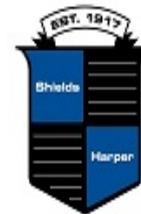


THANK YOU TO OUR 2021 SPONSORS



Post Session Zoom Rooms

- After our Session is over, we are offering a Zoom Room opportunity for you to continue the conversation started in this Session
- You will stay in this session for up to an hour after the end of the class.
- In this Zoom Room, you may meet with the Speaker, Moderator and/or fellow Attendees for a 'post meeting de-brief'





8HR HAZWOPER REFRESHER TRAINING IN THE LAND OF ZOOM 1 of 2

Code: K-3/9 @ 1pm
March 9, 2021



23rd California Unified Program Annual
Training Conference
February 2 – March 18, 2021

Administrative Announcements

- Hazwoper refresher certs
- Cell phone and computer usage
 - Place phones on vibrate
 - Mute your microphones when you are not talking
- **Breaks:** 2:45pm
- **Class completes:** 5pm PDT
- Final Project and Evals
- Course Certificates

GRU'S RULES!!!



YOU WILL NOT CRY OR WHINE
OR LAUGH OR GIGGLE OR
SNEEZE OR BURP OR FART.
NO ANNOYING SOUNDS.

Intro & Welcome

Nick Vent

Hazmatvent@gmail.com

619-778-9500

Bryan@Sustainablewp.org

863-676-4100

www.nickvent.com



What is “Hazardous”?

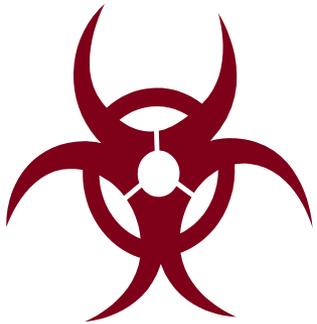
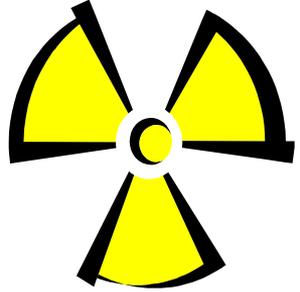
Federal 40 CFR requirements break it into four (4) classifications:

Toxic

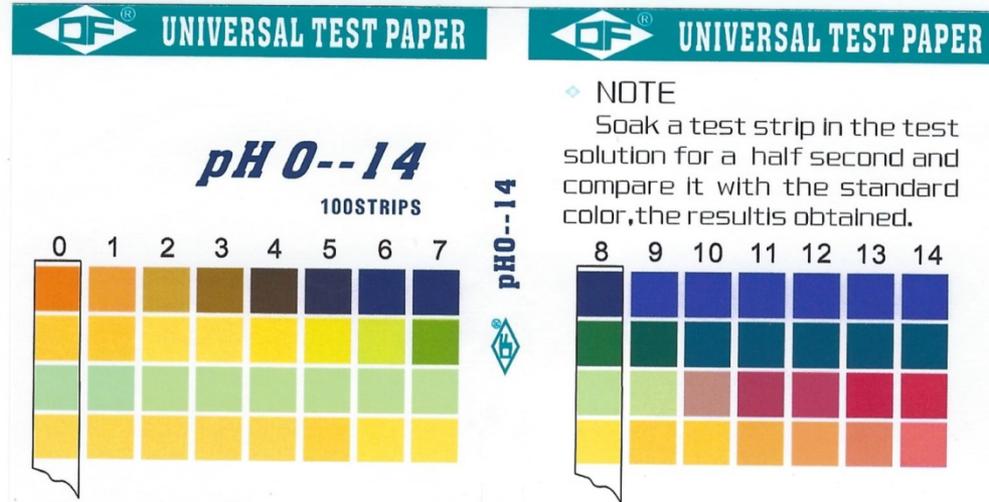
Reactive

Ignitable

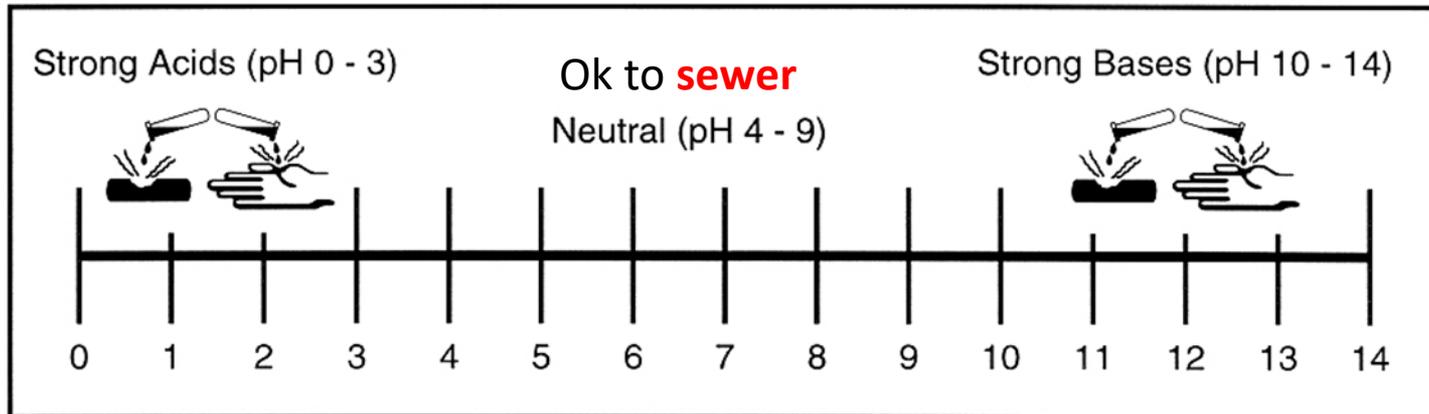
Corrosive



RCRA Corrosive pH 0-2 or 12.5-14



The pH Scale





What is “Hazardous”?

Federal 49 CFR requirements break it into nine (9) classifications:

Explosive

Oxidizers

Gases

Poisons

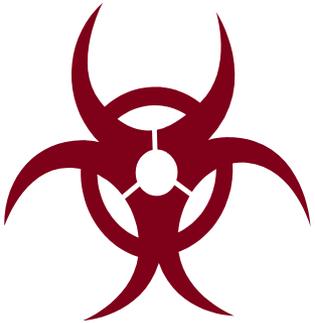
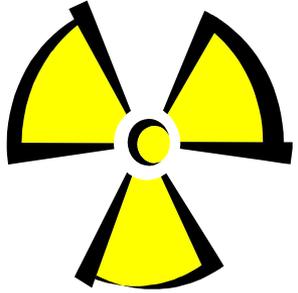
Flammable Liquid

Radioactive

Flammable Solid

Corrosives

Other Regulated Materials



Explosives (Class 1)

- Trinitrotoluene (TNT)
- Black Powder
- Lead azide
- ANFO
- PETN





August 4, 2020

The government there is saying that 2,750 tons of ammonium nitrate exploded
158 deaths, 6,000 injuries, and US\$10–15 billion in property damage¹¹

Other major events in History

- On **16 April 1947** a fire started on a ship loaded with 2,300 tons of ammonium nitrate. The crew and the local fire department were unable to get the fire under control. Shortly after 0900 the cargo exploded. The ship was destroyed as were nearby ships and over 1,000 buildings in the vicinity. Hundreds were killed and thousands were injured. Nobody knows how many were killed since many of the bodies were obliterated. The ship's anchor (weighing 2 tons) landed over 1.5 miles away.
- On **17 April 2013** 240 tons of ammonium nitrate exploded at a fertilizer storage and distribution facility in West, Texas. It destroyed or damaged every structure near the facility. Windows were blown out in buildings 7 miles away. 15 people were killed, including several firefighters. The explosion left a crater over 90 feet in diameter.

Gases (Class 2)

- Anhydrous Ammonia
- Hydrogen Sulfide
- Phosgene
- Acetylene
- Silane



Carbon Dioxide (Gas and Dry Ice) and Helium

- Secure cylinders from falling over and protect valves.
- Ensure areas where they are being used are well ventilated to prevent asphyxiation and/or fire.
- Avoid use or storage in confined rooms or walk-in refrigerators or freezers.
- Responders are dealing with death and injuries in Food establishments due to these gasses.





**FOOD TRUCK
SAFETY**

SNN

10/07/2014

LiveLeak



Flammable/Combustible Liquids (Class 3)

- Gasoline
- Alcoholic Beverages
- Hydrazine
- Toluene
- Acetone



Conflict between DOT and NFPA on Storage of Flammables

This shows up more now that
businesses have pivoted for Covid



Intermediate Bulk Containers



Not allowed by NFPA code





Intermediate Bulk Containers are legal to ship per DOT but can not be stored indoors if they contain flammables.

Flammable Solids (Class 4)

Aluminum Phosphide

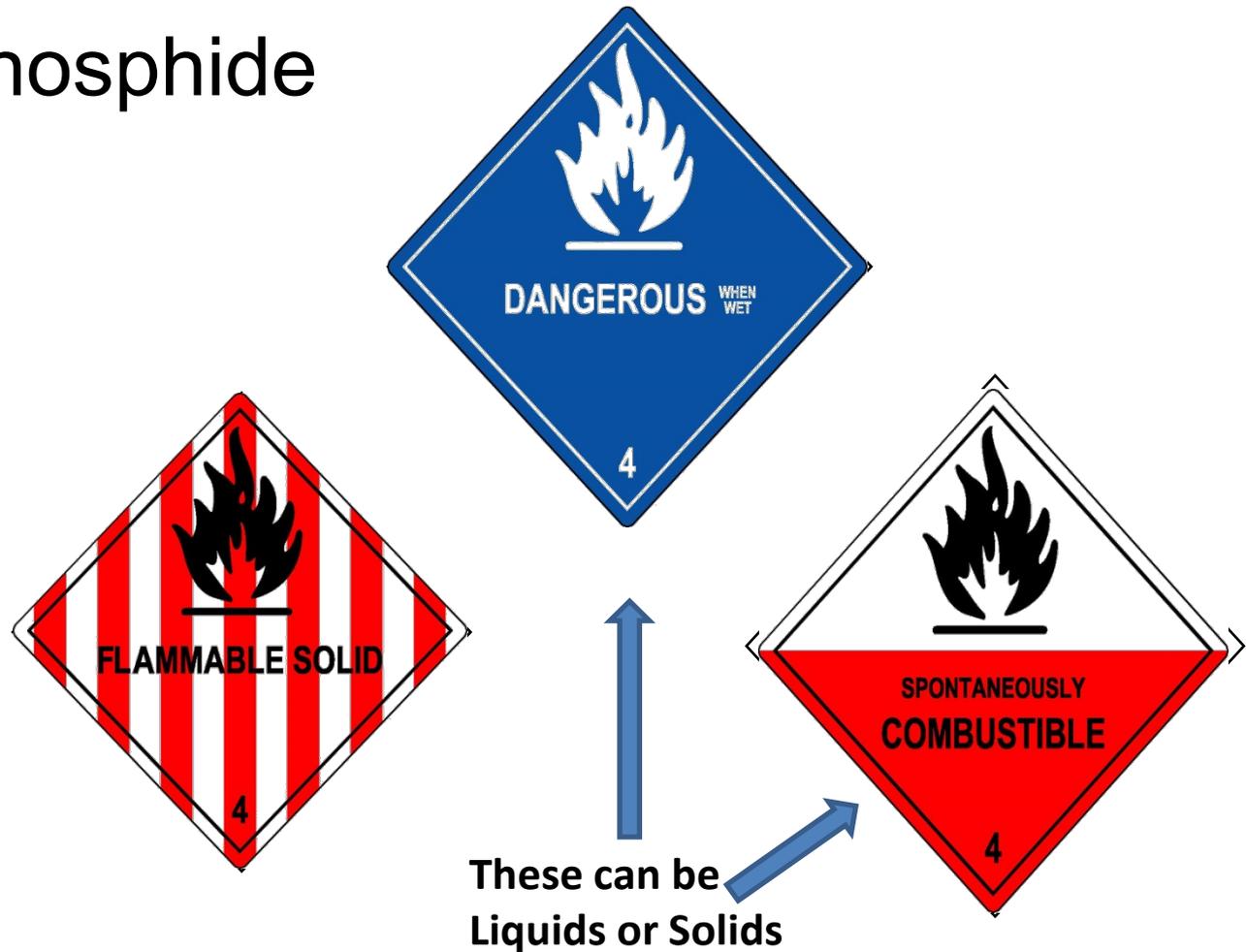
Napthalene

Sodium

Lithium

Phosphorus

Magnesium



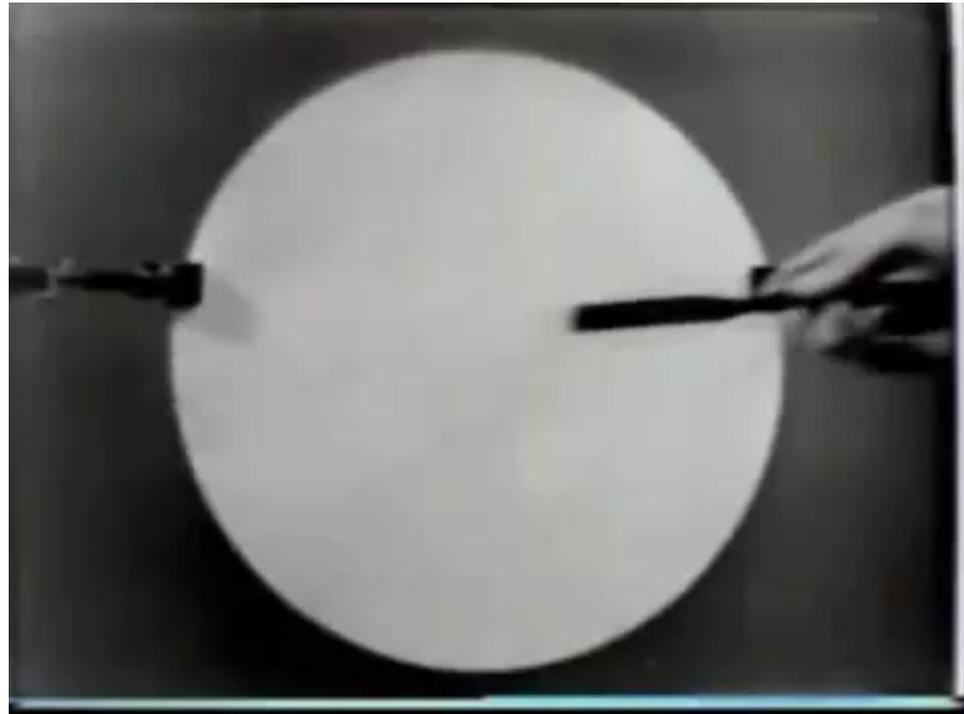
Flammable Solids



Aluminum dust

Pyrophoric Liquids or Solids

- A Liquid or solid which, even in small quantities, is liable to ignite within five minutes after coming into contact with air

