Welcome to the 2023 FRPA Conference!

August 28 - 31, 2023 | Orlando, FL

Hazard Communication & Materials for the Aquatic Professional

Space Coast Pool School

LAUNCH YOUR POOL SERVICE CAREER!

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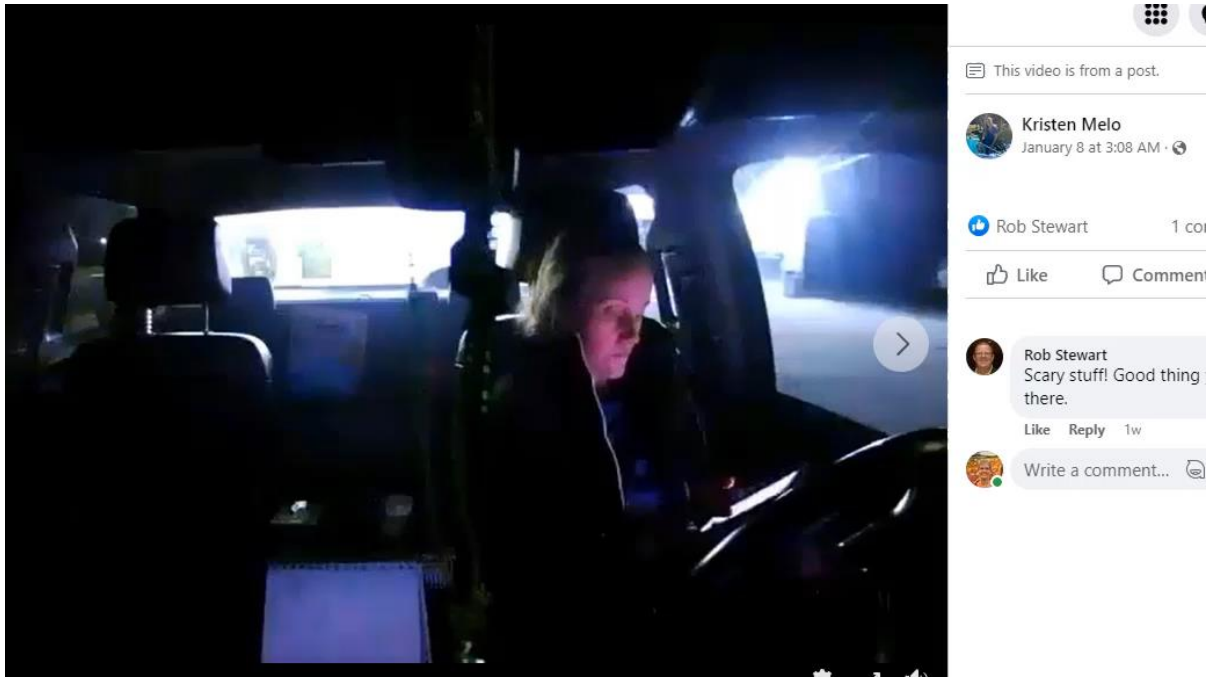
LEARNING OBJECTIVES

1. Explore employer responsibilities with respect to the Hazard Communication Standard.

2. Identify types of hazardous materials and how exposures can occur in order to reduce injury or death.

3. Discuss how the Globally Harmonized System has been developed to protect workers when using products developed and distributed worldwide.



Watch This and Believe it Can Happen to Pool Pros!!

This Happened to Kristen Melo…Pleatco Pool Gal of the Year—January 8, 2023

- I certainly don't claim to know everything there is to know. I absolutely am not even close to knowing it all. What I do know, I try to do my best to practice. One thing I strive to do and preach to my staff constantly is safety and not allowing chemicals to have the chance to interact with each other or mix. I especially am overly cautious with anything new that I'm not familiar with. Yesterday morning I had a gallon of Baquacil (no... I'm not familiar with it at all... I know what it is, what it does, how it's used, and what it is used for, but I've literally never held it in my hands before) that I special ordered for a retail store customer. I had it in a bag, assumed that would make it safe enough to put in my vehicle, and since I didn't want to take a chance on it possibly coming in contact with something in the back of the truck, put it on the floor in my back seat. A little bit did leak and made it through the bag...
- No biggie, right??? After all it's just peroxide... We brush our teeth with it... How bad can it be....
- Well I'm wrong... Very wrong...

- Come to find out from my nights worth of studying trying to find answers after another "lesson learned the hard way" that when the water evaporated from the paper towels I wiped it up with (luckily I didn't throw in the trash with any other chemicals or additional paper. I hate to think what that would have caused!), evaporated off of a piece of mail that it had soaked in to, and possibly because it was also resting on a pair of hematoma clamps I use to unclog impellers with that may have sped up the heat process as it oxidized (((???) who knows???)) it ignited.
- Luckily I was there, waiting outside of the retail store for one of my techs, not driving, and writing estimates in the truck when it happened. I could have been driving, had an accident, or I could have lost my truck in a fire.
- Don't ever get overly confident. Always be cautious and don't think any chemical isn't dangerous because they all are.
- I had no idea peroxide could do this... Even with everything I know about oxidization I was never told this could happen.
- Lesson learned.
- Tell your staff and use me as an example.

I forgot how much it hurts getting Muriatic acid in my eye. Woooo!!! (Rick Flair voice)

A reminder to us all, wear your eye protection when handling chemicals, we take it for granted but some of this is pretty serious stuff

What's in it for you?

Source: Construction Safety Council, used with permission.

Remember! Never mix acid with chlorine

The Spokane, Washington, Fire Department called HAZMAT crews to assist after a worker mixed incompatible chemicals at the Courtyard by Marriot Spokane Downtown.

Although the initial report indicated mustard gas, the Washington Department of Ecology clarified it was actually the potentially lethal chlorine gas, which was produced by accidentally mixing muriatic acid with liquid chlorine.

The Spokane Fire Department monitored the gas concentration in the air and evacuated the area near the swimming pool facility as a precaution. HAZMAT crews were then sent in to neutralize the reaction and dispose of the product.

The incident occurred at around 4 p.m. on March 28, and crews began to wrap up before 9 p.m. No injuries were reported.

06/14/2021 Pool Chemical Spill

- BOISE, Idaho (AP) — The Boise Police Department says 28 people were sickened when an unidentified chemical was spilled at a popular Boise public pool on Friday afternoon.
- Fourteen people were hospitalized after the exposure, but officials said none of the injuries were life-threatening.
- Boise Fire Division Chief Paul Roberts said the chemical was “pool-related” and the spill happened at a maintenance building while a commercial truck was filling tanks at the site. Hazardous materials crews were sent to the pool around 1 p.m., and authorities warned people in the neighborhood to “shelter in place” for a few hours because of the risk of respiratory injuries.
- About 28 people who were at or near the pool reported symptoms, police said. Eleven were treated at the scene and 14 were taken to area hospitals for treatment.
- Investigators with the Boise Fire Department determined the hazmat incident that occurred at a Boise pool on Friday was "the result of two pool chemicals that were inadvertently mixed" during a delivery by an outside vendor.
- The chemical reaction turned into a gas that made several people in the area feel ill.

April 1, 2022 Service Industry News Page 5

Pool worker mixes deadly chemicals

A swimming pool maintenance man working at the Residence Inn in Lexington, Kentucky, put himself in the hospital this March after mixing incompatible chemicals.

According to Lexington Fire Department Major Brian Dawson, it is believed that the man mixed bleach with muriatic acid, thinking it would double the cleaning power. Instead, the combination produced potentially lethal chlorine gas.

Upon arrival at the scene at 8:48 a.m. March 2, Lexington fire officials found that the worker had had a reaction to the pool chemicals, complaining of having trouble breathing.

He was taken to the hospital and is currently doing better.

Initially, fire officials were not immediately aware of the nature of the chemicals involved. A short time later, their assignment was upgraded to a HAZMAT incident and third-party HAZMAT specialist companies arrived at the building to investigate.

Guests at the hotel were evacuated from the building as firefighters monitored the condition of the air and ventilated the pool area.

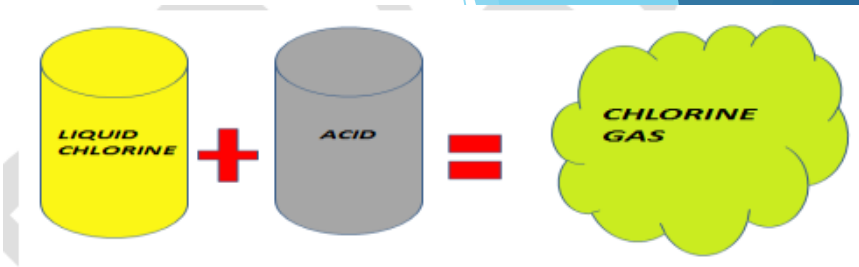
Some waited in their cars for approximately two hours until the building was declared to be clear. They were allowed to return to the hotel when chemical readings showed that it was safe for everyone.

The leftover chemicals were placed into containers and shipped off to a chemical waste facility.

Chemical Incident at Maryland YMCA

- The Cecil County YMCA closed for a day after an incident at the indoor swimming pool sent four people to area hospitals. Emergency personnel responded to reports of members being overcome by chemical vapors in the YMCA at Elkton, in northeast Maryland.
- The YMCA called 911 when people began experiencing adverse effects from the fumes. Multiple ambulances, as well as a HAZMAT team, responded to the scene.
- According to a Facebook post from the Cecil County YMCA, the incident occurred while a worker was servicing the equipment: “On January 25 there was an incident in the indoor pool area at the Cecil County Family YMCA.
- One of our lifeguards, who is a Certified Pool Operator, was working on the pool pumps and feeders, which is a normal, standard practice. When the pumps were turned back on, a chemical gas was released through the pool return, impacting four members. Asked what protocols the facility would put into place to prevent a recurrence of this type of incident, the YMCA responded that the pool pumps and feeders would be worked on only during non-operational hours.

