ingestion:	Give large amounts of water. See a physician.		
Inhalation:	Remove to fresh air.		

VI. Reactivity Data

STABILITY:	UNSTABLE	<input checked="" type="checkbox"/>	STABLE
INCOMPATIBILITY-Material to Avoid:	NONE		
HAZARDOUS POLYMERIZATION:	MAY OCCUR	<input checked="" type="checkbox"/>	WILL NOT OCCUR
HAZARDOUS DECOMPOSITION PRODUCTS:	NONE		
CONDITIONS TO AVOID: None			

VII. Environmental Protection Procedures

SPILL RESPONSE:	Contain Spill. Soak up in an absorbant material. Flush area with water.
WASTE DISPOSAL METHOD:	In accordance with Federal, State and Local regulations.

VIII. Special Protection Information

EYE PROTECTION:	Splash Goggles	SKIN PROTECTION:	
RESPIRATORY PROTECTION:	None Required	VENTILATION RECOMMENDED:	Local Exhaust
OTHER PRECAUTIONS:	None		

IX. Special Precautions

HYGIENIC PRACTICES IN HANDLING & STORAGE:	Avoid Skin or Eye contact.
PRECAUTIONS FOR REPAIR & MAINTENANCE OF CONTAMINATED EQUIPMENT:	Flush with water and allow to air dry.
OTHER PRECAUTIONS:	None

- Contains information about
 - Chemical composition
 - Physical and chemical properties
 - Health and safety hazards
 - Emergency response
 - Waste disposal of a material

1. Product Identification
2. Hazard Identification
3. Composition/information on ingredients
4. First-aid measures
5. Fire-fighting measures
6. Accidental release measures
7. Handling and storage
8. Exposure controls/personal protection
9. Physical and chemical properties
10. Stability and reactivity
11. Toxicological information
12. Ecological information
13. Disposal considerations
14. Transport Information
15. Regulatory information
16. Other information

Note: In Canada the supplier has the option to not provide the information in section 12 - 15

- Shipping papers
 - Names, addresses of shipper and recipient
 - Quantity of chemical, weight of shipment
 - Bill of landing
 - Way bill
 - Manifest
 - Air bill

- Shipping documents (papers) are synonymous and can be found as follows:
 - Road – kept in the cab of a motor vehicle
 - Rail – kept in possession of a crew member
 - Aviation – kept in possession of the aircraft pilot
 - Marine – kept in a holder on the bridge of a vessel
- Shipping documents (papers) provide vital information regarding the hazardous materials/dangerous goods to initiate protective actions

- Information provided:
 - 4-Digit Number, UN or NA (go to Yellow Pages)
 - Proper Shipping name (go to Blue Pages)
 - Hazard Class or Division number of material
 - Packing Group
 - Emergency response telephone number
 - Information describing the hazards of the material (entered on or attached to shipping document)