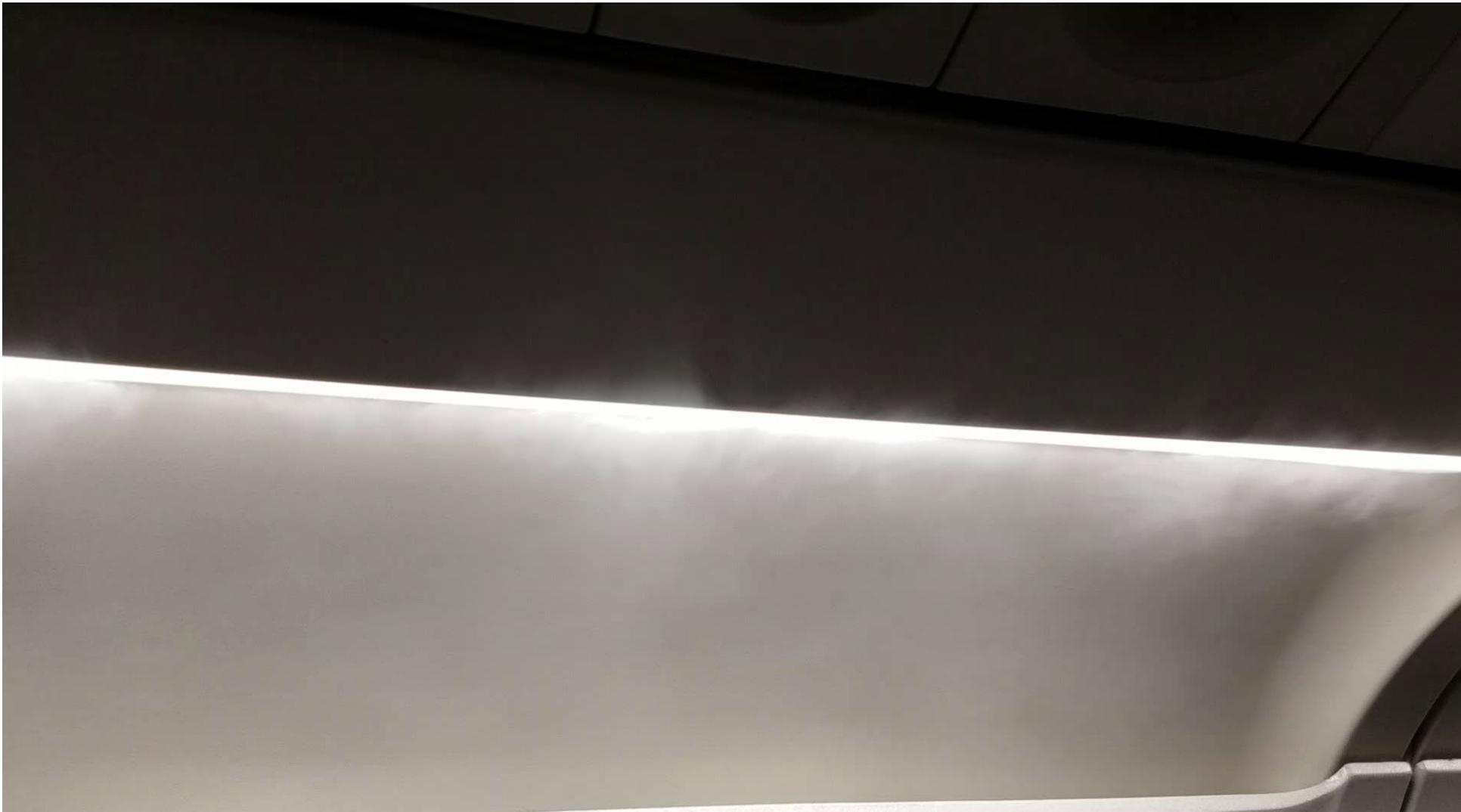


SAMSUNG 7 Note Phone battery



The RED color is the Lithium

Moisture on an Airplane



Oxidizers & Organic Peroxides (Class 5)

- Red Fuming Nitric Acid
- Nitrogen tetroxide
- Potassium nitrate
- Ammonium Nitrate
- Chlorine gas
- Dry Pool Bleach (Shock)
- Epoxy Glue Catalyst
- Methyl Ethyl Ketone Peroxide (MEKP)





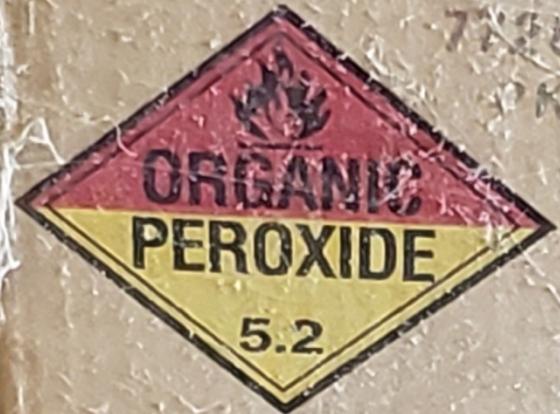
HAZARDOUS MATERIALS
SHIPPING PAPERS
ENCLOSED

0102

ARKEMA
INNOVATIVE CHEMISTRY
LUPEROX® A75
BY ARKEMA

IN CASE OF EMERGENCY CALL CHEMTEC 1-800-424-9300
OR CALL DUNFORD APPLER CHEMTRAC A KONEX SERVICE 1-708-627-0887
MADE IN U.S.A.

7258814350 1X25
PKD BY OR



ORGANIC PEROXIDE TYPE C, SOLID
(DIBENZOYL PEROXIDE, 4774)

UN 3104

STORE BELOW: 30°C / 100°F

UN 4G/Y19 2/S/18
USA/M5720



Poisonous & Infections Materials (Class 6)

- Hydrazine
- Nicotine
- Ebola
- Fumigants
- Pesticides



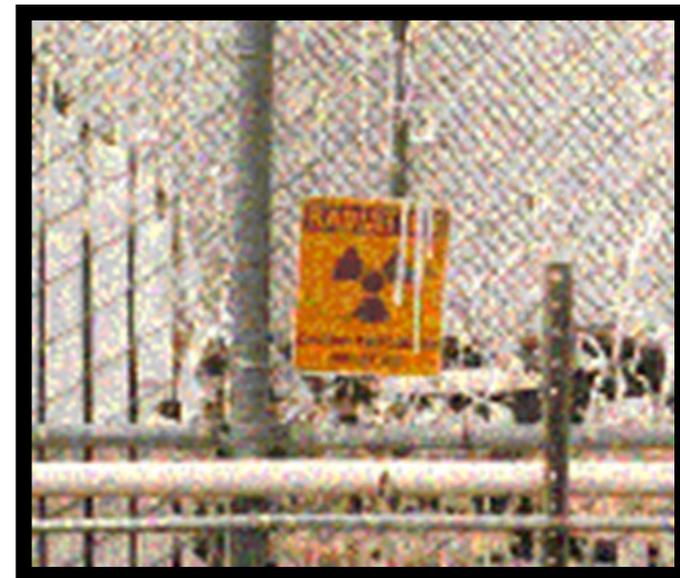
Placards and Labels

- Background color, symbol and number at bottom all correspond to hazard class



Radioactive Materials (Class 7)

- Uranium Hexafluoride
- Thorium
- Soil Penetrometers
- Industrial X-Ray Material



Labels

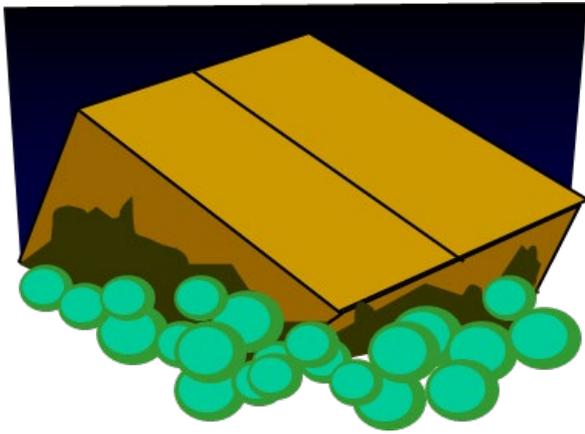
Label	Radiation Level Associated With Intact Package
Radioactive White-I	Almost-no radiation- 0.5 mrem/hr -maximum on surface.
Radioactive Yellow-II	Low radiation levels - 50 mrem/hr maximum on surface; 1 mrem/hr maximum at 3 ft.
Radioactive Yellow-III	Higher radiation levels - 200 mrem/hr maximum on surface; 10 mrem/hr maximum at 3 ft. Also required for fissile class III or large quantity shipments, regardless of radiation level.



Labels Required On Package Exterior.
Standard size is approximately 4" X 4".

Corrosive Materials (Class 8)

- Bleach (Chlorox®)
- Sodium Hydroxide - Lye
- Sulfuric Acid – Battery Acid
- Hydrazine
- Muriatic Acid





Misc. Hazardous Materials (Class 9)

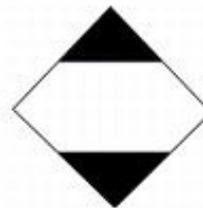
- Ammonium nitrate fertilizers
- Hazardous waste
- Automobiles
- Asbestos
- Many Household products



ORM-D not used after 12/31/20 by ground transport



New



(Limited Quantity)
(Surface)



(Limited Quantity)
(Air)



Inside each box, a device about the size of a cellphone measures temperatures, records GPS and can detect if a box is opened. Pfizer can track the boxes until they arrive at their destinations.





Powered by Controlant

- Shipment status Good Alarm
- Connection Good Fail
- Battery Good Low

For More Real-Time Loggers

Start Shipment
(Press and hold for 3 seconds)



Stop Shipment
(Press and hold for 3 seconds)



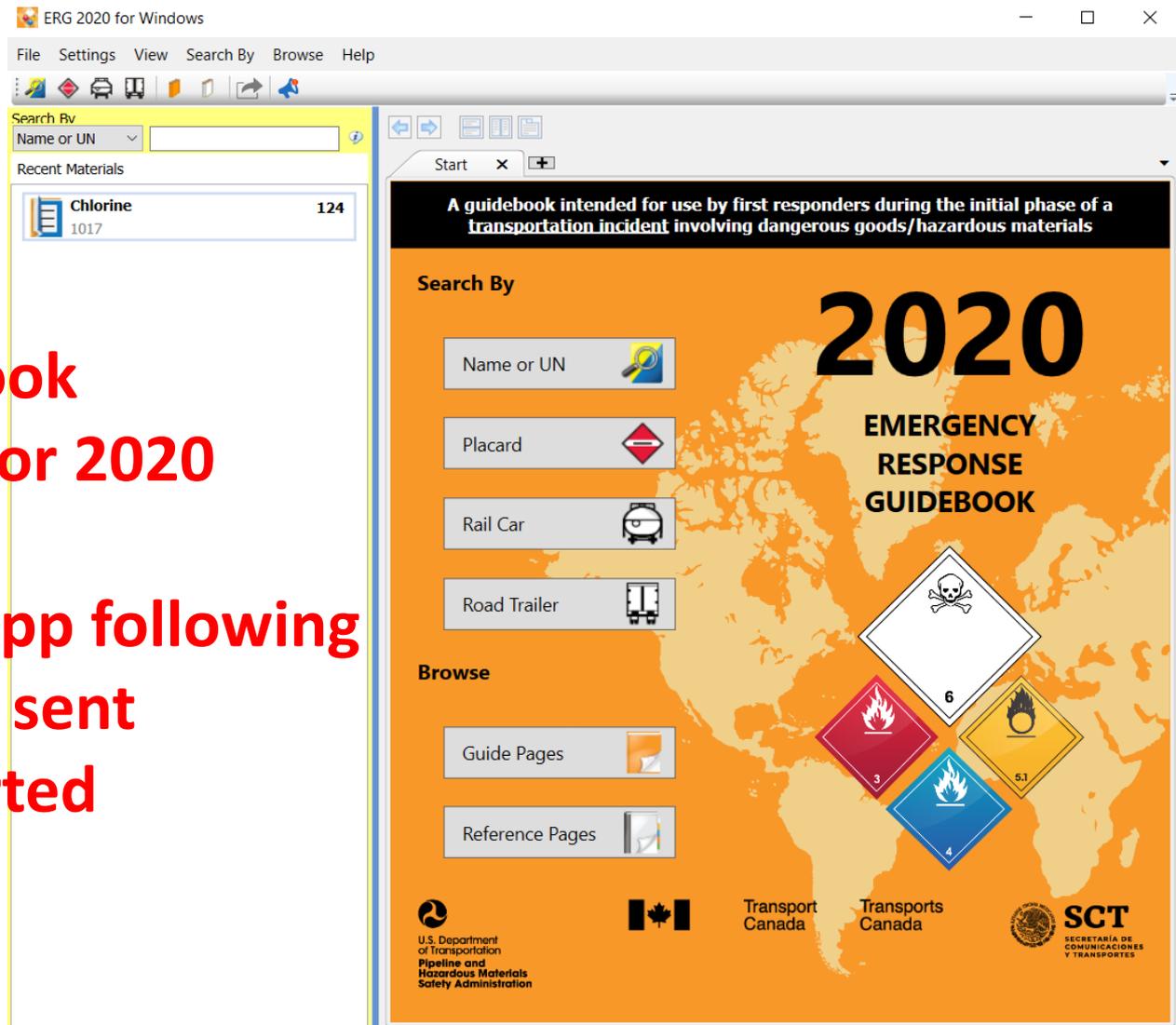
CMS 1000F348

Compliant as of January 1, 2021,

- The new, smaller marks are 100 mm X 100 mm and 100 mm X 70 mm with bolder hashmarks.
- Previous: 120 mm X 110 mm and 105 mm X 74 mm.