Example of Hazardous Materials OSHA Violation with Pool



- Blue Hill Plaza Inn DBA: Pearl River Hilton, Pearl River, NY
- 02/22/2012
- Potential for generation and release of chlorine gas
- Employer did not furnish a place of employment which was free from recognized hazards that were causing or likely to cause death or serious physical harm to employees in that employees were exposed to the hazard of chlorine gas
- Site: Pool Chemical Room
- Incompatible chemicals were stored and pumped in close proximity to each other.


CHL
PH


CL2
PH

- 2- 50 gallon containers of sodium hypochlorite were stored with 2—30 gallon containers of muriatic acid and fed from both containers into pool return line
- Abatement of violation:
  - Physically separate incompatible chemicals to a minimum of 8 feet apart
  - Place muriatic acid storage containers on spill containment device
  - Place all sodium hypochlorite storage containers on spill containment device
  - Do not use a 5 gallon open transfer bucket for pumping sodium hypochlorite for the pool—rather pump from larger 50 gallon container


HAYWARD


Muriatic
ACID


CHL


PH STORAGE

The floor needed sanitizing anyways. Lol.

I'm having a fun day.

When you walk into pool season and an acid barrel busted!

12 14 comments

EAGLE

Drum Spill Containment Platform: For 1 Drums, 15 gal Spill Capacity, 2,000 lb Load Capacity

Item # **35U064**
Mfr. Model # **1633D**
UNSPSC # **24101905**
Catalog Page # **1859**

Country of Origin **USA. Country of Origin is subject to change.**

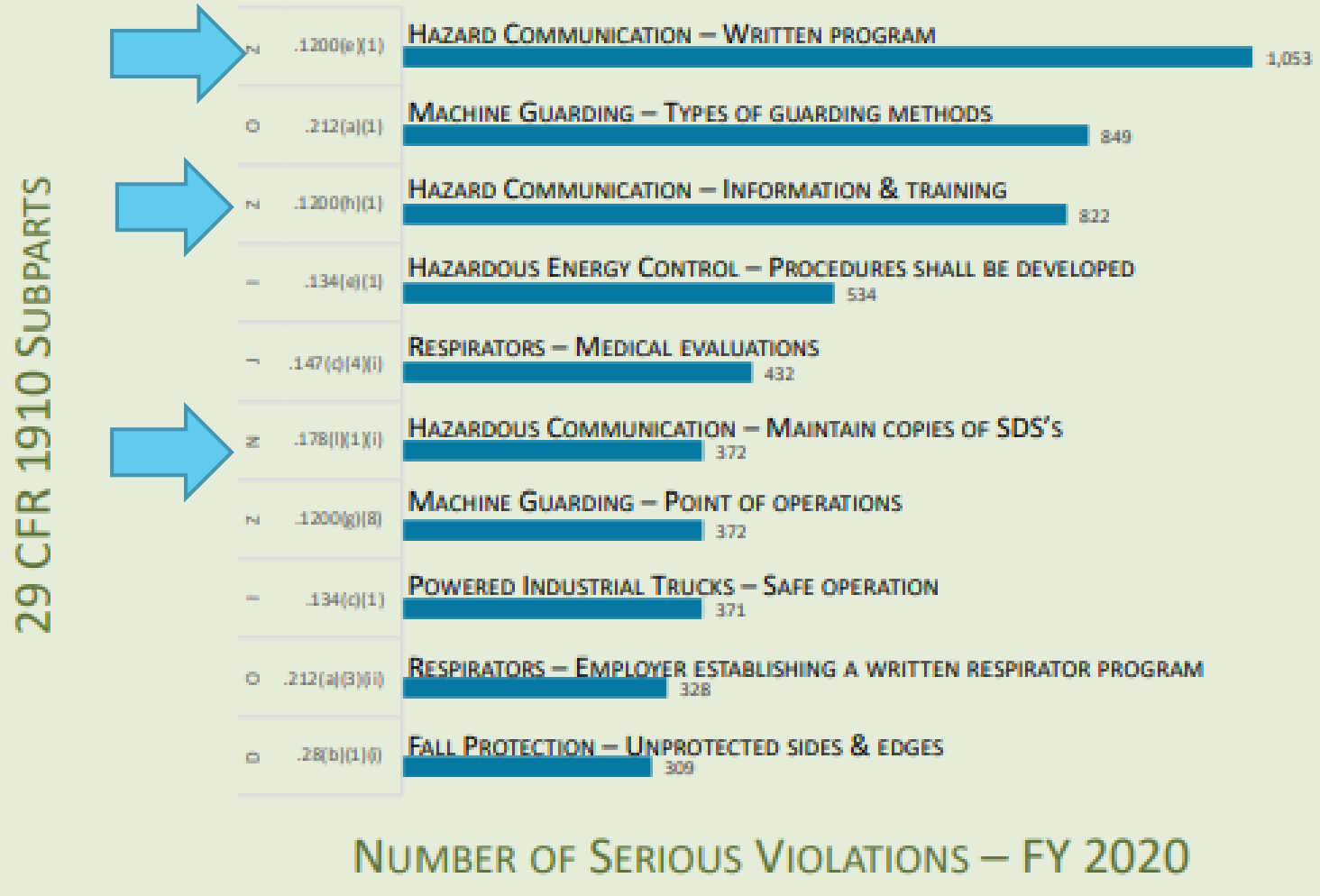
☐ Compare this product


ACID
CHAMPION

The HazCom Standard

- Gives you the right to know about:
  - Chemicals that are used in your workplace
  - Possible dangers you could be exposed to
  - How to protect yourself and others

Most Frequently Cited Serious Violations in General Industry FY2020



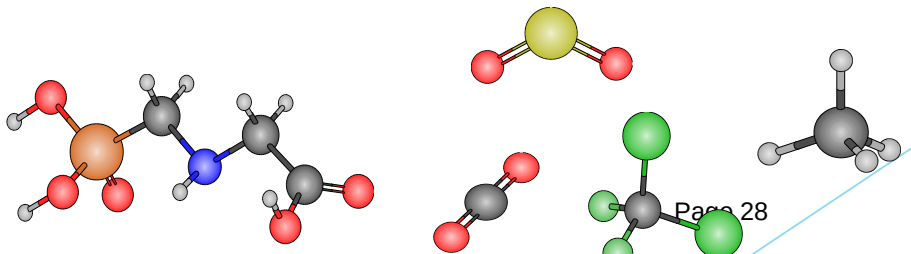
Introduction

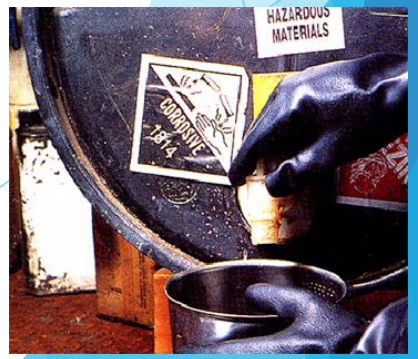
HCS/GHS

- Save lives
  - Approximately 43 per year (deaths)
  - Approximately 585 per year injuries/illnesses
- Save $
  - $475.2M in increased productivity
  - $32.2M in cost savings

Introduction

- About 32 million workers work with and are potentially exposed to one or more chemical hazards
- Millions of chemicals and chemical products exist today, and hundreds of new ones introduced annually
- Chemical exposure may cause or contribute to many serious health effects such as heart ailments, CNS damage, kidney and lung damage, sterility, cancer, burns, and rashes
- Some chemicals may also be safety hazards and have the potential to cause fires and explosions and other serious accidents





Pool Chemical Injuries Send Thousands to ER Each Year ▫

- Pool chemical injuries account for as many as 5,200 emergency room visits each year. ▫
- A study by the Center of Disease Control (CDC) and Prevention shows that these injuries are preventable, and almost half of those injuries occurred at a residence. ▫
- Persons are injured by inhaling fumes when they open pool chemical containers, attempting to pre-dissolve pool chemicals, or handling them improperly.

Hazardous Chemical

- A hazardous chemical is any chemical which is classified as a:
  - Physical hazard
  - Health hazard
  - Simple asphyxiant
  - Combustible dust
  - Pyrophoric gas
  - Hazard not otherwise classified

Physical Hazards

- Physical hazards are chemicals that can cause:
  - Fire
  - Explosion
  - Violent reaction

Health Hazards

- Health hazards are chemicals that are harmful to your health and can cause:
  - Short-term (acute) health problems
  - Long term (chronic) health problems

Health Hazards, continued…

- OSHA considers a health hazard to be any chemical which:
  - Is toxic
  - Is corrosive to the skin or eyes
  - Is a respiratory sensitizer
  - May cause cancer, birth defects or reproductive issues
  - Attacks specific organs
  - Is harmful or deadly when inhaled