1219

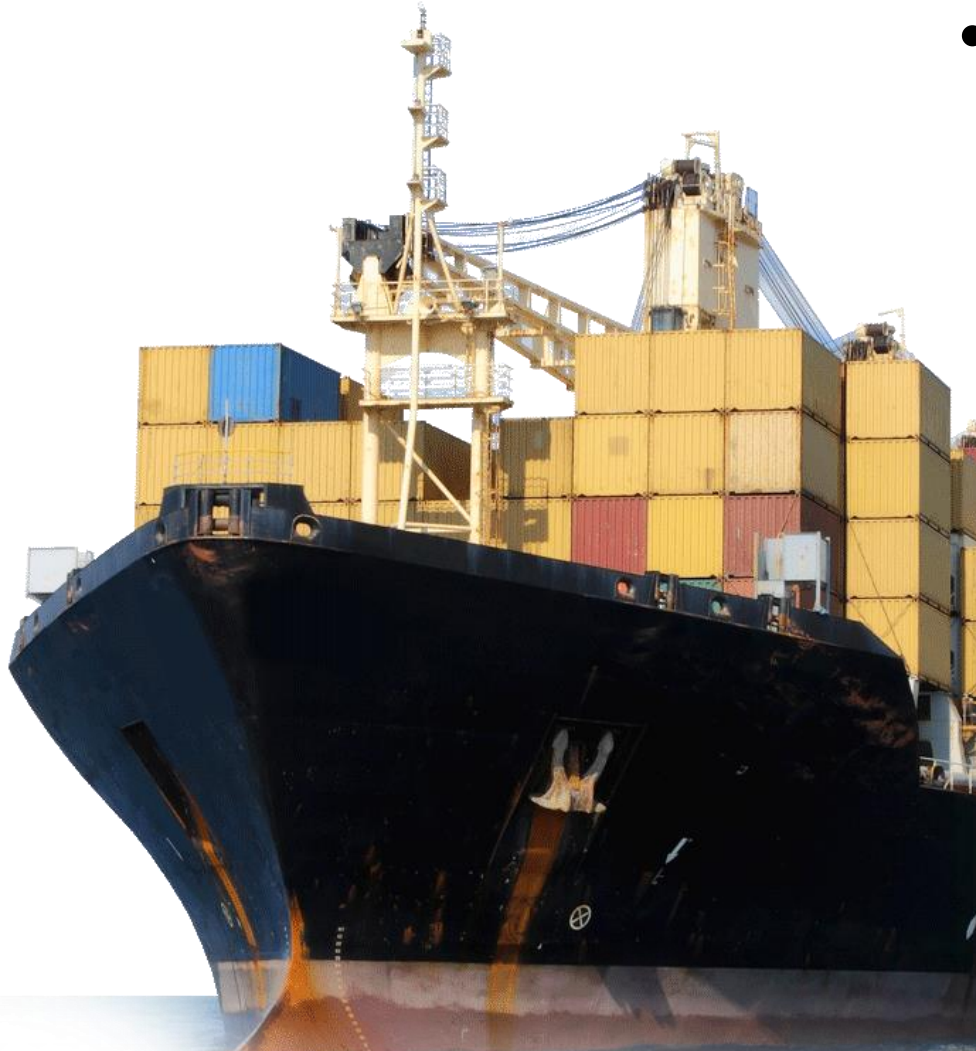
EMERGENCY CONTACT 1-000-000-0000		EXAMPLE OF EMERGENCY RESPONSE TELEPHONE NUMBER	
NO. & TYPE OF PACKAGES	DESCRIPTION OF ARTICLES	HAZARD CLASS OR DIVISION NO.	QUANTITY
1 TANK TRUCK	ISOPROPANOL	3 UN1219	II 3,000 LITERS
	SHIPPING NAME	ID NUMBER	PACKING GROUP

STRAIGHT BILL OF LADING ORIGINAL - NOT NEGOTIABLE		BOL/Reference No. RSI82715
CARRIER: NORFOLK SOUTHERN		Date: 12/23/2008
Shipper: RSI LOGISTICS, INC (OKEMOS, MI US)		
<p>The property described below, in apparent good order, except as noted (contents and condition of packages unknown), marked, counted, and destined as indicated below, which said carrier (the word carrier being understood throughout this contract as meaning any person or person in possession of the property under the contract) agrees to carry to its usual place of delivery and destination, if an interstate, otherwise to deliver to another carrier on the route to its destination. It is mutually agreed, also each carrier of all or any said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Official, Southern, Western and Illinois Freight Classification in effect on the date hereof, if this is a rail or a rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment.</p> <p>Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, including those on the back thereof, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.</p>		
Consignee Information: CONSIGNEE DEER PARK, TX Address: City: DEER PARK, TX US		
Route: NS-ESTL-BNSF		
Origin Switch Route:		
Destination Switch Route: HUSTN-PTRA		Rail Car No: GATX290861
For assistance in any transportation emergency involving chemicals, phone CHEMTREC, day or night, Toll Free 1-800-424-9300		
DESCRIPTION		*WEIGHT
ONE TANK CAR	Contains: Methyl Esters STCC#2899415 BIODIESEL-15, Biodiesel Sales Order Contract No: RSI82715 Sales Order Contract No: AAT122308-4 Purchase Order Contract No: AAT122308-4	(Sub. To Correction) 204400 Lbs.
SEAL NUMBERS:	Gross	
	Tare	
	Net	
	Weighed By: _____	
If charges are to be prepaid, write or stamp here, "To be Prepaid" Prepaid		
Subject to Section 7 of the conditions of applicable bill of lading, if this shipment is to be delivered to the consignee without recourse on the consignee, the consignor shall sign the following statement: The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.		
Not In Effect		
* This is to certify that the above named materials are properly classified, described, packaged, marked, and labeled, and are in proper condition for transportation, according to the applicable regulations of the Department of Transportation.		