Get your ERG book
Prefer the 2016 or 2020
or
Download the App following
The instructions sent
Before class started

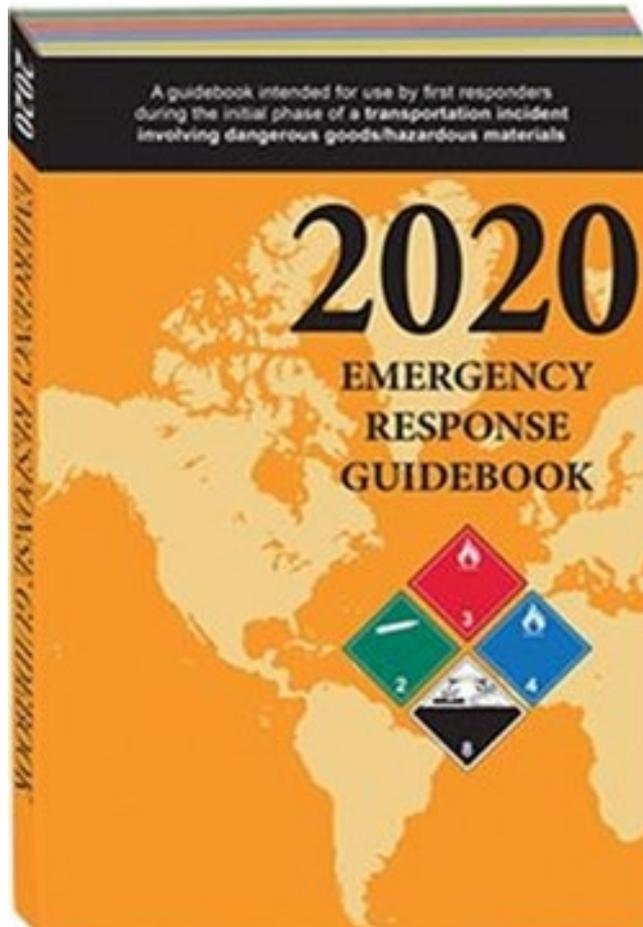


<https://www.phmsa.dot.gov/hazmat/erg/erg2020-mobileapp>

Later you will want to log into www.kahoot.it to play this



getkahoot.com



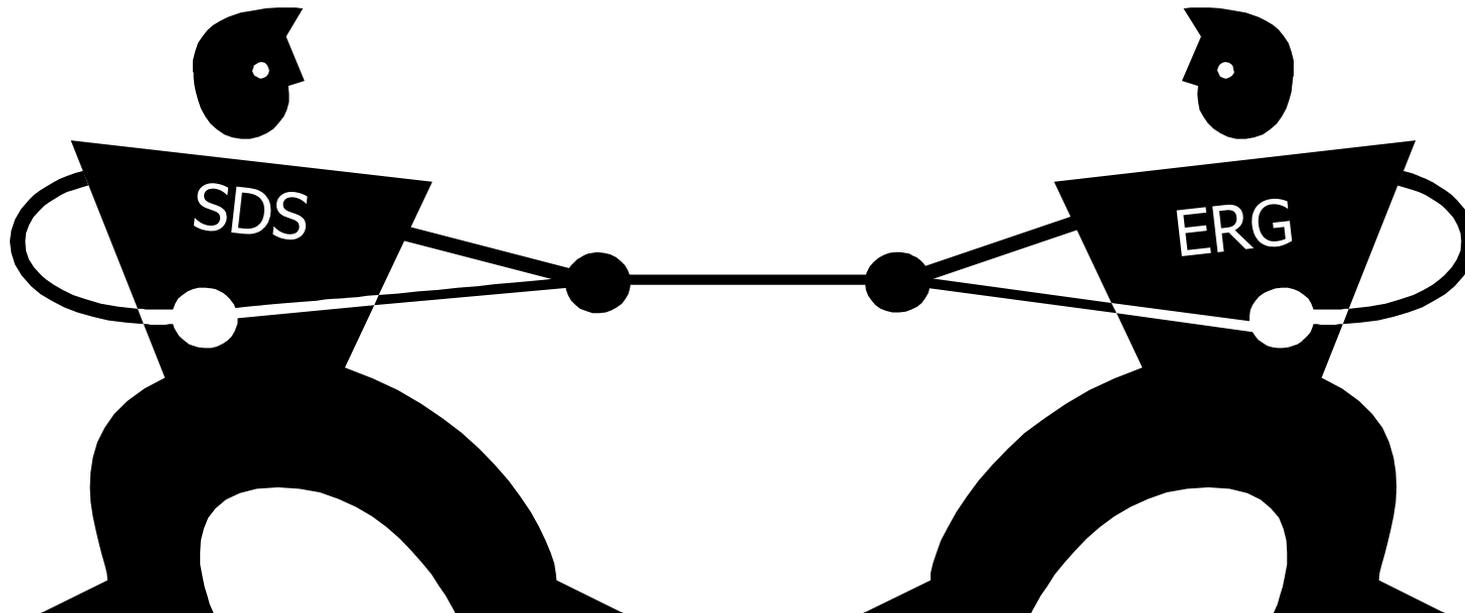
Updated every 4 years

DOT Emergency Response Guidebook (ERG)

Intended use -
“initial phase”
for perimeters

ERG versus SDS

- ERG – Initial transportation incidents
- Safety Data Sheet (SDS)
 - all other incidents
 - Longer term incidents!



ERG 2020

FREE



ERG 2020 for Android

or Iphone

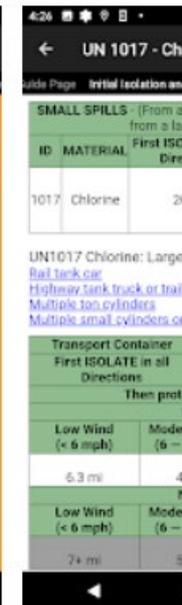
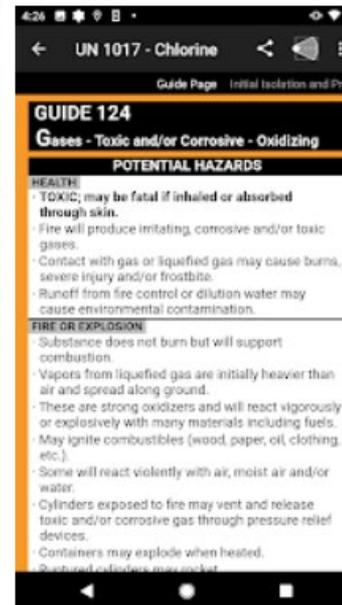
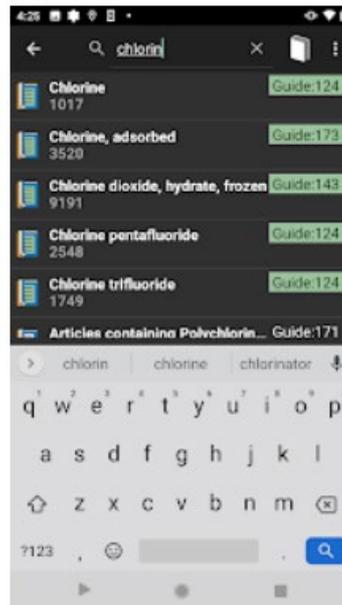
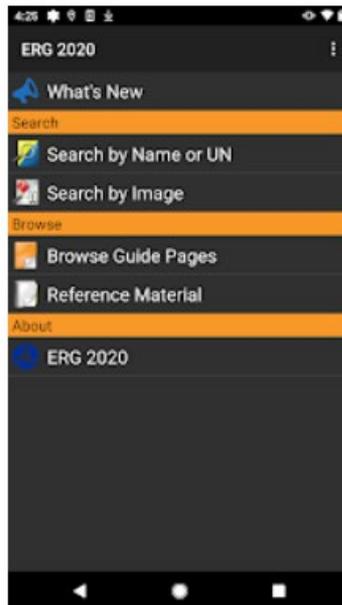
National Library of Medicine at NIH Medical

★★★★☆ 2,878

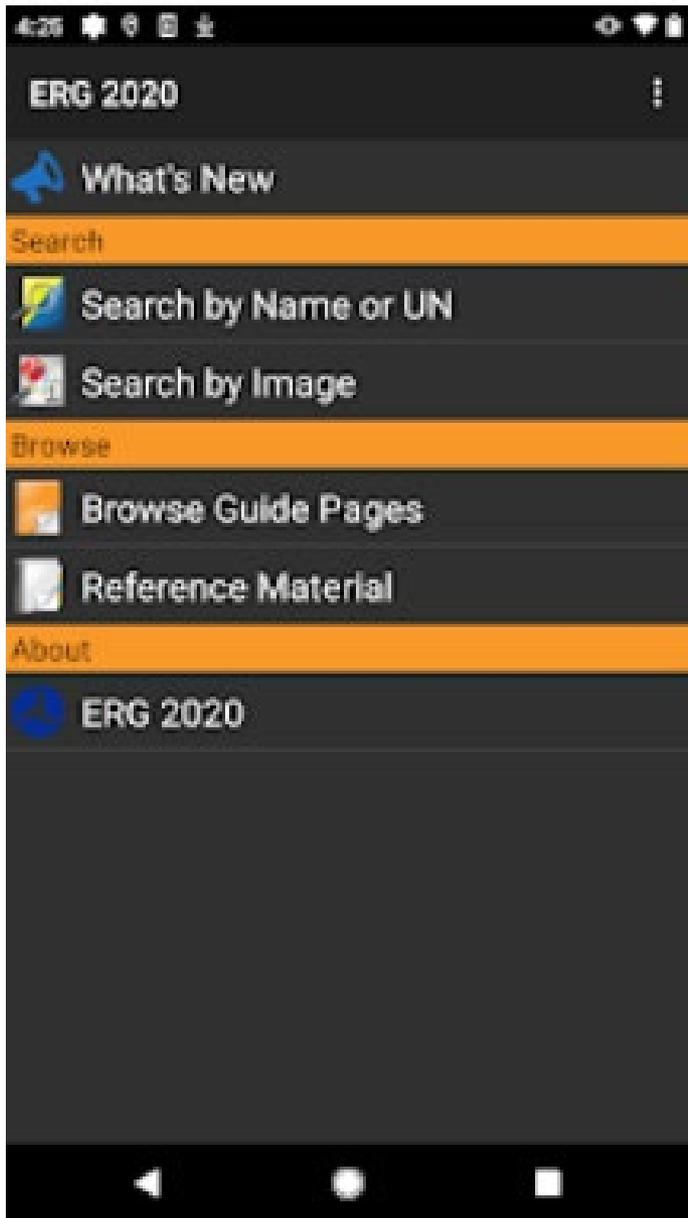
Everyone 10+

This app is compatible with your device.

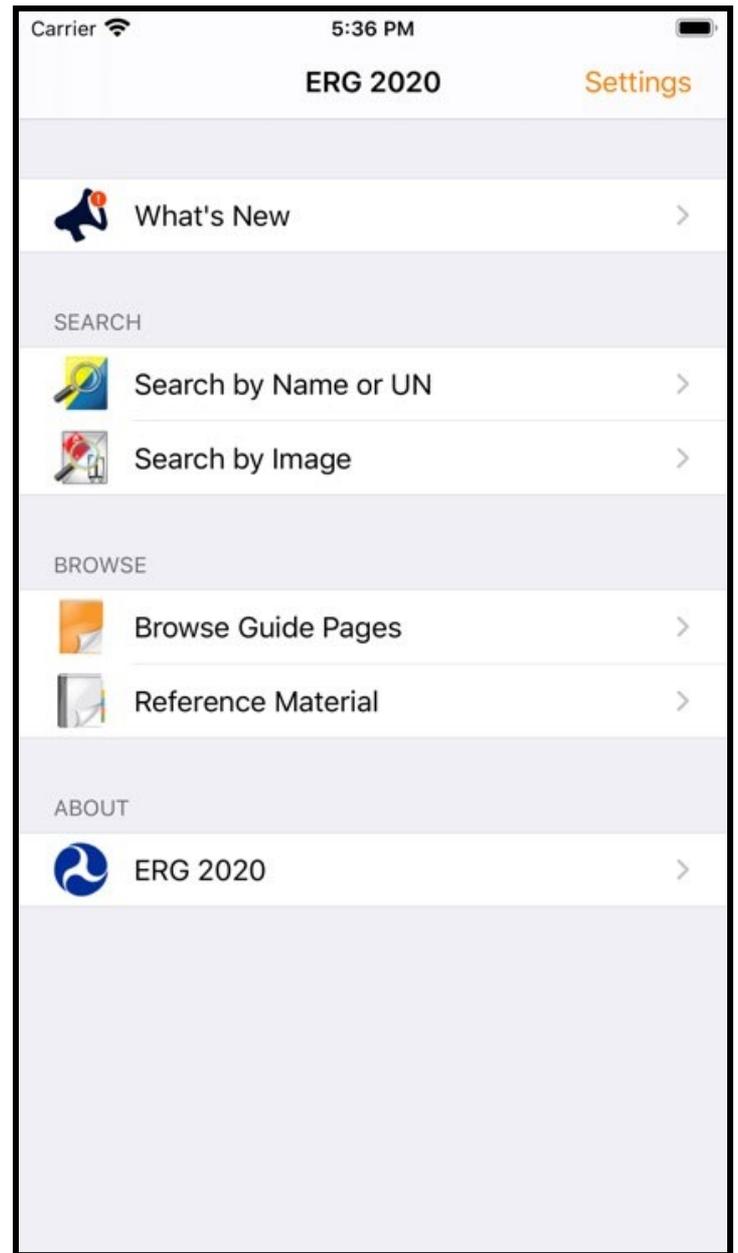
Installed



<http://phmsa.dot.gov/hazmat/erg-mobile-app>

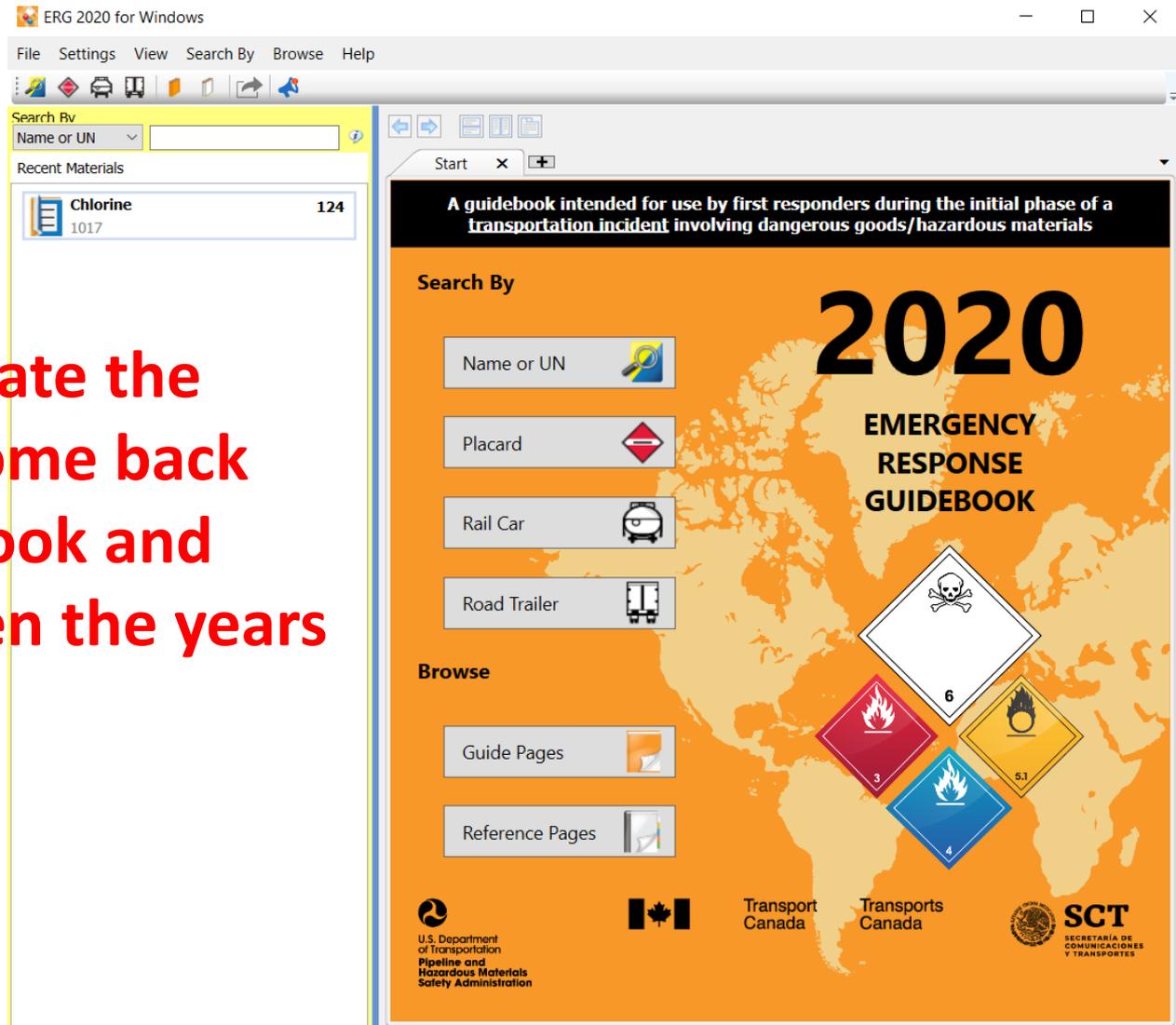


Android phone



Apple phone

Let us demonstrate the APP and then come back To look at the book and Changes between the years