CHEMICAL LEAK
HYPOCHLORITE SOLUTION & SULFURIC ACID


SixFlags
HURRICANE
HARBOR

Introduction

Seven major elements in the GHS-aligned Hazard Communication Standard

Source: OSHA

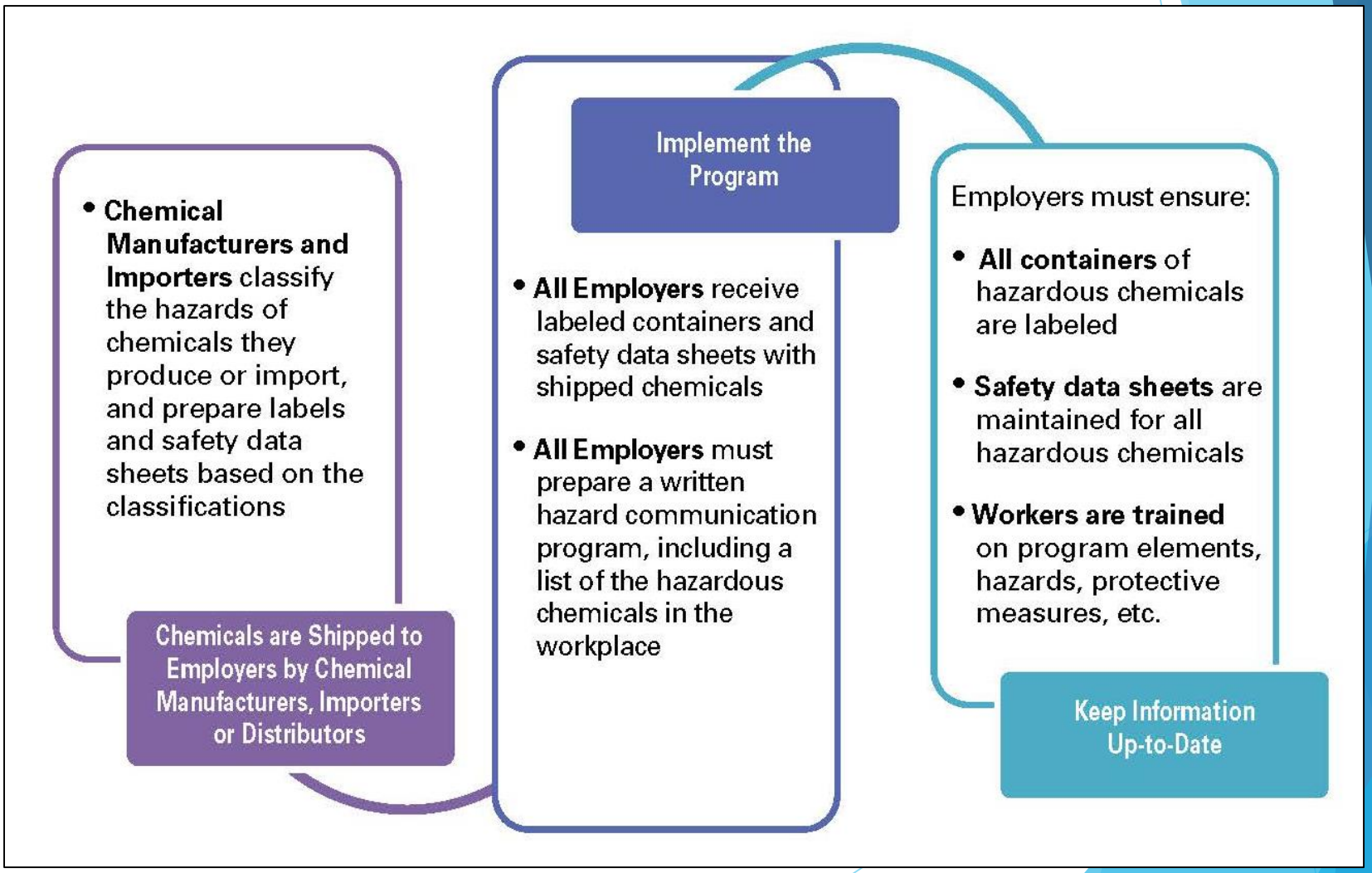
Employer Responsibilities

Employer responsibilities under the HCS:

- Ensure labels are on all incoming containers and not defaced
- Maintain SDSs from shipments
- Obtain SDSs if not received
- Ensure SDSs are readily accessible
- Ensure chemicals in workplace are properly labeled, tagged, or marked
- Provide information and training to employees
- Provide information/access for employees in multi-employer workplaces
- Develop, implement, and maintain a written hazard communication program

Employer Responsibilities

How hazard communication works:



Hazard Communication Program

Requirements for a written program:

- Develop, implement, and maintain a written hazard communication program
- Main intent is to ensure compliance with standard in a systematic way that coordinates all elements

Hazard Communication Program

Components of written program:

- Lists of hazardous chemicals present at worksite
- Availability of SDSs to employees and downstream employers
- Labeling of chemical containers
- Training programs regarding hazards of chemicals and protective measures

Hazard Communication Program

List of hazardous chemicals:

- Use product identifier
  - Product name, common name or chemical name
  - Same as name used on SDS and label
- Inventory of chemicals – employer must have available an SDS for each
- Covers all chemicals in all forms, whether contained or not
- Include chemicals in containers, pipes, and those generated by work operations


DANGER
HAZARDOUS
POOL
CHEMICALS
MURIATIC
ACID
ALGAE CONTROL
Granules

Pool Chemical Inventory

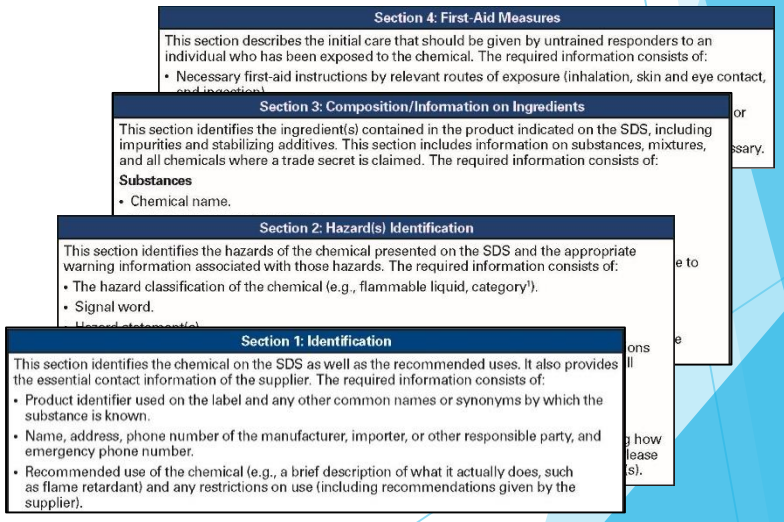
- Muriatic Acid
- **Tri-chlor**
- **Di-chlor**
- Lithium hypochlorite
- Sodium bicarbonate
- Potassium monopersulfate
- Hydrogen peroxide
- **Sodium hypochlorite**
- **Calcium hypochlorite**
- Sodium thiosulfate
- Diatomaceous earth
- Sodium bisulfate
- Stain removers
- Ammonium compounds
- Brominated compounds
- Copper and Silver compounds
- Non-fuming sulfuric acid
- Algacides
- Calcium chloride
- Borates
- Carbon dioxide
- Chlorine gas
- Soda ash
- Cyanuric acid
- Clarifiers
- Enzymes
- Phosphate Removers

Bolded chemicals are oxidizers= more fire or toxic vapor release likely

Hazard Communication Program

Safety data sheet (SDS):

- Available and accessible to workers
- Required for all hazardous chemical used
- Do not use hazardous chemicals if there is no SDS available
- 16-section format

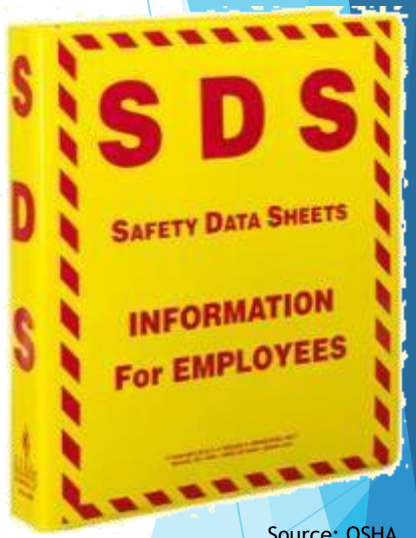


Source: OSHA

Hazard Communication Program

SDS documentation:

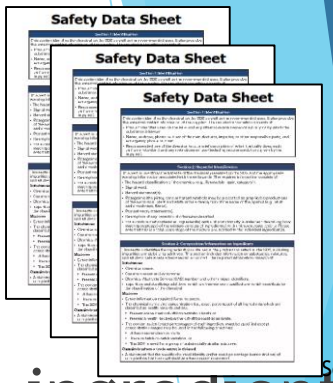
- Designate person(s) responsible for obtaining and maintaining SDSs
- Describe how SDSs are maintained and how employees can access them
- Procedures if SDS is not received with first shipment
- Must have SDS for each chemical; train workers on SDS format and use



Source: OSHA

Hazard Communication Program

SDS 16-section format:



Source: OSHA

- Section 1: Identification
- Section 2: Hazard(s) identification
- Section 3: Composition/information on ingredients
- Section 4: First-aid measures
- Section 5: Fire-fighting measures
- Section 6: Accidental release measures
- Section 7: Handling and storage
- Section 8: Exposure control/personal protection

Hazard Communication Program

- Section 9: Physical and chemical properties
- Section 10: Stability and reactivity
- Section 11: Toxicological information
- ***Section 12: Ecological information***
- ***Section 13: Disposal considerations***
- ***Section 14: Transport information***
- ***Section 15: Regulatory information***
- Section 16: Other information

Not regulated by OSHA

Hazard Communication Program

Example of New Format SDS

GHS System and Labels Down in Section 2

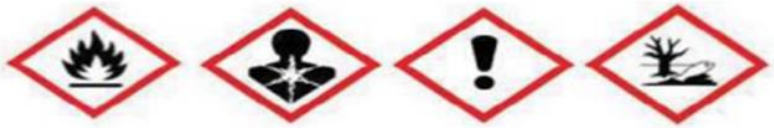
SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	Product XYZ			
Synonyms	:				
SDS Number	:	888100008809	**Version**	:	1.1
Product Use Description	:	Fuel			
Company	:				
			Chemtrec (Emergency Contact)	:	(800) 424-9300

SECTION 2. HAZARDS IDENTIFICATION

Classifications :
Flammable Liquid – Category 1 or 2 depending on formulation.
Aspiration Hazard – Category 1
Carcinogenicity – Category 2
Specific Target Organ Toxicity (Repeated Exposure) – Category 2
Specific Target Organ Toxicity (Single Exposure) – Category 3
Skin Irritation – Category 2
Eye Irritation – Category 2B
Chronic Aquatic Toxicity – Category 2