- Shipping papers for road and highway transportation, located in the cab of the vehicle.



- Shipping papers on a marine vessel, kept in the custody of the captain or master.



CARGO MANIFEST																							
AIRCRAFT DATA				DEST CODE		REF		DESTINATION		MISSION DATA			ALW WT		ALW QU		MANIFEST ID		PAGE NO				
AIR CARRIER	AC NO	AC MODEL								NO	SU	DATE											
SUB-FACE		DATE SAILED	VOYAGE DOCUMENT NO.	POD	REF	VESSEL NAME	STATUS	SUBST	TRUCKING	REMARKS		PAGE NO.											
DOC ID	VEHICLE TRAILER OR CONTNR NUMBER	YR	MARKT	COM CODE	CAR. GO. ENC.	VOYAGE DOC NO.	PORT OF DISCH.	TYPE PACK	TRANSPORTATION CONTROL NUMBER	CONSIGNEE		NAME		IDENTIFICATION NO. OR REMARKS	PIECES	WEIGHT	CUBE						
										P	R	A	M					ARRIG LOT NO./DIMEN	DIMENSIONS				
ITEMS HAVE BEEN LOADED:										ITEMS HAVE BEEN RECEIVED EXCEPT AS CIRCLED NOTED ON REVERSE SIDE													
DATE					SIGNATURE OF LOADING AGENT					DATE					SIGNATURE OF RECEIVING AGENT					TOTALS	0	0.00	0.00

- An air bill: Shipping paper for air transport, kept in the cockpit.



ABF 80 - WHSE. NO. 05450 (2-91) APPERSON PRINT MANAGEMENT SERVICES TO REORDER CALL: 1(800) 438-0162

NO.

AIR WAYBILL NON-NEGOTIABLE

DATE SHIPPED	AIRLINE AWB	CHARGES - CHECK ONE				DECLARED VALUE	DEST.	SVC.	INSURANCE VALUE
		PREPAID <input type="checkbox"/>	COLLECT <input type="checkbox"/>	OTHER <input type="checkbox"/>	See Bill To				
SHIPPER		CONSIGNEE				POINT OF ORIGIN			
STREET		STREET				POINT OF DESTINATION			
CITY		CITY							
STATE		ZIP		STATE		ZIP			
BILL TO: (IF OTHER THAN SHIPPER OR CONSIGNEE)		SHIPPER'S REFERENCE NO.							
PIECE NO.	DESCRIPTION	WEIGHT	L	W	H	RATE			
							TOTAL CUBIC INCHES (DIMENSIONS)		
AUTHORITY		X	SHIPPER'S						
RECEIVED BY:		PERSONAL <input type="checkbox"/>	PER						
DATE		TIME	NO. OF SHIPMENTS THIS STOP						
Copyright © 1988 by Apperson Print Management Services		SUBJECT TO CONDITIONS OF CONTRACT ON BACK OF AIRBILL							

IT IS THE SHIPPER'S OBLIGATION TO PREPARE AND MAINTAIN AN AIRBILL FOR EACH SHIPMENT. THE SHIPPER SHALL BE RESPONSIBLE FOR THE ACCURACY OF THE INFORMATION PROVIDED HEREON. THE SHIPPER SHALL BE RESPONSIBLE FOR THE PAYMENT OF ALL CHARGES AND FEES. THE SHIPPER SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE AIRBILL. THE SHIPPER SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE AIRBILL. THE SHIPPER SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE AIRBILL.

- Canadian Transport Emergency Centre
- Operated by the Transportation of Dangerous Goods (TDG) Directorate of Transport Canada
- Overall mandate is to promote public safety in the transportation of dangerous goods by all modes

- In the event of an emergency involving dangerous goods, CANUTEC should be contacted (by fire, dispatch or ambulance directly depending on the nature of the scene)

613-996-6666

*666 on mobile device

- When you encounter one of these scenes, remember personal safety and take the time to find out what you are dealing with.