<https://www.phmsa.dot.gov/hazmat/erg/erg2020-mobileapp>

ERG Organization

- White — Basic info & instructions
- Yellow — UN #, guide # & material name
- Blue — Material name, guide # and UN #
- Orange — Guide number pages
- Green — Isolation & Protective Actions
 - Small and large quantity spills





ERG—Good But Limited

- Classification of hazard
 - Shipping Papers description behind cover
 - Flow Chart how to use book p.1
 - List of hazard classes p.6
 - Pictures of placards p7-9
 - Pictures of tank cars p.10-14
 - GHS information p.15-17
 - Explosive stand off distances p. 373-374
- **Guides** — “most essential guidance”
- **Isolation/evacuation distances** — guides

A guidebook intended for use by first responders during the initial phase of a transportation incident involving hazardous materials/dangerous goods

2020

EMERGENCY RESPONSE GUIDEBOOK



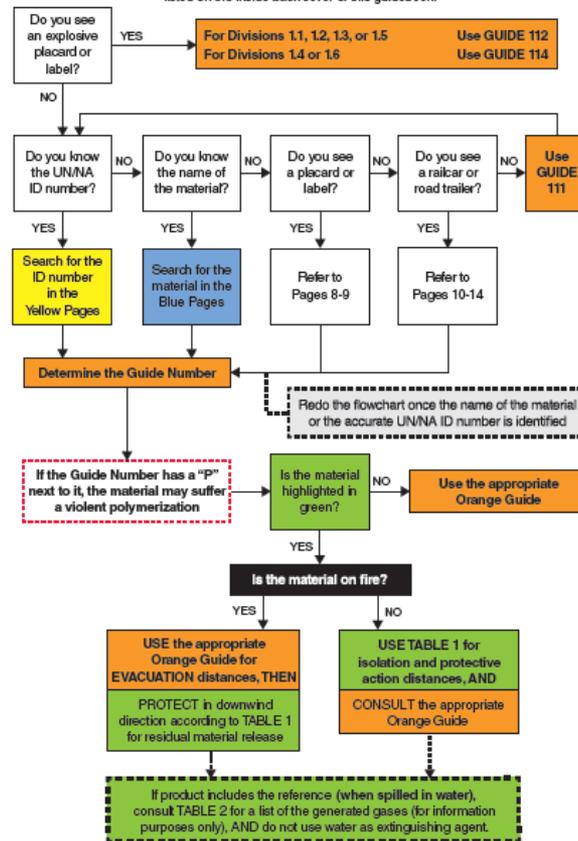
U.S. Department of Transportation
Pipeline and Hazardous Materials Safety Administration

Transport Canada Transports Canada

SCT
SOCIÉTÉ CANADIENNE DE TRANSPORTS
ET DE LOGISTIQUE

HOW TO USE THIS GUIDEBOOK

RESIST RUSHING IN!
APPROACH INCIDENT FROM UPWIND, AND UPHILL AND/OR UPSTREAM
STAY CLEAR OF ALL SPILLS, VAPORS, FUMES, SMOKE, AND POTENTIAL HAZARDS
WARNING: DO NOT USE THIS FLOWCHART if more than one hazardous material/dangerous good is involved. Immediately call the appropriate emergency response agency telephone number listed on the inside back cover of this guidebook.



BEFORE AN EMERGENCY - BECOME FAMILIAR WITH THIS GUIDEBOOK!

First responders must be trained in the use of this guidebook.

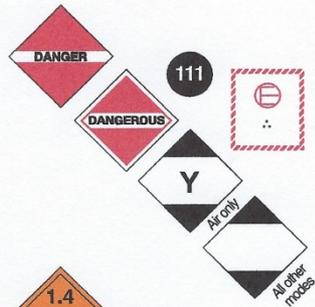
Emergency Response Guidebook 2020

Updates since 2016 edition

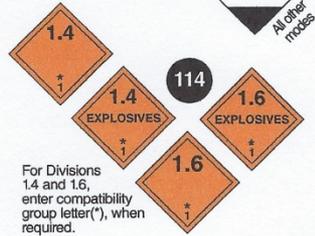
Summary of updates: White pages

- Minor edits based on plain language review
- Improved illustrations for railcar and road trailer identification charts
- New additions:
 - Lithium battery label and marking p. 9
 - Decontamination section p. 362
 - Heat Induced Tear (HIT) & (BLEVE) basic information p. 365
 - CBRNE explanations p, 368
 - New terms in glossary section

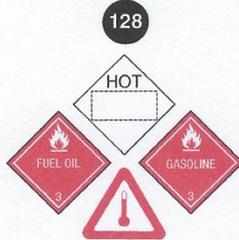
TABLE OF MARKINGS, LABELS, AND PLACARDS
 USE THIS TABLE ONLY IF MATERIALS CANNOT BE SPECIFICALLY IDENTIFIED BY



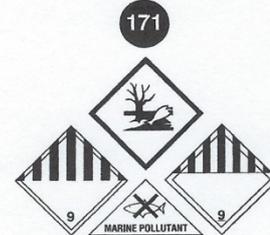
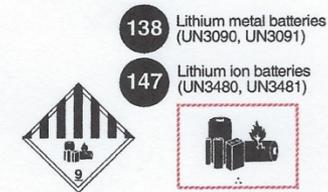
For Divisions 1.1, 1.2, 1.3 and 1.5, enter division number (**) and compatibility group letter(*), when required.



For Divisions 1.4 and 1.6, enter compatibility group letter(*), when required.



AND INITIAL RESPONSE GUIDE TO USE ON-SCENE
 USING THE SHIPPING PAPER, NUMBERED PLACARD, OR ORANGE PANEL NUMBER



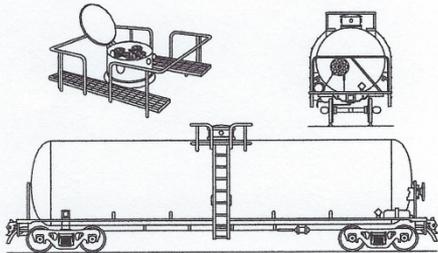
RAIL CAR IDENTIFICATION CHART

CAUTION: Emergency response personnel must be aware that rail tank cars vary widely in construction, fittings and purpose. Tank cars could transport products that may be solids, liquids or gases. The products may be under pressure. It is essential that products be identified by consulting shipping papers or train consist or contacting dispatch centers before emergency response is initiated. The information stenciled on the sides or ends of tank cars, as illustrated below, may be used to identify the product utilizing:

- the commodity name shown;
- the other information shown, especially reporting marks and car number which, when supplied to a dispatch center, will facilitate the identification of the product.

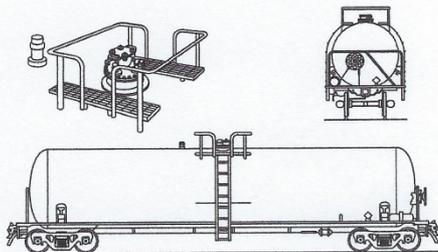
The recommended guides should be considered as last resort if the material cannot be identified by any other means.

117 Pressure tank car



- For flammable, non-flammable, toxic and/or liquefied compressed gases
- Protective housing
- No bottom fittings
- Pressures usually above 40 psi

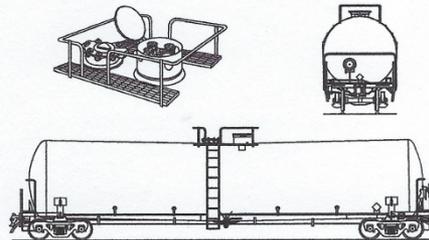
131 Non-pressure / low pressure tank car



- Known as **general service tank car**
- For variety of hazardous and non-hazardous materials
- Fittings and valves normally visible at the top of the tank
- Some may have bottom outlet valve
- Pressures usually below 25 psi

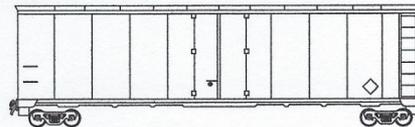
RAIL CAR IDENTIFICATION CHART

128 Non-pressure / low pressure tank car (TC117, DOT117)



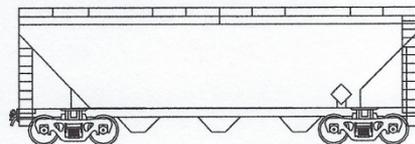
- For flammable liquids (e.g., Petroleum crude oil, ethanol)
- Protective housing separate from manway
- Bottom outlet valve
- Pressures usually below 25 psi

111 Box car



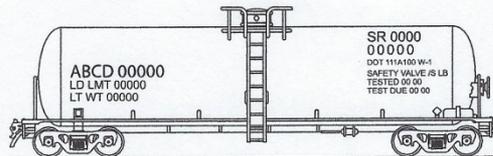
- For general freight that carry bulk or non-bulk packages
- May transport hazardous materials/dangerous goods in small packages or "tote bins"
- Single or double sliding door

140 Hopper car



- For bulk commodities and bulk cargo (e.g., coal, ore, cement and solid granular materials)
- Bulk lading discharged by gravity through the hopper bottom doors when doors opened

COMMON MARKINGS ON RAIL CARS: reporting marks and car number, load limit (pounds or kilograms), empty weight of car, placard, tank qualification and pressure relief device information, car specification, and commodity name.



ROAD TRAILER IDENTIFICATION CHART

CAUTION: This chart depicts only the most general shapes of road trailers and cargo transport units. Emergency response personnel must be aware that there are many variations of road trailers, not illustrated below, that are used for shipping chemical products. Many intermodal tanks that transport liquids, solids, liquefied compressed gases, and refrigerated liquefied gases have similar silhouettes. The suggested guides are for the most hazardous products that may be transported in these trailer types.

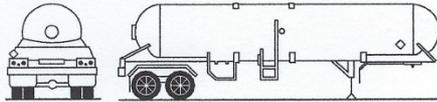
WARNING: Road trailers may be jacketed, the cross-section may look different than shown and external ring stiffeners would be invisible.

NOTE: An emergency shut-off valve is commonly found at the front of the tank, near the driver door.

The recommended guides should be considered as last resort if the material cannot be identified by any other means.

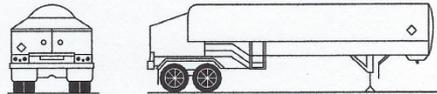
MAWP: Maximum Allowable Working Pressure.

117 MC331, TC331, SCT331



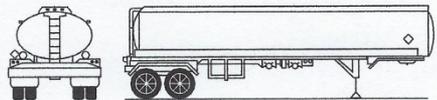
- For liquefied compressed gases (e.g., LPG, ammonia)
- Rounded heads
- Design pressure between 100-500 psi

117 MC338, TC338, SCT338, TC341, CGA341



- For refrigerated liquefied gases (cryogenic liquids)
- Similar to a "giant thermo-bottle"
- Fitting compartments located in a cabinet at the rear of the tank
- MAWP between 25-500 psi

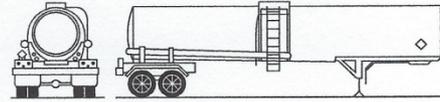
131 DOT406, TC406, SCT306, MC306, TC306



- For flammable liquids (e.g., gasoline, diesel)
- Elliptical cross-section
- Rollover protection at the top
- Bottom outlet valves
- MAWP between 3-15 psi

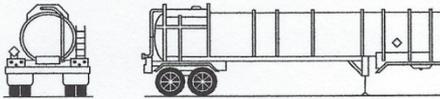
ROAD TRAILER IDENTIFICATION CHART

137 DOT407, TC407, SCT307, MC307, TC307



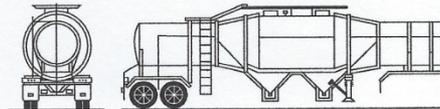
- For toxic, corrosive, and flammable liquids
- Circular cross-section
- May have external ring stiffeners
- MAWP of at least 25 psi

137 DOT412, TC412, SCT312, MC312, TC312



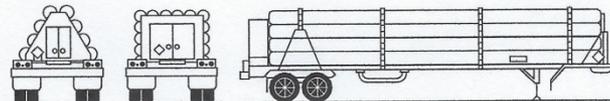
- Usually for corrosive liquids
- Circular cross-section
- External ring stiffeners
- Tank diameter is relatively small
- MAWP of at least 15 psi

112 TC423



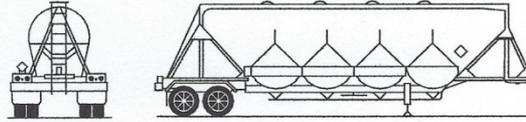
- For emulsion and water-gel explosives
- Hopper-style configuration
- MAWP between 5-15 psi

117 Compressed Gas/Tube Trailer

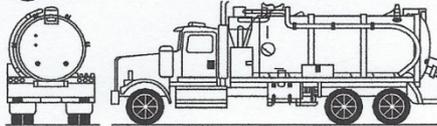


ROAD TRAILER IDENTIFICATION CHART

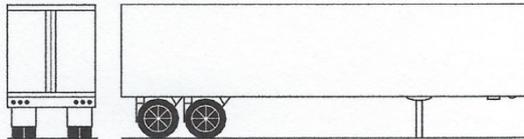
134 Dry Bulk Cargo Trailer



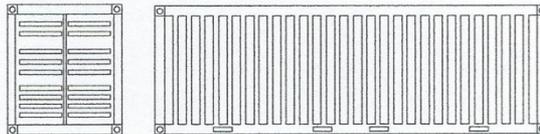
137 Vacuum Tanker



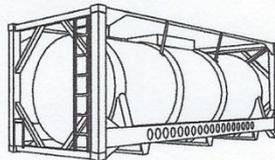
111 Mixed Cargo



111 Intermodal Freight Container



117 Intermodal Tank



DECONTAMINATION

The ways to decontaminate people and equipment can vary. If you need help with decontamination, contact the emergency response telephone number provided on the shipping papers or the agencies listed on the inside back cover. These resources may be able to put you in contact with the chemical manufacturer to determine the appropriate procedure if not otherwise available.

Decontamination is the process of removing or neutralizing hazardous materials/dangerous goods that have contaminated people and equipment during an incident.

Contamination happens in the area generally referred to as the Hot Zone. Everything and everyone entering this zone should be decontaminated when leaving, including emergency response personnel. This reduces the chances that more contamination will occur.

There are two main types of contamination:

- **Direct contamination** happens in the Hot Zone.
- **Cross contamination** happens when someone or something outside the Hot Zone was not properly decontaminated and comes in contact with another object or person, usually in the Warm or Cold Zone.

To decontaminate, you must:

- physically remove contaminants; and/or
- chemically neutralize contaminants*.

The NFPA 472, Chapter 3, describes the following four kinds of decontamination.