Pictograms :



Signal Word : **Danger**

Source: OSHA

Cal Hypochlorite SDS Sheet

SAFTY DATA SHEET

1. PRODUCT IDENTIFICATION

Product Name: CALCIUM HYPOCHLORITE GRANULES
Synonym(s): Hypochlorite; Cal Hypo; Cal-Shock
Recommended Uses: Disinfectant and Sanitizer
SDS Reference: 23

Company Information: ALLCHEM PERFORMANCE PRODUCTS, INC.
6010 NW FIRST PLACE
GAINESVILLE, FL 32607
Tel: 352-378-9696

Distributed By: ALLCHEM PERFORMANCE PRODUCTS, INC.
6010 NW FIRST PLACE
GAINESVILLE FL 32607

24 HOUR EMERGENCY NUMBER: INFOTRAC (TRANSPORTATION): 1-800-535-5053

2. HAZARD(S) IDENTIFICATION

Classification:
OXIDIZER
CORROSIVE
INHALATION HAZARD
TARGET ORGAN TOXICITY (SINGLE)
ENVIRONMENTAL HAZARD

Signal Word: DANGER

Hazard Statements:
HEALTH HAZARDS:
Skin Corrosion - Causes severe skin burns and eye damage - Category 1B - H314
Eye Damage - Causes serious eye damage - Category 1 - H318
Inhalation Hazard - Toxic if inhaled - Category 3 - H331
Specific Target Organ Toxicity - Single Dose - May cause respiratory irritation - Category 3 - H335
Acute Oral Toxicity - Harmful if swallowed - Category 4 - H302
PHYSICAL HAZARDS:
Oxidizing Solid - Oxidizer - May intensify fire - Class 2 - H272
ENVIRONMENTAL HAZARDS:
Very toxic to aquatic life - Category 1 - H400

Hazard Communication Program

Labeling:

- All containers of hazardous materials must be labeled
- Immediate warning
- Snapshot of hazards and protective information

Hazard Communication Program

Documentation for labeling:

- Designate person(s) responsible for labeling compliance
- Describe alternatives to labeling of stationary process containers
- Ensure all workplace containers are labeled appropriately
- Labels included in training (shipping and workplace containers)
- Procedures for reviewing/updating workplace label information

What's Wrong Here??

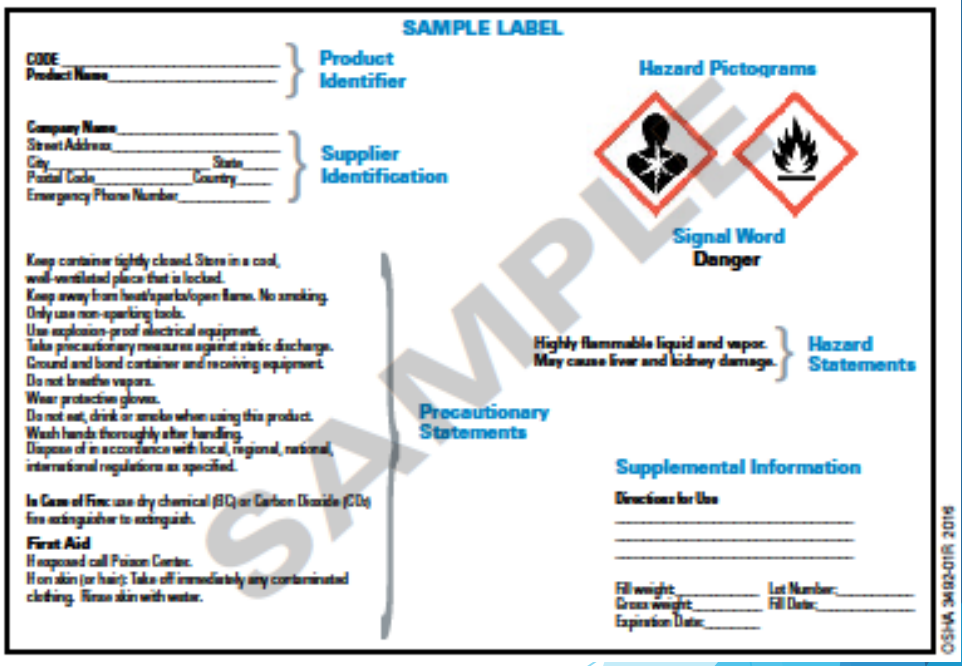

1 116 312300
SC Laundry Detergent
Détergent à lessive pour CS
Detergente para el lavado de ropa SC
Tide Professional
5-10
18.9 L / 5 GAL (US / É.-U. / EE. UU.)
PRO LINE

Pool Troopers Tampa FL Chem Labels Ready!

Hazard Communication Program

Required elements for **shipping labels:**

- Name, address, telephone number
- Product identifier
- Signal word
- Hazard statement(s)
- Precautionary statement(s)
- Pictogram



This sample illustrates the required elements for shipping labels. Source: OSHA

Hazard Communication Program

Requirements for **workplace labels:**

- Employers can create own labeling system that works for their workplace/employees
- Can choose same label required for shipped containers or alternative labels as long as they provide general information about hazards
- Train employees to understand

Source: OSHA

Hazard Communication Program

Training requirements:

- Train employees on hazardous chemicals in their work area
  - Before initial assignment
  - When new hazards are introduced
  - Nonroutine tasks
- Include in training
  - Methods/observations to determine presence/release of chemical in work area
  - Hazards of chemicals
  - Appropriate protective measures
  - Where and how to obtain additional information

Source: OSHA

Hazard Communication Labels

Types of labels:

- HCS shipping labels
- HCS workplace labels
- NFPA 704 labels
- HMIS labels
- DOT shipping labels, placarding, and markings

Source of graphics: OSHA

Hazard Communication Labels

Required elements for HCS **shipping labels:**

- Product identifier
- Signal word
- Hazard statement(s)
- Precautionary statement(s)
- Pictogram
- Name, address, telephone number

SAMPLE LABEL

PRODUCT IDENTIFIER

CODE
Product Name

SUPPLIER IDENTIFICATION

Company Name
Street Address
City State
Postal Code Country
Emergency Phone Number

PRECAUTIONARY STATEMENTS

Keep container tightly closed. Store in cool, well ventilated place that is locked.
Keep away from heat/sparks/open flame. No smoking.
Only use non-sparking tools.
Use explosion-proof electrical equipment.
Take precautionary measure against static discharge.
Ground and bond container and receiving equipment.
Do not breathe vapors.
Wear Protective gloves.
Do not eat, drink or smoke when using this product.
Wash hands thoroughly after handling.
Dispose of in accordance with local, regional, national, international regulations as specified.

In Case of Fire: use dry chemical (BC) or Carbon dioxide (CO_2) fire extinguisher to extinguish.

First Aid
If exposed call Poison Center.
If on skin (on hair): Take off immediately any contaminated clothing. Rinse skin with water.

HAZARD PICTOGRAMS

SIGNAL WORD
Danger

HAZARD STATEMENT

Highly flammable liquid and vapor.
May cause liver and kidney damage.

SUPPLEMENTAL INFORMATION

Directions for use

Fill weight Lot Number
Gross weight Fill Date

Expiration Date

Source: OSHA

Hazard Communication Labels

Figure 5: Example of Required HCS Label Elements

How the hazardous chemical is identified

Contact information of Responsible Party

Product Identifier

Pictogram *(Symbol in Red Frame)*

Signal Word *(Danger)*

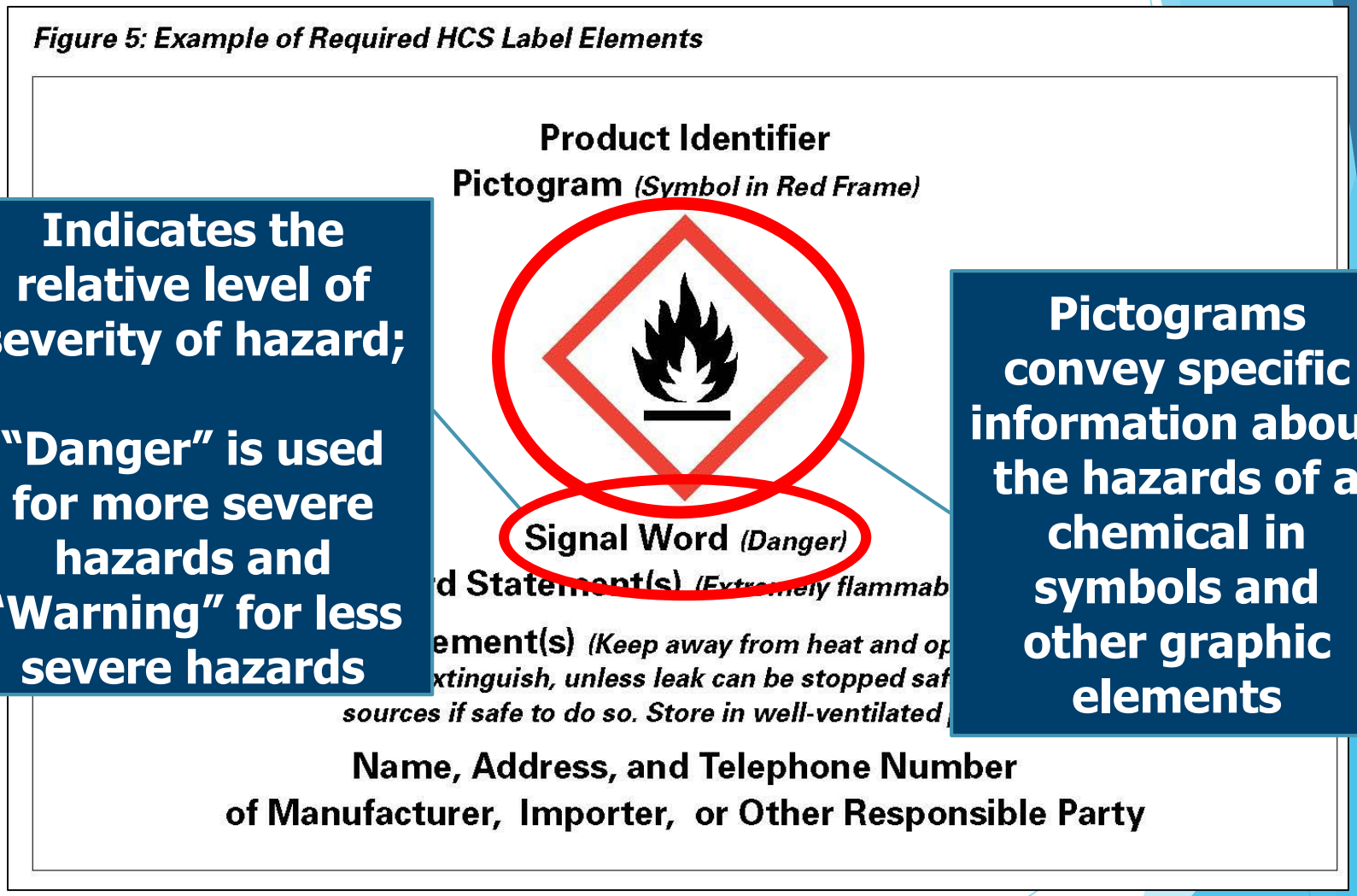
Hazard Statement(s) *(Extremely flammable gas)*