- (1) **Gross decontamination:** Quickly removing surface contamination, which usually happens by mechanically removing the contaminant or rinsing with water from handheld hose lines, emergency showers, or other nearby water sources.
- (2) **Technical decontamination:** Reducing contamination to a level as low as possible by chemical or physical methods. A hazmat team will perform this kind of decontamination.
- (3) **Mass decontamination:** Reducing or removing surface contaminants as fast as possible from a large number of people in potentially life-threatening situations.
- (4) **Emergency decontamination:** Immediately reducing contamination of people in potentially life-threatening situations with or without formally setting up a decontamination corridor. This process should be performed upwind and uphill from victims. Responders should avoid contact with victims, runoff or spray from the decontamination process.

Emergency and mass decontamination can be done with firefighting and rescue operations equipment. Nozzles can be put on wide-angle fog patterns and sprayed towards the ground to create a decontamination shower. Responders can also place nozzles on the discharge ports of engines.

Contaminated clothing and equipment must be removed after use and stored in a controlled area (Warm Zone) until cleanup procedures can begin. Sometimes protective clothing and equipment cannot be decontaminated and must be disposed of properly.

*Chemical neutralization releases heat. DO NOT PERFORM on a victim.

Summary of updates: Yellow and Blue Pages

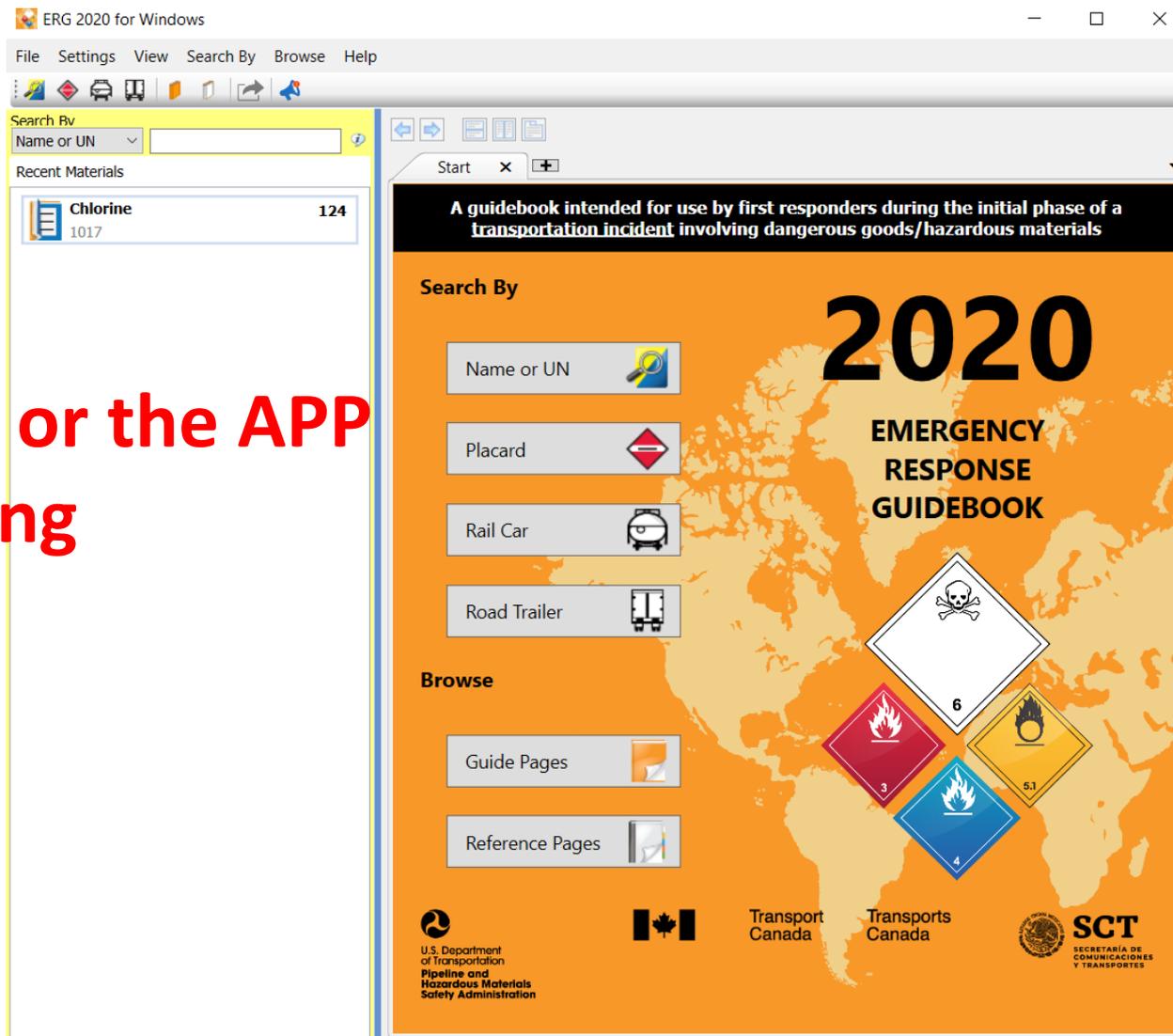
- UN numbers for Chemical Warfare Agents were removed
- Removed and added UN numbers based on UN and North American regulations
- **Reviewed** polymerization hazards for certain materials
- Re-evaluated guide assignment for some materials

Summary of updates: Orange pages

- Created new *How to use the orange guide pages* section p. 156
- Guide 121 *Gases - inert* was merged with Guide 120 *Gases - inert (Including refrigerated liquids)*
- Added CAUTION sentences for specific materials
- Comprehensive review of the sentences in the orange pages by FEMA/NFA
- Distances in PUBLIC SAFETY section are now in **EVACUATION** section

Summary of updates: Green pages

- Additional explanations of use for Green sections p. 286-293
- New terms in glossary section



**USE your book or the APP
And follow along**

<https://www.phmsa.dot.gov/hazmat/erg/erg2020-mobileapp>

ERG

- Look up **Chlorine**
 - Is this gas or liquid or solid?
 - How did you find it?

Yellow section

Blue Section

ID No.	Guide No.	Name of Material	ID No.	Guide No.	Name of Material
1013	120	Carbon dioxide	1033	115	Dimethyl ether
1013	120	Carbon dioxide, compressed	1035	115	Ethane
1014	122	Carbon dioxide and Oxygen mixture, compressed	1035	115	Ethane, compressed
1014	122	Oxygen and Carbon dioxide mixture, compressed	1036	118	Ethylamine
1015	126	Carbon dioxide and Nitrous oxide mixture	1037	115	Ethyl chloride
1015	126	Nitrous oxide and Carbon dioxide mixture	1038	115	Ethylene, refrigerated liquid (cryogenic liquid)
1016	119	Carbon monoxide	1039	115	Ethyl methyl ether
1016	119	Carbon monoxide, compressed	1039	115	Methyl ethyl ether
1017	124	Chlorine	1040	119P	Ethylene oxide
1018	126	Chlorodifluoromethane	1040	119P	Ethylene oxide with Nitrogen
1018	126	Refrigerant gas R-22	1041	115	Carbon dioxide and Ethylene oxide mixture, with more than 9% but not more than 87% Ethylene oxide
1020	126	Chloroethane	1041	115	Ethylene oxide and Carbon dioxide mixture, with more than 9% but not more than 87% Ethylene oxide
1020	126	Refrigerant gas R-115	1043	125	Fertilizer, ammoniating solution, with free Ammonia
1021	126	1-Chloro-1,2,2,2-tetrafluoroethane	1044	126	Fire extinguishers with compressed or liquefied gas
1021	126	Refrigerant gas R-124	1045	124	Fluorine
1022	126	Chlorotrifluoromethane	1045	124	Fluorine, compressed
1022	126	Refrigerant gas R-13	1046	120	Helium
1023	119	Coal gas	1046	120	Helium, compressed
1023	119	Coal gas, compressed	1048	125	Hydrogen bromide, anhydrous
1026	119	Cyanogen	1049	115	Hydrogen
1027	115	Cyclopropane	1049	115	Hydrogen, compressed
1028	126	Dichlorodifluoromethane	1050	125	Hydrogen chloride, anhydrous
1028	126	Refrigerant gas R-12	1051	117P	Hydrogen cyanide, anhydrous, stabilized
1029	126	Dichlorofluoromethane	1051	117P	Hydrogen cyanide, stabilized
1029	126	Refrigerant gas R-21	1052	125	Hydrogen fluoride, anhydrous
1030	115	1,1-Difluoroethane			
1030	115	Refrigerant gas R-152a			
1032	118	Dimethylamine, anhydrous			

Name of Material	Guide No.	ID No.	Name of Material	Guide No.	ID No.
Carbonyl fluoride	125	2417	Chemical under pressure, flammable, poisonous, n.o.s.	119	3504
Carbonyl fluoride, compressed	125	2417	Chemical under pressure, flammable, toxic, n.o.s.	119	3504
Carbonyl sulfide	119	2204	Chemical under pressure, n.o.s.	126	3500
Carbonyl sulphide	119	2204	Chemical under pressure, poisonous, n.o.s.	123	3502
Castor beans, meal, pomace or flake	171	2969	Chemical under pressure, toxic, n.o.s.	123	3502
Gaustic alkali liquid, n.o.s.	154	1719	Chloral, anhydrous, stabilized	153	2075
Gaustic potash, solid	154	1813	Chlorate and Borate mixture	140	1458
Gaustic potash, solution	154	1814	Chlorate and Magnesium chloride mixture, solid	140	1459
Gaustic soda, solid	154	1823	Chlorate and Magnesium chloride mixture, solution	140	3407
Gaustic soda, solution	154	1824	Chlorates, inorganic, aqueous solution, n.o.s.	140	3210
Cells, containing Sodium	138	3292	Chlorates, inorganic, n.o.s.	140	1461
Celluloid, in blocks, rods, rolls, sheets, tubes, etc., except scrap	133	2000	Chloric acid, aqueous solution, not more than 10% Chloric acid	124	2626
Celluloid, scrap	135	2002	Chlorine	124	1017
Cerium, slabs, ingots or rods	170	1333	Chlorine, adsorbed	173	3520
Cerium, turnings or gritty powder	138	3078	Chlorine dioxide, hydrate, frozen	143	919
Cesium	138	1407	Chlorine pentafluoride	124	2548
Cesium hydroxide	157	268	Chlorine trifluoride	124	1749
Cesium hydroxide, solution	154	2681	Chlorite solution	154	1908
Cesium nitrate	140	1451	Chlorites, inorganic, n.o.s.	143	1462
CG	125	—	Chloroacetaldehyde	153	2232
Charcoal	133	1361	Chloroacetic acid, molten	153	3250
Chemical kit	154	1760	Chloroacetic acid, solid	153	1751
Chemical kit	171	3316	Chloroacetic acid, solution	153	1750
Chemical sample, poisonous	151	3315	Chloroacetone, stabilized	131	1695
Chemical sample, toxic	151	3315	Chloroacetonitrile	131	2668
Chemical under pressure, corrosive, n.o.s.	125	3503			
Chemical under pressure, flammable, corrosive, n.o.s.	118	3505			
Chemical under pressure, flammable, n.o.s.	115	3501			

POTENTIAL HAZARDS

HEALTH

- **TOXIC; 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.

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.
- Many gases are heavier than air and will spread along the ground and collect in low or confined areas (sewers, basements, tanks, etc.).
- Ventilate closed spaces before entering, but only if properly trained and equipped.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer **when there is NO RISK OF FIRE.**
- Structural firefighters' protective clothing provides thermal protection **but only limited chemical protection.**

EVACUATION

Immediate precautionary measure

- Isolate spill or leak area for at least 100 meters (330 feet) in all directions.

Spill

- See [Table 1 - Initial Isolation and Protective Action Distances](#).

Fire

- 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.



In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping paper and/or the ERAP Program Section (page 390).

EMERGENCY RESPONSE

FIRE

Small Fire

CAUTION: These materials do not burn but will support combustion. Some will react violently with water.

- Contain fire and let burn. If fire must be fought, water spray or fog is recommended.
- **Water only; no dry chemical, CO₂ or Halon®.**
- Do not get water inside containers.
- If it can be done safely, move undamaged containers away from the area around the fire.
- Damaged cylinders should be handled only by specialists.

Fire Involving Tanks

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

SPILL OR LEAK

- Do not touch or walk through spilled material.
- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Do not direct water at spill or source of leak.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Isolate area until gas has dispersed.
- Ventilate the area.

FIRST AID

- Call 911 or emergency medical service.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air if it can be done safely.
- Give artificial respiration if victim is not breathing.
- **Do not perform mouth-to-mouth resuscitation if victim ingested or inhaled the substance; wash face and mouth before giving artificial respiration. Use a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Clothing frozen to the skin should be thawed before being removed.
- 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.
- Keep victim calm and warm.
- Keep victim under observation.
- Effects of contact or inhalation may be delayed.



P2476 AL

7 03

TW1445

HT 1567

TW1420

7-1041AC

2 02

TW1363

Video from SDGE location across road







Green Pages

Initial Isolation and Protective Action Distances

TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

ID No.	Guide	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package)				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	NIGHT	Meters	(Feet)	DAY	NIGHT				
					Kilometers (Miles)	Kilometers (Miles)			Kilometers (Miles)	Kilometers (Miles)				
—	153	Soman (when used as a weapon)	60 m	(200 ft)	0.4 km	(0.3 mi)	0.7 km	(0.5 mi)	300 m	(1000 ft)	1.8 km	(1.1 mi)	2.7 km	(1.7 mi)
—	153	Tabun (when used as a weapon)	30 m	(100 ft)	0.2 km	(0.1 mi)	0.2 km	(0.1 mi)	100 m	(300 ft)	0.5 km	(0.4 mi)	0.6 km	(0.4 mi)
—	153	Thickened GD (when used as a weapon)	60 m	(200 ft)	0.4 km	(0.3 mi)	0.7 km	(0.5 mi)	300 m	(1000 ft)	1.8 km	(1.1 mi)	2.7 km	(1.7 mi)
—	153	VX (when used as a weapon)	30 m	(100 ft)	0.1 km	(0.1 mi)	0.1 km	(0.1 mi)	60 m	(200 ft)	0.4 km	(0.2 mi)	0.3 km	(0.2 mi)
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)	2.3 km	(1.4 mi)	5.1 km	(3.2 mi)
1008	125	Boron trifluoride, compressed												
1016	119	Carbon monoxide	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	200 m	(600 ft)	1.2 km	(0.7 mi)	4.3 km	(2.7 mi)
1016	119	Carbon monoxide, compressed												
1017	124	Chlorine	60 m	(200 ft)	0.3 km	(0.2 mi)	1.4 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												
1045	124	Fluorine	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.1 mi)	100 m	(300 ft)	0.5 km	(0.3 mi)	2.3 km	(1.4 mi)
1045	124	Fluorine, compressed												
1048	125	Hydrogen bromide, anhydrous	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.2 mi)	150 m	(500 ft)	1.0 km	(0.6 mi)	3.4 km	(2.1 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					