Statement(s) *(Keep away from heat and open flames. No smoking. Do not extinguish, unless leak can be stopped safely. Eliminate all ignition sources if safe to do so. Store in well-ventilated place.)*

Name, Address, and Telephone Number of Manufacturer, Importer, or Other Responsible Party

Source: OSHA

Hazard Communication Labels



Indicates the relative level of severity of hazard;

"Danger" is used for more severe hazards and "Warning" for less severe hazards

Pictograms convey specific information about the hazards of a chemical in symbols and other graphic elements

Source: OSHA

Hazard Communication Labels

Figure 3: HazCom 2012 Pictograms

Health Hazard • Carcinogen • Mutagenicity • Reproductive Toxicity • Respiratory Sensitizer • Target Organ Toxicity • Aspiration Toxicity	**Flame** • Flammables • Pyrophorics • Self-Heating • Emits Flammable Gas • Self-Reactives • Organic Peroxides	**Exclamation Mark** • Irritant (skin and eye) • Skin Sensitizer • Acute Toxicity (harmful) • Narcotic Effects • Respiratory Tract Irritant • Hazardous to Ozone Layer (Non-Mandatory)
Gas Cylinder • Gases Under Pressure	**Corrosion** • Skin Corrosion/ Burns • Eye Damage • Corrosive to Metals	**Exploding Bomb** • Explosives • Self-Reactives • Organic Peroxides
Flame Over Circle • Oxidizers	**Environment** (Non-Mandatory) • Aquatic Toxicity	**Skull and Crossbones** • Acute Toxicity (fatal or toxic)

Source: OSHA

Hazard Communication Labels

Figure 3: HazCom 2012 Pictograms

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Source: OSHA

Hazard Communication Labels

Skull and Crossbones

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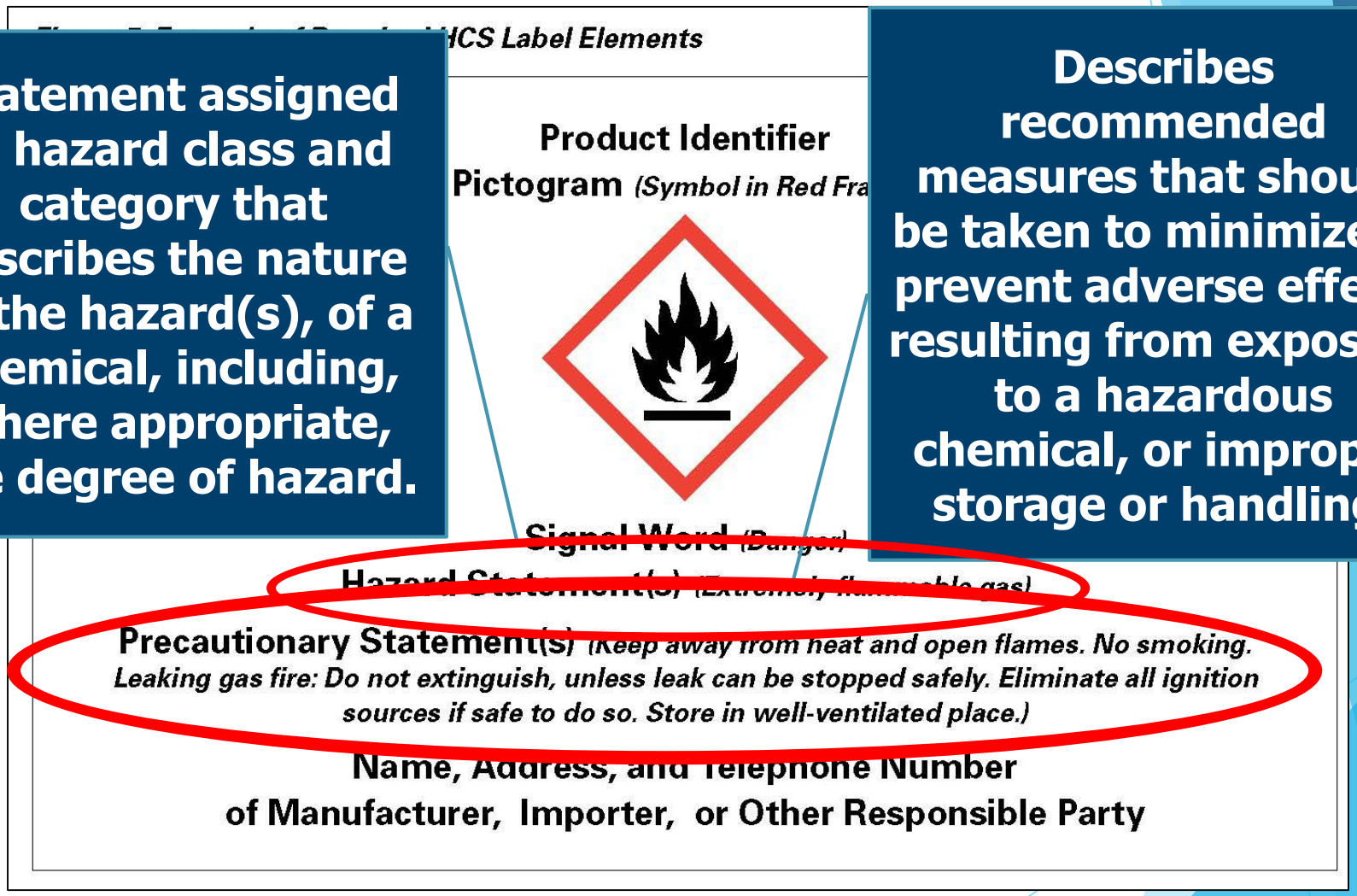
Not regulated by OSHA

Source: OSHA

Hazard Communication Labels

Statement assigned to hazard class and category that describes the nature of the hazard(s), of a chemical, including, where appropriate, the degree of hazard.

Describes recommended measures that should be taken to minimize or prevent adverse effects resulting from exposure to a hazardous chemical, or improper storage or handling.

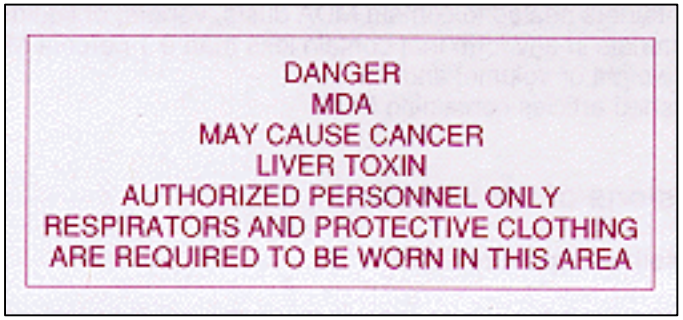


Source: OSHA

Hazard Communication Program

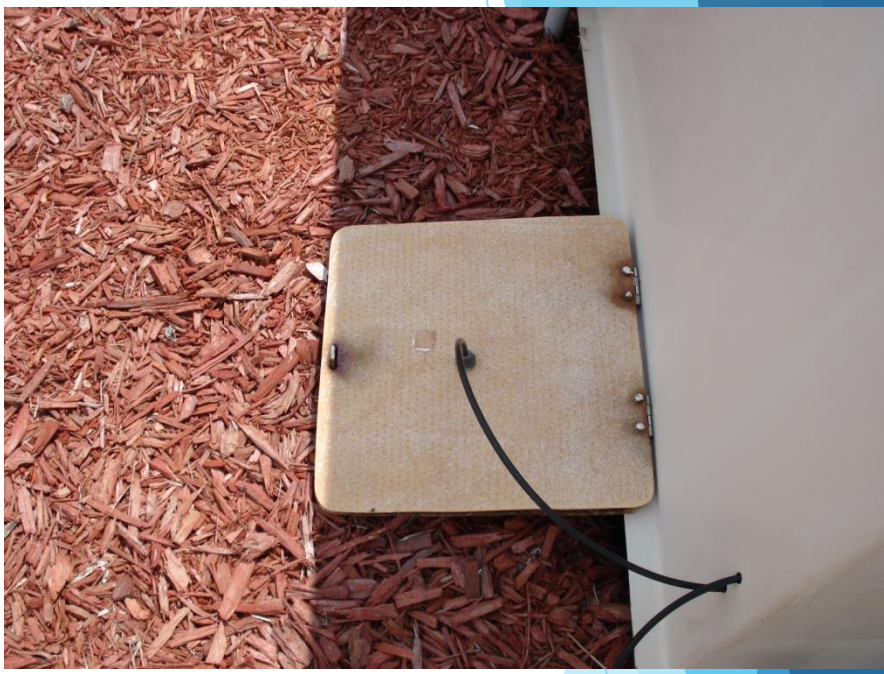
Requirements for **workplace labels:**

- Same information as label from manufacturer or product identifier and words, pictures, symbols or combination thereof
- May include signs, placards, process sheets, batch tickets, operation procedures, other written materials



Source of graphics: OSHA

What's wrong with this?