Green Pages

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)	km	(Miles)	km	(Miles)	km	(Miles)	km	(Miles)	km	(Miles)	km	(Miles)	
TRANSPORT CONTAINER	UN1005 Ammonia, anhydrous: Large Spills													
Rail tank car	300	(1000)	1.9	(1.2)	1.5	(0.9)	1.1	(0.6)	4.5	(2.8)	2.5	(1.5)	1.4	(0.9)
Highway tank truck or trailer	150	(500)	0.9	(0.6)	0.5	(0.3)	0.4	(0.3)	2.0	(1.3)	0.8	(0.5)	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)	10.1	(6.3)	6.8	(4.2)	5.3	(3.3)	11+	(7+)	9.2	(5.7)	6.9	(4.3)
Highway tank truck or trailer	600	(2000)	5.8	(3.6)	3.4	(2.1)	2.9	(1.8)	6.7	(4.3)	5.0	(3.1)	4.1	(2.5)
Multiple ton cylinders	300	(1000)	2.1	(1.3)	1.3	(0.8)	1.0	(0.6)	4.0	(2.5)	2.4	(1.5)	1.3	(0.8)
Multiple small cylinders or single ton cylinder	150	(500)	1.5	(0.9)	0.8	(0.5)	0.5	(0.3)	2.9	(1.8)	1.3	(0.8)	0.6	(0.4)

TABLE 3

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

Rail car leaks

- The worst chlorine gas accident in the country occurred Jan 6, 2005 @ 2:40am, when 18 freight train cars derailed and released 120,000 pounds of chlorine gas in the mill town of Graniteville, S.C. **Nine people were killed and at least 1,400 people were exposed, resulting in more than 550 people treated at hospitals,** including some with serious lung injuries. More than 5,000 people were evacuated from their homes.
- On August 27, 2016, about 8:26 a.m. eastern daylight time, a railroad tank car sustained a 42-inch long crack in its tank shell shortly after being loaded with 178,400 pounds of liquefied compressed chlorine at the Axiall Corporation Natrium plant in New Martinsville, West Virginia. Over the next 2.5 hours, **the entire 178,400-pound load of chlorine was released and formed a large vapor cloud that migrated south along the Ohio River valley.**

6 most common TIH materials

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

FREE

WISER



- <http://wiser.nlm.nih.gov>

Mobile support - Computer/Cell

- WISER currently exists as a Stand-alone mobile application for IOS and Android devices
- Microsoft Windows PC application
- Web application (WebWISER)

- Identification of an unknown substance and actions
- Over 460 substances from NLM's Hazardous Substances Data Bank ([HSDB](#)) which contains detailed information on over 4,700 critical hazardous substances

As of 6/12/2020, **version 6.0.107**

FREE

WISER



CHEMM



REMM



ERG



HSDB



WISER



WMD
Response
Guidebook

WISER



- Visualization of protective distance zones on an interactive map.
- Radiological support, including radioisotope substance data, tools, and reference materials.
- Biological support, including biological agent data, tools, and reference materials.
 - Includes Ebola as of 2015
- General tools, including an electronic version of the ERG.

Known Substances



Search for a substance within WISER's database of known substances.

Help Identify Chemical



Identify an unknown chemical based on its physical properties, symptoms of exposure, the environment, and other criteria.

Tools

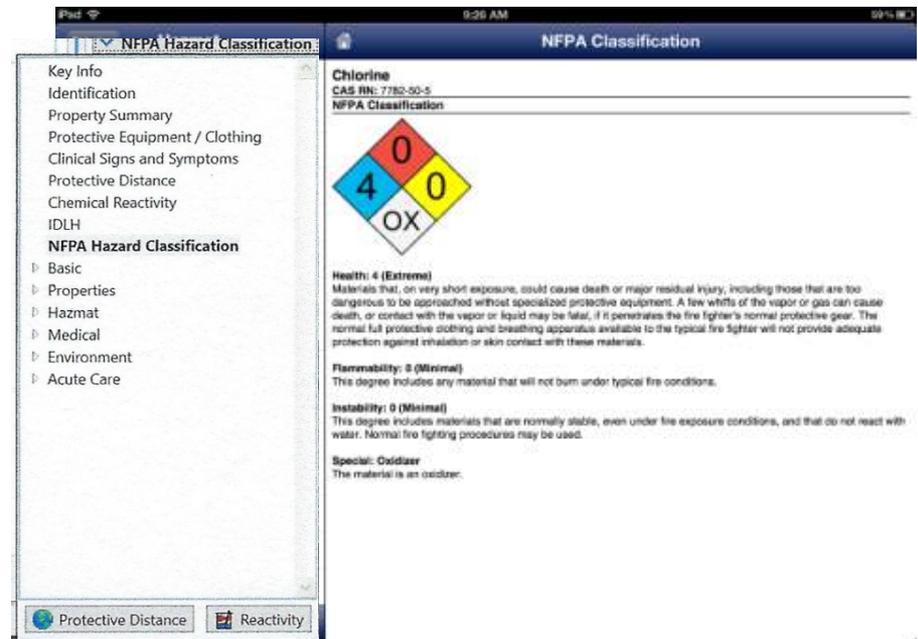
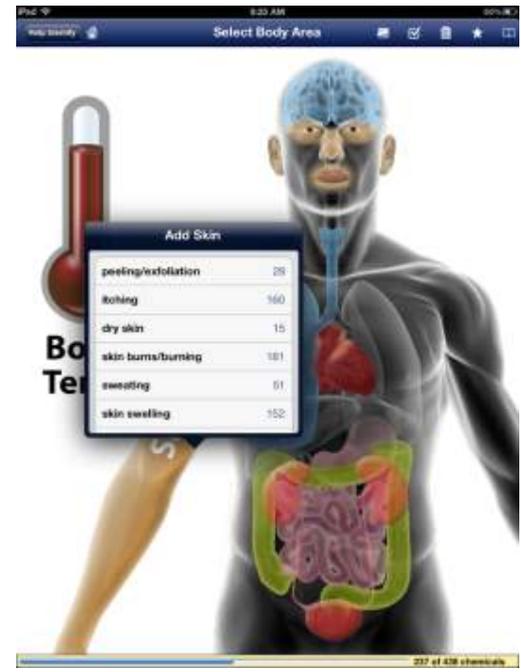
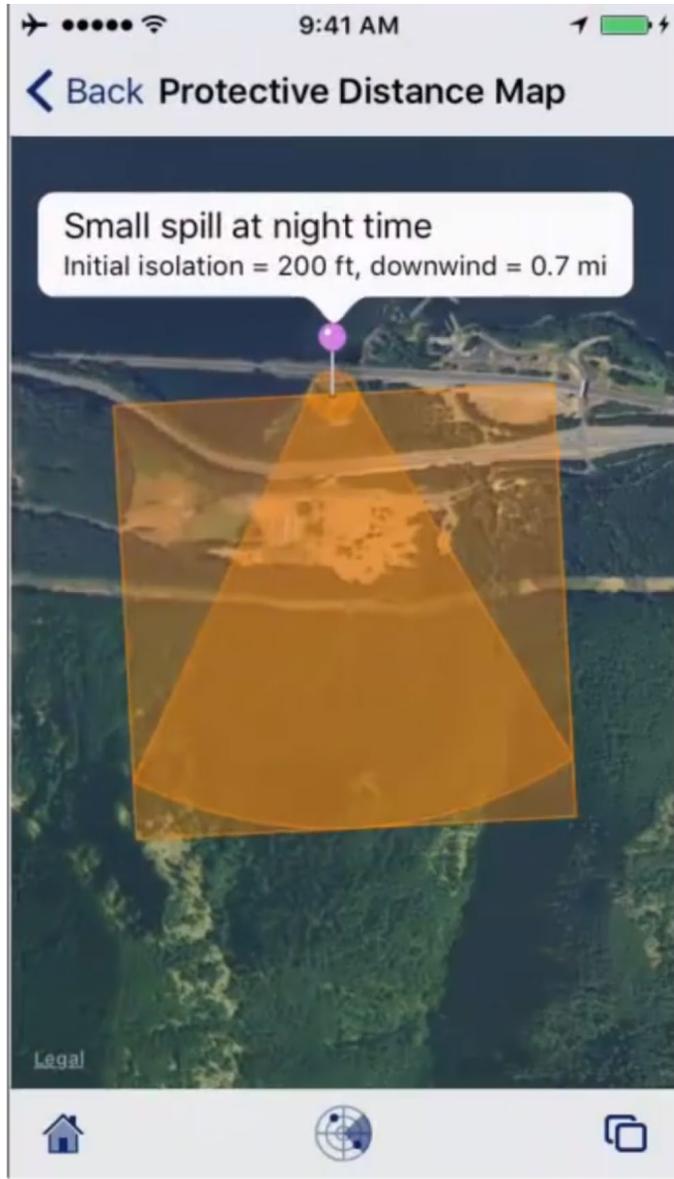
Explore general tools and reference material.



TIME PERMITTING – LET'S DEMONSTRATE THIS APP



WISER



ERG

- Look up **Methyl Acrylate, stabilized**
 - Anything special about the Guide #?

- ERG page 381

Methyl acrylate, stabilized	129P	1919
Methylal	127	1234

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- **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 the ground and collect in low or confined areas (sewers, basements, tanks, etc.).
- 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 create fire or explosion hazard.
- Containers may explode when heated.
- Many liquids will float on water.

HEALTH

- May cause toxic effects if inhaled or absorbed through skin.
- Inhalation or contact with material may irritate or burn skin and eyes.
- Fire will produce irritating, corrosive and/or toxic gases.
- Vapors may cause dizziness or asphyxiation.
- 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 for at least 50 meters (150 feet) in all directions.

Large Spill

- Consider initial downwind evacuation for at least 300 meters (1000 feet).

Fire

- 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.



In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping paper and/or the ERAP Program Section (page 390).

EMERGENCY RESPONSE

FIRE

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

Small Fire

- Dry chemical, CO₂, water spray or alcohol-resistant foam.
- **Do not use dry chemical extinguishers to control fires involving nitromethane (UN1261) or nitroethane (UN2842).**

Large Fire

- Water spray, fog or alcohol-resistant foam.
- Avoid aiming straight or solid streams directly onto the product.
- If it can be done safely, move undamaged containers away from the area around the fire.

Fire Involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned master stream devices 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 master stream devices or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- **ELIMINATE** all ignition sources (no smoking, flares, sparks or flames) from immediate area.
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- A 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.
- Use clean, non-sparking tools to collect absorbed material.

Large Spill

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

FIRST AID

- Call 911 or emergency medical service.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.
- Move victim to fresh air if it can be done safely.
- 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 calm and warm.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.



“P”: polymerization hazard
Such as **Methyl Acrylate**, stabilized

ERG page 381





QUICK STOP™ Straw

Helps Stop Messy
Foam Drips!

16 oz.
value size

DOW

Great Stuff

INSULATING FOAM SEALANT

GAPS & CRACKS

- Expands to Fill, Seal and Insulate
- For Gaps Up To 1 Inch
- Helps Reduce Drafts



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for more information.

DANGER! FLAMMABLE GAS
FLAMMABLE GAS RELEASED
PELIGRO! GAS INFLAMMABLE
GAS LIBERADO

NET WT 16 OZ (454g) 16 OZ (454g)



Notification Requirements

- Responsible party must make “Mandatory” notifications
 - To proper authorities
 - Releases with potential adverse impact
 - Health
 - Safety
 - Environment





Notification Requirements California

- “Mandatory” notifications
 - Remember to tell your supervisor there was a problem and responders are on their way!!
 - **Local 911 — Local dispatch**
 - CUPA/Administering Agency — ???
 - State Warning Center — (800) 852-7550
 - **National Response Center — (800) 424-8802**
 - If you have a Reportable Quantity (RQ)
 - Section 49CFR 172.101 Table 1 lists the RQ
 - Some SDS also list the RQ values



DOT Reporting §171.15 -16

For serious incidents, person in charge must notify the National Response Center at 1-800-424-8802

Serious Incidents:

- Person is killed
- Injuries require hospitalization
- Evacuation of general public for more than 1 Hr.
- Major transportation artery/facility closed for more than 1 hour
- Flight path or routine of an aircraft is altered
- Accident involving Class 7 or 6.2
- Release of more than 450 L /400 kg of Marine Pollutant
- Person in charge judges it should be reported
- **RQ - Spills**

General. As soon as practical but no later than 12 hours after the occurrence of any incident described in [paragraph \(b\)](#) of this section, each [person](#) in physical possession of the [hazardous material](#) must provide notice

Responsibility for Notifications

- Business or Spiller makes mandatory notifications
 - **Your legal responsibility and not the responders**
- Responders:
 - Make these if no one else is around
 - May also call as backup
 - Some departments require them to make notifications also (Highway Patrol in some states)



Orange Panels

- See the ERG (pages 16-19)

§ 172.331 - **Bulk packagings** other than portable tanks, cargo tanks, tank cars and multi-unit tank car tanks. (a) Each person who offers a hazardous material to a motor carrier for transportation in a bulk packaging shall provide the motor carrier with the required identification numbers on placards or plain white square-on-point display configurations, as authorized, **or shall affix orange panels containing the required identification numbers** to the packaging prior to or at the time the material is offered for transportation, unless the packaging is already marked with the identification number as required by this subchapter.

Example US vs International



ERG (pages 16-19)

Use the ERG – What is inside this truck?



Remember what an Orange Panel means?



APRIA HEALTHCARE®

- Home Oxygen Therapy & Respiratory Medication
- Home IV Therapy
- Home Medical Equipment

1073



Louisville CO
302-684-1111
15007 2706-1

November 2018 - Coon Rapids, MN

2187



ERG—Good But Limited

- Look up **UN1760**
 - What is this material?
 - How did you find it?

ERG—Good But Limited

- Look up:

- What is this material?
- How did you find it?
- What Guide page?



Placard Limits

- Multiple and subsidiary hazards
 - More than one placard on the vehicle but only one product?
- “Dangerous” placard meaning
 - Table 2 commodities
- 454kg or 1001 lb rule
- 1000kg or 2204 lb rules
- Compliance and enforcement





getkahoot.com



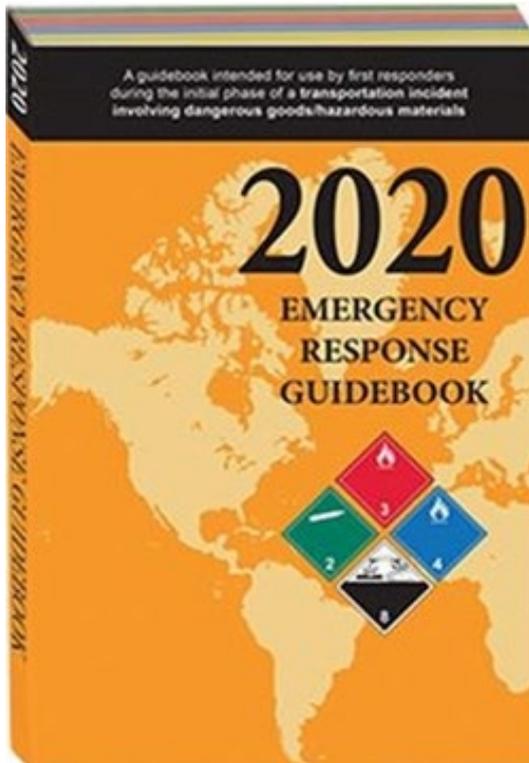
Kahoot!