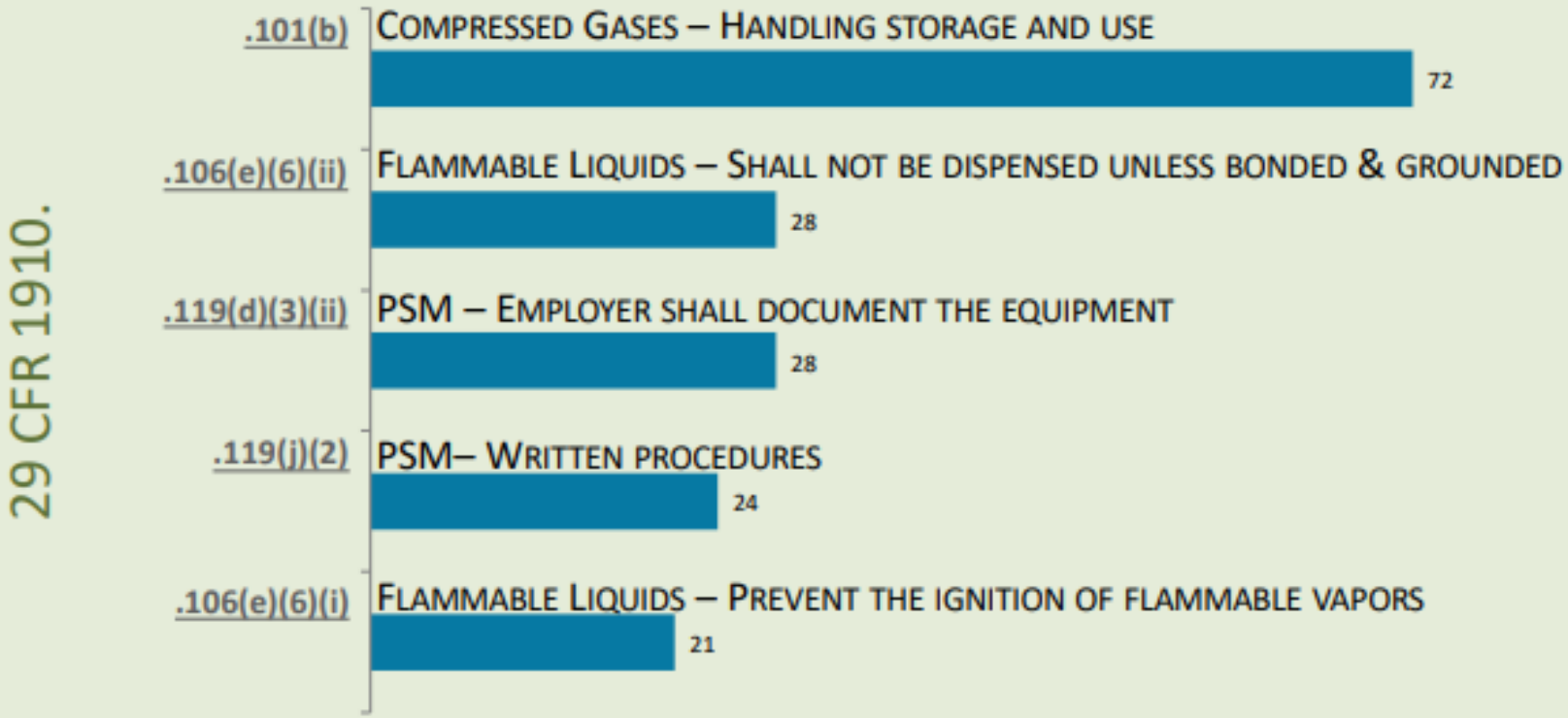
These are not labeled properly as to their contents


CAUTION
Verochem
MURIATIC
ACID 20° Be
CORROSIVE
8


VERO CHEMICAL
DISTRIBUTORS, INC.

What's wrong here??

Hazardous Materials [1910.101 – .126]



Number of Serious Violations – FY 2020

Exposure to Hazardous Materials

What are hazardous materials?

- Group of products for which the storage, handling, and use are regulated under the Hazardous Materials standard
- Primarily associated with physical hazard
- May also pose health hazard

Exposure to Hazardous Materials

Examples of worksite exposure:

- Operations involving the storage, handling, and/or use of:
  - Compressed gases
    - Liquefied gases – anhydrous ammonia, **chlorine**, propane, nitrous oxide, and **carbon dioxide**
    - Non-liquefied gases – oxygen, nitrogen, helium, and argon
    - Dissolved gases - acetylene

Exposure to Hazardous Materials

- Flammable liquids
  - Category 1 – ethyl ether, isopentane, propylene oxide
  - Category 2 – acetone, benzene, ethyl alcohol, gasoline
  - Category 3 – naphtha, turpentine, xylene
  - Category 4 – ethylene glycol, glycerine
- Cryogenics and refrigerated liquids – oxygen, nitrogen, argon, hydrogen, helium LNG, Liquid methane, carbon monoxide
- Liquefied petroleum gases (LPGs) - **propane**, propylene, butane, and butylene
- Explosives and blasting agents
- Oxidizers—tri-chlor, calcium hypochlorite(cal hypo)

Exposure to Hazardous Materials

- Handling Diatomaceous Earth(DE) powder, ,Sand silica in sand filter—inhalation health hazard
- Processes that include using hazardous chemicals
  - Acid washing swimming pool
- Handling of hazardous pool chemicals & other materials on daily addition to pool

Wear Gloves & Long Sleeves When Cleaning Out Filters

- Have you ever noticed that your arms get covered in bumps any time that you change out the sand from inside a sand filter? Or what about cleaning the elements on a cartridge or DE filter? That reaction that you are getting is due to the disgustingly high level of bacteria concentrated here. If you really stop to think about it, which you probably shouldn't, pool filters are absofrigginglutely disgusting. Their job is to capture all of the human oils, spit, ass, hair, bird crap, and eye goo and whatever other crud ends up in the pool.
- These magical ingredients then percolate inside in the filter for weeks, months or years, and then you stuff your bare arm right on in there and start scooping it out like you are looking for a prize at the bottom of a cereal box. Out of respect for yourself and your loved ones whom you presumably touch with your gross-ass hands and arm bumps, wear some gloves and some long sleeves when dealing with pool filters.

Exposure to Hazardous Materials

Additional precautions for hazard exposures:

- Hazardous (classified) locations
- Confined spaces—
  - Acid wash of pool in confined space even worse

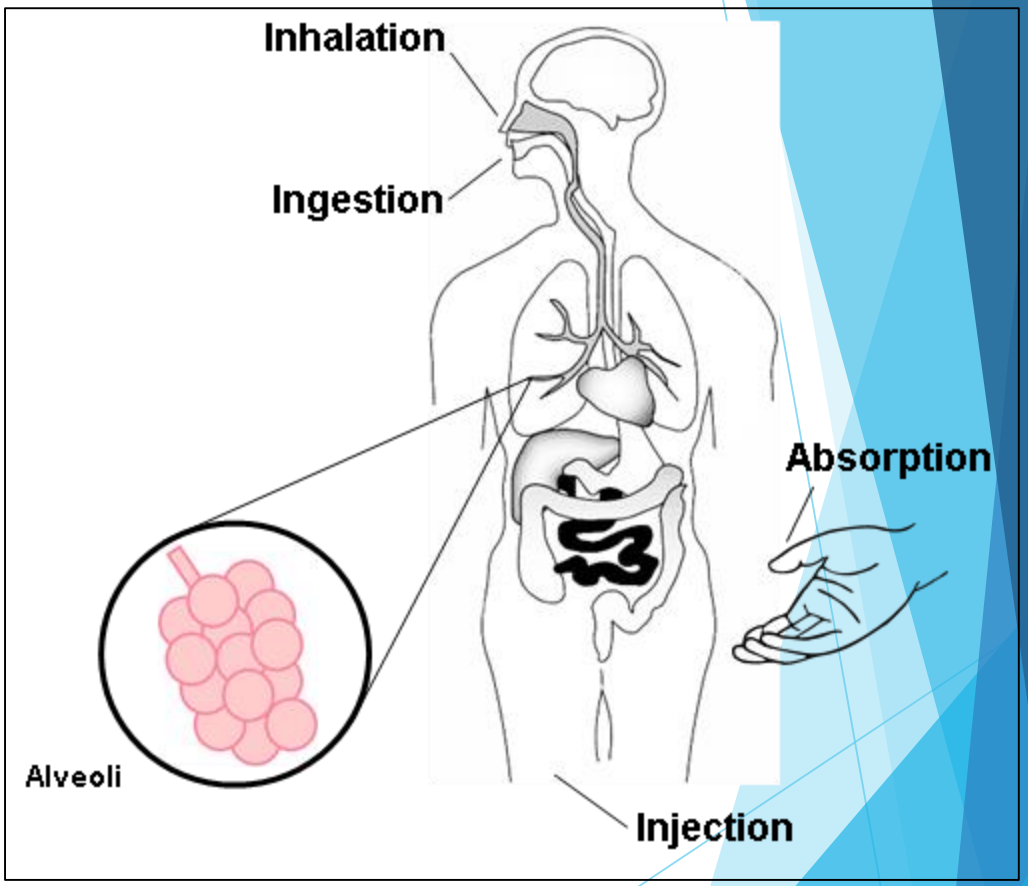
Source: OSHA

Exposure to Hazardous Materials

Routes of entry:

- Inhalation*
- Ingestion
- Absorption
- Injection

* Most Common



Source: Construction Safety Council, used with permission.