Game PIN

Enter

www.kahoot.it

ERG Use



Emergency Response Guidebook Worksheet

Incident Information	Weather Information	Product Information	UN/NA Number Information
Container type: _____	Temperature: _____	UN/NA #: _____	Chemical name: _____
Size of leak: _____	Wind/Direction: _____	Hazard class: ____/____	Highlighted? YES NO
Near water? YES NO	Precipitation: _____	Vehicle type: _____	Polymerization hazard? YES NO
Near people? YES NO		Placard color: _____	
On fire? YES NO			

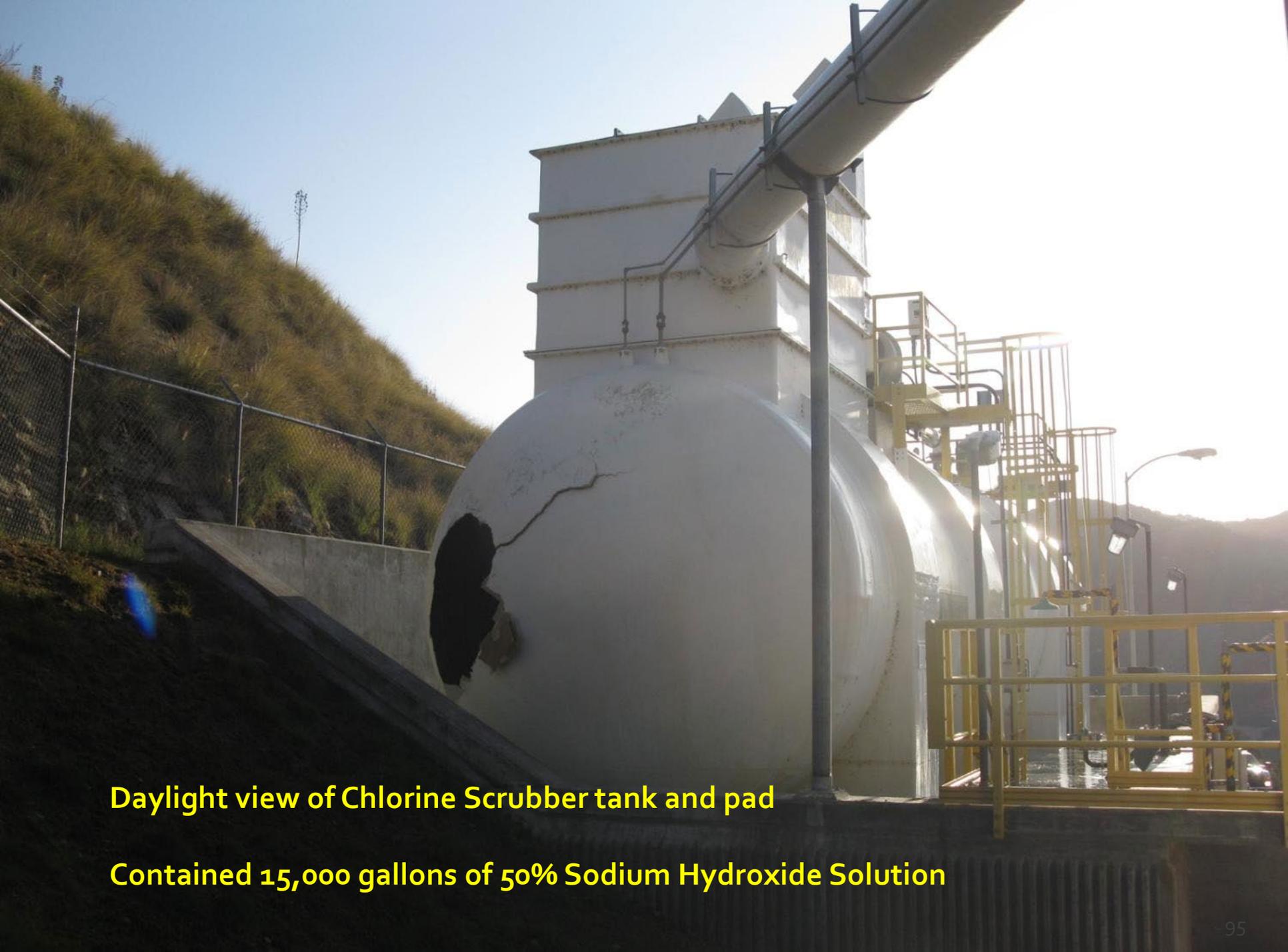
If there is no other information, go to Guide # 111.

Is the entry highlighted? NO

Is the material on fire? YES

Guide #: _____

GREEN Section Information (FIRST)	ORANGE Section Information (SECOND)
Water reactive? YES NO If so, TIH product formed: _____ Isolation zone (in all directions): _____ Downwind evacuation. Day: _____ Night: _____	Primary hazard (listed first): FLAMMABILITY HEALTH Isolation zone (in all directions): _____ First aid info: _____ PPE suggestions: _____ Spill mitigation: _____ Firefighting measures: _____



Daylight view of Chlorine Scrubber tank and pad

Contained 15,000 gallons of 50% Sodium Hydroxide Solution

Hazardous Communications Standard Updates 29CFR 1910.1200

Title 8 CCR Section 5194

<http://www.dir.ca.gov/title8/5194-May-6-2013.html>

Nick Vent

The Sustainable Workplace Alliance



HAZARD COMMUNICATION

Components

1. Safety Data Sheets
2. Labels
3. Written Program
4. Training of Employees





HAZARD COMMUNICATION

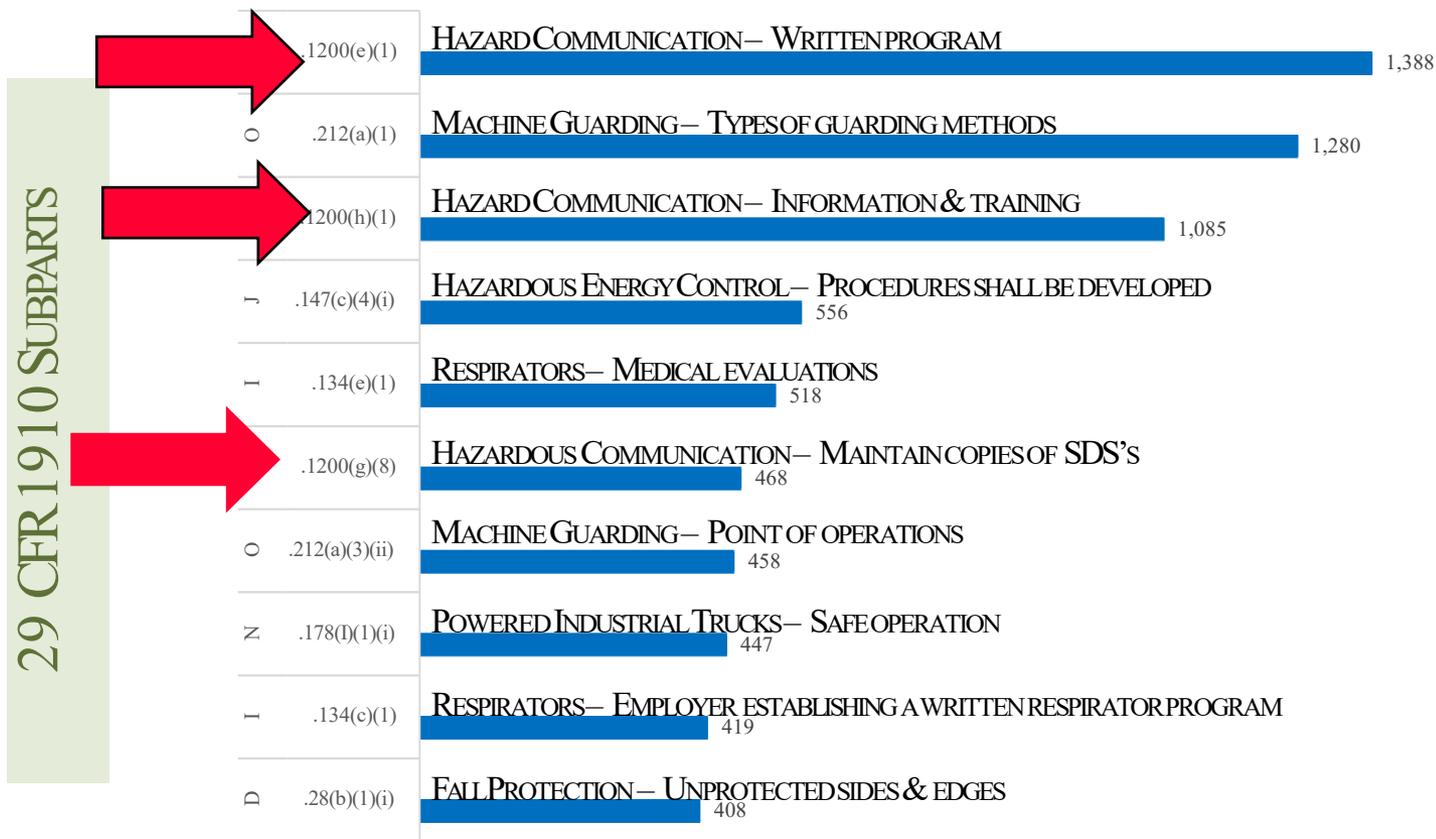
Employers shall provide employees with effective information and training on hazardous chemicals:

1. At the time of their initial assignment,
2. Whenever a new chemical hazard is introduced into their work area.

Information and training may:

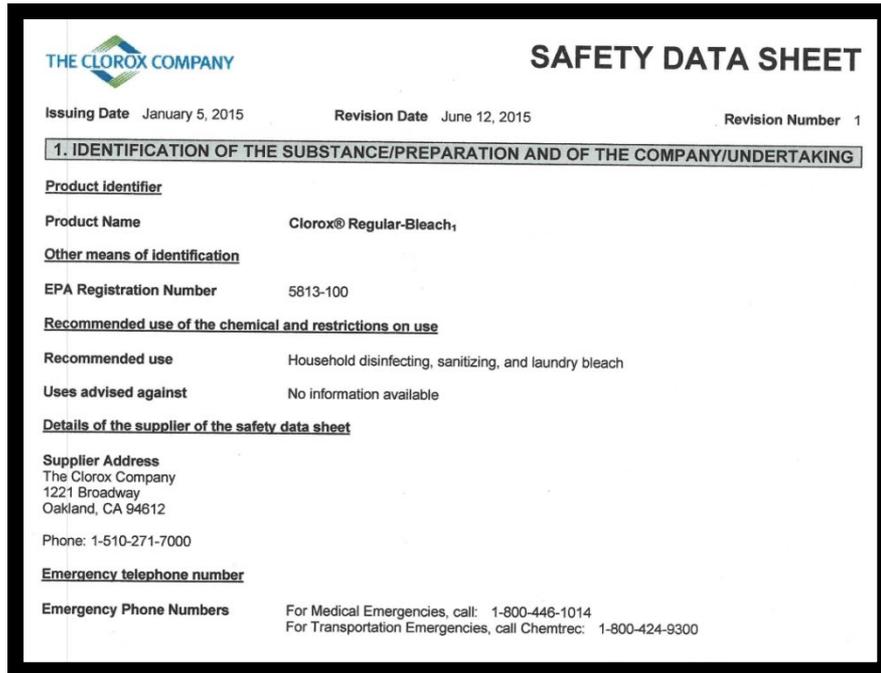
1. Cover categories of hazards
2. Or specific chemicals. Chemical-specific information must always be available through labels and safety data sheets.

MOST FREQUENTLY CITED SERIOUS VIOLATIONS IN GENERAL INDUSTRY 2019



NUMBER OF SERIOUS VIOLATIONS— FY2019

Safety Data Sheets



THE CLOROX COMPANY SAFETY DATA SHEET

Issuing Date January 5, 2015 Revision Date June 12, 2015 Revision Number 1

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product Identifier

Product Name Clorox® Regular-Bleach,

Other means of identification

EPA Registration Number 5813-100

Recommended use of the chemical and restrictions on use

Recommended use Household disinfecting, sanitizing, and laundry bleach

Uses advised against No information available

Details of the supplier of the safety data sheet

Supplier Address
The Clorox Company
1221 Broadway
Oakland, CA 94612

Phone: 1-510-271-7000

Emergency telephone number

Emergency Phone Numbers For Medical Emergencies, call: 1-800-446-1014
For Transportation Emergencies, call Chemtrec: 1-800-424-9300

- Should be available for each Haz Mat in the workplace
 - Required by OSHA Hazard Communication Regulations
- Provides valuable information

Let's go over the Safety Data Sheet
for Chlorox® Bleach

SAFETY DATA SHEETS (SDS)

- Supplied by manufacturer/distributor
- Have on hand for each hazardous chemical
- Must be accessible to all affected employees
- Standardized 16 section format
 - Gone is the 9 section format
 - As of June 1, 2016



Global Harmonization System

- Developed by U.N. commission
- Adopted by U.S. on **March 20, 2012**
- Finalized **June 1, 2016**
- Changes in some terminology
- New pictograms for hazard warning
- Safety Data Sheets in 16 section format



Section 1 Identification;

Includes product identifier;
manufacturer or distributor name,
address,
phone number;
emergency phone number;
recommended use;
restrictions on use.

THE CLOROX COMPANY		SAFETY DATA SHEET	
Issuing Date	January 5, 2015	Revision Date	June 12, 2015
		Revision Number	1
1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING			
<u>Product Identifier</u>			
Product Name	Clorox® Regular-Bleach ₁		
<u>Other means of identification</u>			
EPA Registration Number	5813-100		
<u>Recommended use of the chemical and restrictions on use</u>			
Recommended use	Household disinfecting, sanitizing, and laundry bleach		
Uses advised against	No information available		
<u>Details of the supplier of the safety data sheet</u>			
Supplier Address			
The Clorox Company			
1221 Broadway			
Oakland, CA 94612			
Phone: 1-510-271-7000			
<u>Emergency telephone number</u>			
Emergency Phone Numbers			
For Medical Emergencies, call: 1-800-446-1014			
For Transportation Emergencies, call Chemtrec: 1-800-424-9300			

Section 2 Hazard(s) identification;

- Includes all hazards regarding the chemical;
- Required label elements.

2. HAZARDS IDENTIFICATION	
Classification	
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).	
Skin corrosion/irritation	Category 1
Serious eye damage/eye irritation	Category 1
GHS Label elements, including precautionary statements	
Emergency Overview	
Signal word	Danger
Hazard Statements	
Causes severe skin burns and eye damage	
Causes serious eye damage	
	
Appearance	Clear, pale yellow
Physical State	Thin liquid
Odor	Bleach
Precautionary Statements - Prevention	
Wash face, hands and any exposed skin thoroughly after handling.	
Wear protective gloves, protective clothing, face protection, and eye protection such as safety glasses.	
Precautionary Statements - Response	
Immediately call a poison center or doctor.	
If swallowed: Rinse mouth. Do NOT induce vomiting.	
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water.	
Wash contaminated clothing before reuse.	
If inhaled: Remove person to fresh air and keep comfortable for breathing.	
Specific treatment (see supplemental first aid instructions on this label).	
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.	
Precautionary Statements - Storage	
Store locked up.	
Precautionary Statements - Disposal	
Dispose of contents in accordance with all applicable federal, state, and local regulations.	
Hazards not otherwise classified (HNOC)	
Although not expected, heart conditions or chronic respiratory problems such as asthma, chronic bronchitis, or obstructive lung disease may be aggravated by exposure to high concentrations of vapor or mist.	
Product contains a strong oxidizer. Always flush drains before and after use.	
Unknown Toxicity	
Not applicable.	
Other information	
Very toxic to aquatic life with long lasting effects.	
Interactions with Other Chemicals	
Reacts with other household chemicals such as toilet bowl cleaners, rust removers, acids, or products containing ammonia to produce hazardous irritating gases, such as chlorine and other chlorinated compounds.	



Section 3 Composition/information on ingredients;

- Includes information on chemical ingredients;
- Trade secret claims.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No	Weight %	Trade Secret
Sodium hypochlorite	7681-52-9	5 - 10	*

* The exact percentage (concentration) of composition has been withheld as a trade secret.



Section 3 Composition/information on ingredients;

Trade secret claims

- Product identifier · Trade name: Velopex Cleaner
Product number: VEL4032; VEL4128; VCS12832

3 Composition/information on ingredients		
<ul style="list-style-type: none"> • Chemical characterization: Mixtures • Description: Mixture of substances listed below with nonhazardous additions. • Dangerous Components: 		
RTECS: GE 7350000	Trade Secret ⚠ Eye Irrit. 2A, H319	4.5%
	Trade Secret ⚠ Carc. 2, H351; Repr. 2, H361; ⚠ Aquatic Chronic 2, H411; ⚠ Acute Tox. 4, H302	4.5%
	Trade Secret ⚠ Skin Corr. 1A, H314	2.2%
	Trade Secret ⚠ Aquatic Chronic 2, H411; ⚠ Acute Tox. 4, H302	0.5%

CFR 1910.1200(i) Trade secrets.

Section 4 First-aid measures

- Includes important symptoms/ effects,
- Acute,
- Delayed;
- Required treatment.

4. FIRST AID MEASURES	
<u>First aid measures</u>	
General Advice	Call a poison control center or doctor immediately for treatment advice. Show this safety data sheet to the doctor in attendance.
Eye Contact	Hold eye open and rinse slowly and gently with water for 15 - 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.
Skin Contact	Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.
Inhalation	Move to fresh air. If breathing is affected, call a doctor.
Ingestion	Have person sip a glassful of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person. Call a poison control center or doctor immediately for treatment advice.
Protection of First-aiders	Avoid contact with skin, eyes, and clothing. Use personal protective equipment as required. Wear personal protective clothing (see section 8).
<u>Most important symptoms and effects, both acute and delayed</u>	
Most Important Symptoms and Effects	Burning of eyes and skin.
<u>Indication of any immediate medical attention and special treatment needed</u>	
Notes to Physician	Treat symptomatically. Probable mucosal damage may contraindicate the use of gastric lavage.

Section 5 Fire-fighting measures;

- Lists suitable extinguishing techniques,
- Equipment;
- Chemical hazards from fire.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media

CAUTION: Use of water spray when fighting fire may be inefficient.

Specific Hazards Arising from the Chemical

This product causes burns to eyes, skin, and mucous membranes. Thermal decomposition can release sodium chlorate and irritating gases and vapors.

Explosion Data

Sensitivity to Mechanical Impact None.

Sensitivity to Static Discharge None.

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

Section 6 Accidental release measures;

- Lists emergency procedures;
- Protective equipment;
- Proper methods of containment and cleanup.

6. ACCIDENTAL RELEASE MEASURES	
<u>Personal precautions, protective equipment and emergency procedures</u>	
Personal Precautions	Avoid contact with eyes, skin, and clothing. Ensure adequate ventilation. Use personal protective equipment as required. For spills of multiple products, responders should evaluate the MSDSs of the products for incompatibility with sodium hypochlorite. Breathing protection should be worn in enclosed and/or poorly-ventilated areas until hazard assessment is complete.
Other Information	Refer to protective measures listed in Sections 7 and 8.
<u>Environmental precautions</u>	
Environmental Precautions	This product is toxic to fish, aquatic invertebrates, oysters, and shrimp. Do not allow product to enter storm drains, lakes, or streams. See Section 12 for ecological information.
<u>Methods and material for containment and cleaning up</u>	
Methods for Containment	Prevent further leakage or spillage if safe to do so.
Methods for Cleaning Up	Absorb and containerize. Wash residual down to sanitary sewer. Contact the sanitary treatment facility in advance to assure ability to process washed-down material.

Section 7 Handling and storage;

- Lists precautions for safe handling and storage,
- Includes incompatibilities
 - What not to allow to be mixed together

7. HANDLING AND STORAGE

Precautions for safe handling

Handling

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes, and clothing. Do not eat, drink, or smoke when using this product.

Conditions for safe storage, including any incompatibilities

Storage

Store away from children. Reclose cap tightly after each use. Store this product upright in a cool, dry area, away from direct sunlight and heat to avoid deterioration. Do not contaminate food or feed by storage of this product.

Incompatible Products

Toilet bowl cleaners, rust removers, acids, and products containing ammonia.

This is in section 10 also

Section 8 Exposure controls/PPE;

- Lists OSHA's Permissible Exposure Limits (PELs);
- Threshold Limit Values (TLVs);
- Appropriate engineering controls;
- Personal Protective Equipment (PPE)

8. EXPOSURE CONTROLS/PERSONAL PROTECTION			
Control parameters			
Exposure Guidelines			
Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Sodium hypochlorite 7681-52-9	None	None	None
<small>ACGIH TLV: American Conference of Governmental Industrial Hygienists - Threshold Limit Value. OSHA PEL: Occupational Safety and Health Administration - Permissible Exposure Limits. NIOSH IDLH: Immediately Dangerous to Life or Health.</small>			
Appropriate engineering controls			
Engineering Measures	Showers Eyewash stations Ventilation systems		
Individual protection measures, such as personal protective equipment			
Eye/Face Protection	If splashes are likely to occur: Wear safety glasses with side shields (or goggles) or face shield.		
Skin and Body Protection	Wear rubber or neoprene gloves and protective clothing such as long-sleeved shirt.		
Respiratory Protection	If irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.		
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice. Wash hands after direct contact. Do not wear product-contaminated clothing for prolonged periods. Remove and wash contaminated clothing before re-use. Do not eat, drink, or smoke when using this product.		

Section 9 Physical and chemical properties;

- Lists the chemical's characteristics

9. PHYSICAL AND CHEMICAL PROPERTIES			
<u>Physical and Chemical Properties</u>			
Physical State	Thin liquid		
Appearance	Clear		Odor
Color	Pale yellow		Odor Threshold
			Bleach
			No informa
<u>Property</u>	<u>Values</u>		<u>Remarks/ Method</u>
pH	~12		None known
Melting/freezing point	No data available		None known
Boiling point / boiling range	No data available		None known
Flash Point	Not flammable		None known
Evaporation rate	No data available		None known
Flammability (solid, gas)	No data available		None known
Flammability Limits in Air			
Upper flammability limit	No data available		None known
Lower flammability limit	No data available		None known
Vapor pressure	No data available		None known
Vapor density	No data available		None known
Specific Gravity	~1.1		None known
Water Solubility	Soluble		None known
Solubility in other solvents	No data available		None known
Partition coefficient: n-octanol/water	No data available		None known
Autoignition temperature	No data available		None known
Decomposition temperature	No data available		None known
Kinematic viscosity	No data available		None known
Dynamic viscosity	No data available		None known
Explosive Properties	Not explosive		
Oxidizing Properties	No data available		
<u>Other Information</u>			
Softening Point	No data available		
VOC Content (%)	No data available		
Particle Size	No data available		
Particle Size Distribution	No data available		

Section 10 Stability and reactivity;

- Lists chemical stability and possibility of hazardous reactions

10. STABILITY AND REACTIVITY

Reactivity

Reacts with other household chemicals such as toilet bowl cleaners, rust removers, acids, or products containing ammonia to produce hazardous irritating gases, such as chlorine and other chlorinated compounds.

Chemical stability

Stable under recommended storage conditions.

Possibility of Hazardous Reactions

None under normal processing.

Conditions to avoid

None known based on information supplied.

Incompatible materials

Toilet bowl cleaners, rust removers, acids, and products containing ammonia.

Hazardous Decomposition Products

None known based on information supplied.



&





November 2019

Burlington Massachusetts (Outside of Boston)

Two weeks later a second incident happened in a nearby town

Section 11 Toxicological information

- Includes routes of exposure;
- Related symptoms,
- Acute and chronic effects;
- Numerical measures of toxicity.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Inhalation	Exposure to vapor or mist may irritate respiratory tract and cause coughing. Inhalation of high concentrations may cause pulmonary edema.
Eye Contact	Corrosive. May cause severe damage to eyes.
Skin Contact	May cause severe irritation to skin. Prolonged contact may cause burns to skin.
Ingestion	Ingestion may cause burns to gastrointestinal tract and respiratory tract, nausea, vomiting, and diarrhea.

Component Information

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Sodium hypochlorite 7681-52-9	8200 mg/kg (Rat)	>10000 mg/kg (Rabbit)	-

Information on toxicological effects

Symptoms May cause redness and tearing of the eyes. May cause burns to eyes. May cause redness or burns to skin. Inhalation may cause coughing.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Sensitization No information available.

Mutagenic Effects No information available.

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical Name	ACGIH	IARC	NTP	OSHA
Sodium hypochlorite 7681-52-9	-	Group 3	-	-

*IARC (International Agency for Research on Cancer)
Group 3 - Not Classifiable as to Carcinogenicity in Humans*

Reproductive Toxicity No information available.

STOT - single exposure No information available.

STOT - repeated exposure No information available.

Chronic Toxicity Carcinogenic potential is unknown.

Target Organ Effects Respiratory system, eyes, skin, gastrointestinal tract (GI).

Aspiration Hazard No information available.

Numerical measures of toxicity - Product Information

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral)
54 g/kg
ATEmix (inhalation-dust/mist)
58 mg/L

Section 12 Ecological information;

12. ECOLOGICAL INFORMATION

Ecotoxicity

Very toxic to aquatic life with long lasting effects.

This product is toxic to fish, aquatic invertebrates, oysters, and shrimp. Do not allow product to enter storm drains, lakes, or streams.

Persistence and Degradability

No information available.

Bioaccumulation

No information available.

Other adverse effects

No information available.

Section 13 Disposal considerations;

13. DISPOSAL CONSIDERATIONS

Disposal methods

Dispose of in accordance with all applicable federal, state, and local regulations. Do not contaminate food or feed by disposal of this product.

Contaminated Packaging

Do not reuse empty containers. Dispose of in accordance with all applicable federal, state, and local regulations.

What is legally Empty?

Federal: Title 40 CFR, section 261.7 which allows up to one inch or 3% of the total weight of the container's contents to remain in the container.

State: (Most states)

No free pourable liquids

Or triple rinsed if held an Acutely or Extremely Hazardous Waste

49 CFR 173.29, an empty packaging meets :

- The packaging is unused,
- The packaging is sufficiently cleaned of residue and purged of vapors to remove any potential hazard,
- The packaging is refilled with a material that is not hazardous to such an extent that any residue remaining in the packaging no longer poses a hazard,



Section 14 Transport information;

14. TRANSPORT INFORMATION

<u>DOT</u>	Not restricted.
<u>TDG</u>	Not restricted for road or rail.
<u>ICAO</u>	Not restricted, as per Special Provision A197, Environmentally Hazardous Substance exception.
<u>IATA</u>	Not restricted, as per Special Provision A197, Environmentally Hazardous Substance exception.
<u>IMDG/IMO</u>	Not restricted, as per IMDG Code 2.10.2.7, Marine Pollutant exception.

Section 15 Regulatory information;

15. REGULATORY INFORMATION				
Chemical Inventories				
TSCA	All components of this product are either on the TSCA 8(b) Inventory or otherwise exempt from listing.			
DSL/NDSL	All components are on the DSL or NDSL.			
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List				
U.S. Federal Regulations				
SARA 313 Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.				
SARA 311/312 Hazard Categories				
Acute Health Hazard		Yes		
Chronic Health Hazard		No		
Fire Hazard		No		
Sudden Release of Pressure Hazard		No		
Reactive Hazard		No		
Clean Water Act This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)				
Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Sodium hypochlorite 7681-52-9	100 lb			X
CERCLA This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)				
Chemical Name	Hazardous Substances RQs	Extremely Hazardous Substances RQs	RQ	
Sodium hypochlorite 7681-52-9	100 lb	-	RQ 100 lb final RQ RQ 45.4 kg final RQ	
EPA Statement This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label: DANGER: CORROSIVE. Causes irreversible eye damage and skin burns. Harmful if swallowed. Do not get in eyes, on skin, or on clothing. Wear protective eyewear and rubber gloves when handling this product. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the restroom. Avoid breathing vapors and use only in a well-ventilated area.				

**Reportable Quantities
If there is a release**



US State Regulations						
California Proposition 65 This product does not contain any Proposition 65 chemicals.						
U.S. State Right-to-Know Regulations						
Chemical Name	New Jersey	Massachusetts	Pennsylvania	Rhode Island	Illinois	
Sodium hypochlorite 7681-52-9	X	X	X	X		
Sodium chlorate 7775-09-9	X	X	X			
International Regulations						
Canada WHMIS Hazard Class E - Corrosive material						



Where else would you find Reportable Quantities (RQ)

- 40 Code of Federal Regulations
 - § 302.4 Designation of hazardous substances.
 - Table 302.4 - List of Hazardous Substances and Reportable Quantities

- 49 Code of Federal Regulations
 - Section 172.101 App A
 - Appendix A to §172.101 - List of Hazardous Substances and Reportable Quantities

Section 16 Other information, including date of preparation or last revision

- Includes the date of preparation or last revision

16. OTHER INFORMATION

NFPA Health Hazard 3 Flammability 0 Instability 0 Physical and Chemical Hazards -

HMIS Health Hazard 3 Flammability 0 Physical Hazard 0 Personal Protection B

Prepared By Product Stewardship
23 British American Blvd.
Latham, NY 12110
1-800-572-6501

Revision Date June 12, 2015

Revision Note Revision Section 14.

Reference 1096036/164964.159

General Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal, and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

Safety Data Sheet Exercise

You can do this later



Name: _____ Date: _____

Safety Data Sheet Exercise

Allow 5-10 minutes

Review the SDS provided and find the following information:

What number do you call if a spill occurs for more information?

What is the Flash point of this material?

What should you do if you get this stuff on your skin?

What is the DOT hazard class of this material?

What does the material look like (solid/Liquid/gas/color/ etc)?

Which ingredient(s) are hazardous?

What PPE should be worn when working with this material?

If this material catches fire, how should you put it out?

What is the PEL for this material?

What are the routes of Entry for this material that will do the most damage to you?

Post Session Zoom Rooms

- After our Session is over, this Zoom Room will remain open for you to continue the conversation started in this Session
- In this Zoom Room, you may meet with the Speaker, Moderator and/or fellow Attendees for a 'post meeting de-brief'
- To leave the session return to where you entered.
- Complete the evaluation before leaving to enter get your CEU/REHS hours.



Any Questions?

BE SURE TO SHOW UP TOMORROW @ 1PM FOR PART 2

Nick Vent

Sustainable Workplace Alliance

Hazmatvent@gmail.com

619-778-9500