Hazards of Hazardous Materials

Types of **physical hazards** associated with hazardous materials:

- Oxidizer
- **Flammable**
- **Explosion**
- Corrosive to metal
- **High-pressure systems**

Oxidizers in pool industry per SDS Sheets:

- **1,3,5-trichloro-s-triazine-2,4,6-trione; TCCA; Trichlor; Symclosene; Trichloroisocyanuric Acid**
- **Hypochlorite; Cal Hypo; Cal-Shock**

Source of pictograms: OSHA

Hazards of Hazardous Materials

Types of **health hazards** associated with hazardous materials:

- **Acute/chronic toxicity**
- **Skin corrosion or irritation**
- **Aspiration hazard**
- Serious eye damage or eye irritation
- Respiratory or skin sensitization
- Germ cell mutagenicity
- Carcinogenicity
- Reproductive toxicity
- Specific target organ toxicity

Example: Carcinogenic DE powder

Pool Chemical Inventory

- Muriatic Acid
- **Tri-chlor**
- **Di-chlor**
- Lithium hypochlorite
- Sodium bicarbonate
- Potassium monopersulfate
- Hydrogen peroxide
- **Sodium hypochlorite**
- **Calcium hypochlorite**
- Sodium thiosulfate
- Diatomaceous earth
- Sodium bisulfate
- Stain removers
- Ammonium compounds
- Brominated compounds
- Copper and Silver compounds
- Non-fuming sulfuric acid
- Algacides
- Calcium chloride
- Borates
- Carbon dioxide
- Chlorine gas
- Soda ash
- Cyanuric acid
- Clarifiers
- Enzymes
- Phosphate Removers

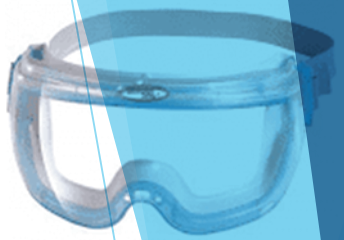
Bolded chemicals are oxidizers= more fire or toxic vapor release likely

Hazards of Hazardous Materials

- Example: Acid washing of swimming pool
- Use muriatic acid solution

Pool acid washing, when not done correctly, can cause:

- *Chemical burns on the skin if protective gear is not worn.*
- *Lung damage if the chemicals are breathed into the body.*
- **Personal Protective Equipment to Use:**
  - **protective clothing that covers all areas of exposed skin**
  - **full face shield or goggles,**
  - **half mask respirator with fresh acid cartridges,**
  - **rubber boots and gloves.**



Source of photos: NIOSH

2 1 comment

Like Comment

Jesse Benavidez
Surge pit cleaning! My favorite

Handling DE Powder

- You also need to handle diatomaceous earth with care as not to inhale it. Because it doesn't only irritate your lungs, it also causes silicosis, a condition of inflammation and scarring of the lungs.

EP Minerals®

SAFETY DATA SHEET

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION	
PRODUCT IDENTIFIER	Celatom® FW-6,FW-12, FW-14, FW-18, FW-20, FW-40, FW-50, FW-60, FW-70, FW-80, SP
CHEMICAL NAME	Diatomaceous Earth, Flux-Calcined
CHEMICAL FAMILY	Silica
MATERIAL USE	Filter Aid
RESTRICTION ON USE	None Known
MANUFACTURER	EP Minerals, LLC., 9875 Gateway Dr., Reno, NV 89521
TELEPHONE NO.	(775) 824 7600 (Monday – Friday 8:00 am PST – 5:00 pm PST)
EMERGENCY TELEPHONE NO.	(775) 824 7600 (Monday – Friday 8:00 am PST – 5:00 pm PST)
SDS DATE OF PREPARATION	January 31, 2014
SECTION 2: HAZARDS IDENTIFICATION	
OSHA GHS HAZARD CLASSIFICATION	Carcinogen Category 1A Specific Target Organ Toxicity, Repeated Exposure Category 1
HAZARDS NOT OTHERWISE CLASSIFIED	None
LABEL ELEMENTS	DANGER May cause cancer by inhalation. Causes damage to lungs through prolonged or repeated exposure. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust. Wear eye protection. If exposed or concerned: Get medical advice. Dispose of contents in accordance with local, state and federal regulations. 

PERSONAL PROTECTIVE EQUIPMENT:	
EYE / FACE PROTECTION	Goggles to protect from dust
SKIN PROTECTION	No special equipment is needed.
RESPIRATORY PROTECTION	Respirators fitted with filters certified to standard 42CFR84 under series N95 should be worn when dust is present. If the dust concentration is less than ten (10) times the Permissible Exposure Limit (PEL) use a quarter or half-mask respirator with a N95 dust filter or a single use dust mask rated N95. If dust concentration is greater than ten (10) times and less than fifty (50) times the PEL, a full-face piece respirator fitted with replaceable N95 filters is recommended. If dust concentration is greater than fifty (50) and less than two hundred (200) times the PEL use a power air-purifying (positive pressure) respirator with a replaceable N95 filter. If dust concentration is greater than two hundred (200) times the PEL use a type C, supplied air respirator (continuous flow, positive pressure), with full face piece, hood or helmet.
GENERAL HYGIENE	Avoid breathing dust. Avoid contact with eyes. Wash hands after handling and before eating or drinking.


NAUTILUS FNS

7:03

Comments Done

Pool Boyinthahouse the shi t we deal wit !

2d Like Reply 1

Pool Boyinthahouse
Russell Cantrell the worst is getting Trichlor chlorine gassed. I don't wish that on anyone...

2d Like Reply 2

Russell Cantrell
Pool Boyinthahouse no indeed, got hit once in a residential equipment rm. customer had pinched off the Hayward off line chlorinater tubes with 5 pucks in place all winter. Room lights were out and I used my flashlight- that shit hit me when I took the lid off and I couldn't take deep breathes for 2-3 weeks. I now carry a Dragar full face w/ chlorine/ acid gas cartridges and emergency O2 tank and mask- I did lite SCUBA diving to, so being able to breathe is a must 🤞

2d Like Reply 1

Amy Bailey-Lemieux
Pool Boyinthahouse makes me hit the floor!! I had to have a breathing treatment because of it

1d Like Reply

Write a comment...

video.
Aug 25


How To
Add
D.E.
To Your Pool

Roll-n-Vac HD-2 Bundle – Concrete Slurry Vacuum – Professional Pool Maintenance Vacuum

The HD-2 has high water lift specs. Works best for vacuuming water, wet leaves, sludge, sand, and mud. The Roll-n-Vac® is designed for industrial and construction environments, providing heavy duty performance for maximum results that will save you time and money.

Used to clean out sand filters safely & minimizes contact with Sand silica to employees.


COMMERCIAL SIZE
Fiber Clear
FREE
Pure Cellulose Filtration Media
The SAFE D.E. Alternative
Fast, Complete Backwashes
Less Wear & Tear on Equipment
Pressure Filters
Sand & Cartridge Filters
www.FiberClear.net

Hazards of Hazardous Materials

Compressed gases:

- Oxygen displacement
- Fires
- Explosion
- Toxic gas exposures
- Physical hazards associated with high pressure systems

Source: OSHA

Carbon dioxide – Compressed gas—used for pH adjustment

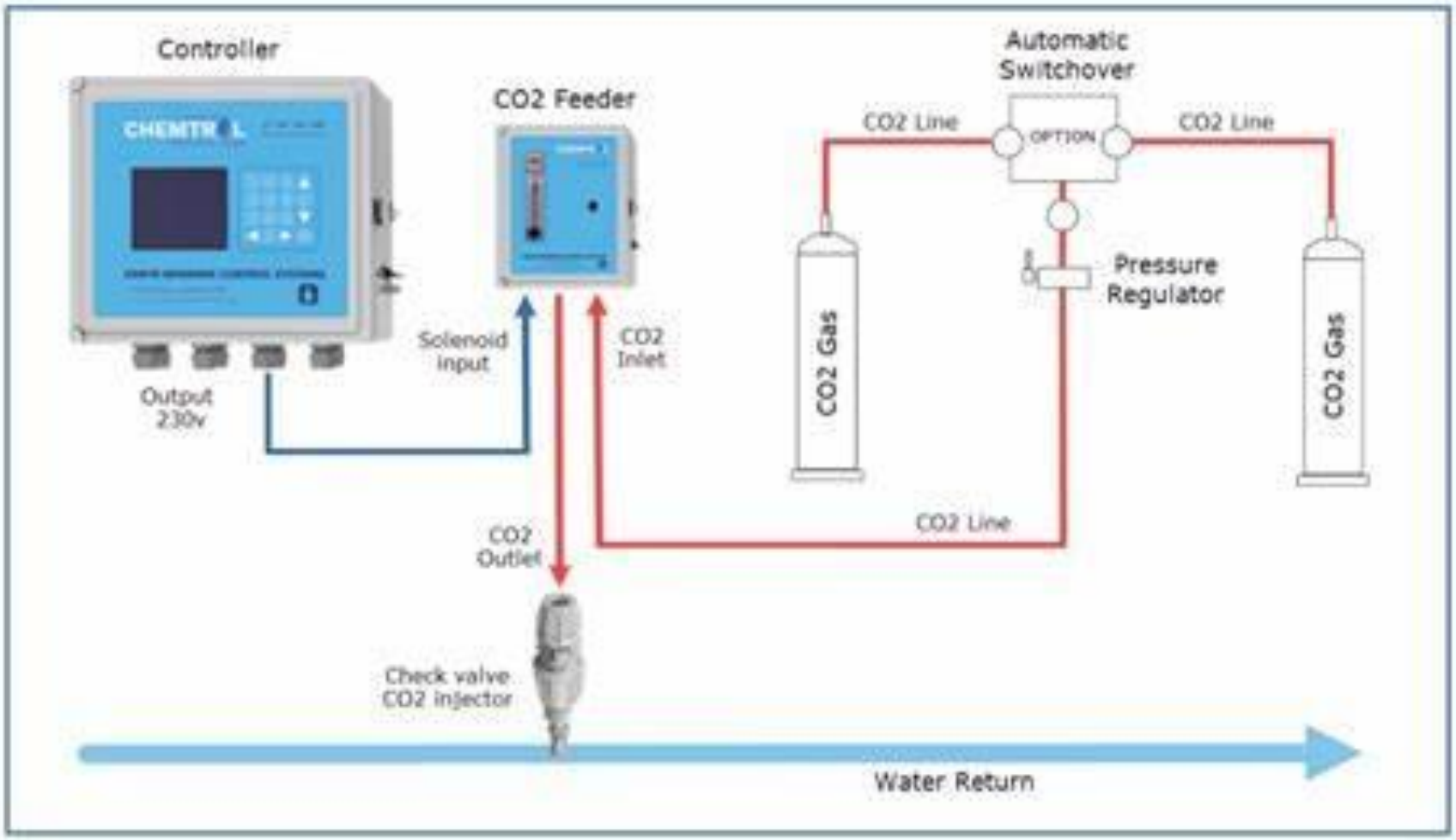
SAFETY DATA SHEET

Carbon Dioxide

Airgas
an Air Liquide company

Section 1. Identification

GHS product identifier	:	Carbon Dioxide
Chemical name	:	Carbon dioxide, gas
Other means of identification	:	Carbonic, Carbon Dioxide, Carbonic Anhydride, R744, Carbon Dioxide USP
Product type	:	Gas.
Product use	:	Synthetic/Analytical chemistry and Medical use.
Synonym	:	Carbonic, Carbon Dioxide, Carbonic Anhydride, R744, Carbon Dioxide USP
SDS #	:	001013
Supplier's details	:	Airgas USA, LLC and its affiliates 259 North Radnor-Chester Road Suite 100 Radnor, PA 19087-5283 1-610-687-5253
24-hour telephone	:	1-866-734-3438


Controller
CHEMTROL
CO2 Feeder
Automatic
Switchover
CO2 Line
OPTION
CO2 Line
Pressure
Regulator
CO2 Gas
CO2 Gas
Solenoid
input
CO2
Inlet
Output
230v
CO2 Line
CO2
Outlet
Check valve
CO2 injector
Water Return


SCFH CARBON DIOXIDE FEED SYSTEM
Model Number
NCS-CF-CO2-0030
Serial Number
NCS-H0-0232
Maximum Co2 Flow Rate
30 SCFH
Maximum Operating Pressure
100 PSID 690 kPa
Maximum Operating Temperature
131°F
55°C
Volts
120
Hz
60
Watts
8
RATE OF FLOW
SCFH AIR
30
24
18
12
6
FEED ADJUSTMENT
IN


Trident
CO_2 INJECTION SYSTEM
CAUTION
DO NOT EXCEED 100 P.S.I.
Neptune Benson
FLOW RATE
OUT
IN


Carbo-Mizer
450
CARBON DIOXIDE
REFRIGERATED LIQUID
UN 2187

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : GASES UNDER PRESSURE - Liquefied gas
Simple asphyxiant.

GHS label elements

Hazard pictograms :

Signal word : Warning

Hazard statements : Contains gas under pressure; may explode if heated.
May displace oxygen and cause rapid suffocation.
May increase respiration and heart rate.

Precautionary statements

General : Read and follow all Safety Data Sheets (SDS'S) before use. Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand. Close valve after each use and when empty. Use equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction. Always keep container in upright position.

Prevention : Use and store only outdoors or in a well ventilated place.

Response : Not applicable.

Storage : Protect from sunlight. Store in a well-ventilated place.

Disposal : Not applicable.

Hazards not otherwise classified : In addition to any other important health or physical hazards, this product may displace oxygen and cause rapid suffocation.
May cause frostbite.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : As this product is a gas, refer to the inhalation section.

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : Contains gas under pressure. In a fire or if heated, a pressure increase will occur and the container may burst or explode.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 8. Exposure controls/personal protection

Hand protection	:	Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
Body protection	:	Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Other skin protection	:	Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Respiratory protection	:	Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Chlorine Gas-Compressed gas

SAFETY DATA SHEET

Chlorine

Airgas
an Air Liquide company

Section 1. Identification

GHS product identifier	:	Chlorine
Chemical name	:	chlorine
Other means of identification	:	Molecular chlorine; CHLORINE GAS; active chlorine released from chlorine; Dichlorine; Dichlor; Diatomic chlorine; Chlorine molecule; Chlorine mol.; Chlor mol.; Chlorine, liquefied; Liquid chlorine
Product type	:	Gas.
Product use	:	Synthetic/Analytical chemistry.
Synonym	:	Molecular chlorine; CHLORINE GAS; active chlorine released from chlorine; Dichlorine; Dichlor; Diatomic chlorine; Chlorine molecule; Chlorine mol.; Chlor mol.; Chlorine, liquefied; Liquid chlorine
SDS #	:	001015
Supplier's details	:	Airgas USA, LLC and its affiliates 259 North Radnor-Chester Road Suite 100 Radnor, PA 19087-5283 1-610-687-5253
24-hour telephone	:	1-866-734-3438


CYLINDERS
SECURELY

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture :
OXIDIZING GASES - Category 1
GASES UNDER PRESSURE - Compressed gas
ACUTE TOXICITY (inhalation) - Category 2
SKIN CORROSION - Category 1
SERIOUS EYE DAMAGE - Category 1
AQUATIC HAZARD (ACUTE) - Category 1

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements :
May cause or intensify fire; oxidizer.
Contains gas under pressure; may explode if heated.
Causes severe skin burns and eye damage.
Fatal if inhaled.
Very toxic to aquatic life.

Precautionary statements

General : Read and follow all Safety Data Sheets (SDS'S) before use. Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand. Close valve after each use and when empty. Use equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction. Open valve slowly. Use only with equipment cleaned for Oxygen service.

Section 2. Hazards identification

Prevention : Wear protective gloves. Wear protective clothing. Wear eye or face protection. In case of inadequate ventilation wear respiratory protection. Keep away from clothing and other combustible materials. Keep reduction valves, valves and fittings free from oil and grease. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Do not breathe gas.

Response : Collect spillage. In case of fire: Stop leak if safe to do so. IF INHALED: Remove person to fresh air and keep comfortable for breathing. 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. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Storage : Store locked up. Protect from sunlight. Store in a well-ventilated place.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : Contains gas under pressure. Oxidizing material. This material increases the risk of fire and may aid combustion. Contact with combustible material may cause fire. In a fire or if heated, a pressure increase will occur and the container may burst or explode. This material is very toxic to aquatic life. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : Decomposition products may include the following materials: halogenated compounds

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. If involved in fire, shut off flow immediately if it can be done without risk.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/ or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Hazards of Hazardous Materials

Cryogenic and refrigerated liquids:

- Extreme cold
- Extreme pressure
- Asphyxiation
- Fire or explosion

Source: OSHA

Hazards of Hazardous Materials

Flammable liquids:

- Fire
- Explosion

Source: OSHA

Criteria for Flammable Liquids	
Category	Criteria
1	Flashpoint < 73.4°F and initial boiling point ≤ 95°F
2	Flashpoint < 73.4°F and initial boiling point > 95°F
3	Flashpoint ≥ 73.4°F and ≤ 140°F
4	Flashpoint > 140°F and ≤ 199.4°F

29 CFR 1910.1200 Appendix B, B.6.2

Hazards of Hazardous Materials

Liquefied petroleum gases (LPG):

- Pictograms: 
- Signal word: Danger
- Hazard statements:
  - Extremely flammable gas.
  - Contains gas under pressure; may explode if heated.
  - May cause frostbite.
  - May form explosive mixtures in air.
  - May displace oxygen and cause rapid suffocation.

Source: OSHA

Propane Gas Tanks for Pool Heaters

SAFETY DATA SHEET

Propane

Airgas
an Air Liquide company

Section 1. Identification

GHS product identifier	:	Propane
Chemical name	:	propane
Other means of identification	:	Propyl hydride; n-Propane; Dimethyl methane; Bottled gas; propane in gaseous state; propane liquefied, n-Propane; Dimethylmethane; Freon 290; Liquefied petroleum gas; Lpg; Propyl hydride; R 290; C3H8; UN 1075; UN 1978; A-108; Hydrocarbon propellant.
Product type	:	Liquefied gas
Product use	:	Synthetic/Analytical chemistry.
Synonym	:	Propyl hydride; n-Propane; Dimethyl methane; Bottled gas; propane in gaseous state; propane liquefied, n-Propane; Dimethylmethane; Freon 290; Liquefied petroleum gas; Lpg; Propyl hydride; R 290; C3H8; UN 1075; UN 1978; A-108; Hydrocarbon propellant.
SDS #	:	001045
Supplier's details	:	Airgas USA, LLC and its affiliates 259 North Radnor-Chester Road Suite 100 Radnor, PA 19087-5283 1-610-687-5253
24-hour telephone	:	1-866-734-3438

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE GASES - Category 1
GASES UNDER PRESSURE - Liquefied gas

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Extremely flammable gas.
Contains gas under pressure; may explode if heated.
May cause frostbite.
May displace oxygen and cause rapid suffocation.
May form explosive mixtures with air.

Precautionary statements

General : Read and follow all Safety Data Sheets (SDS'S) before use. Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand. Close valve after each use and when empty. Use equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction. Always keep container in upright position. Approach suspected leak area with caution.

Prevention : Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

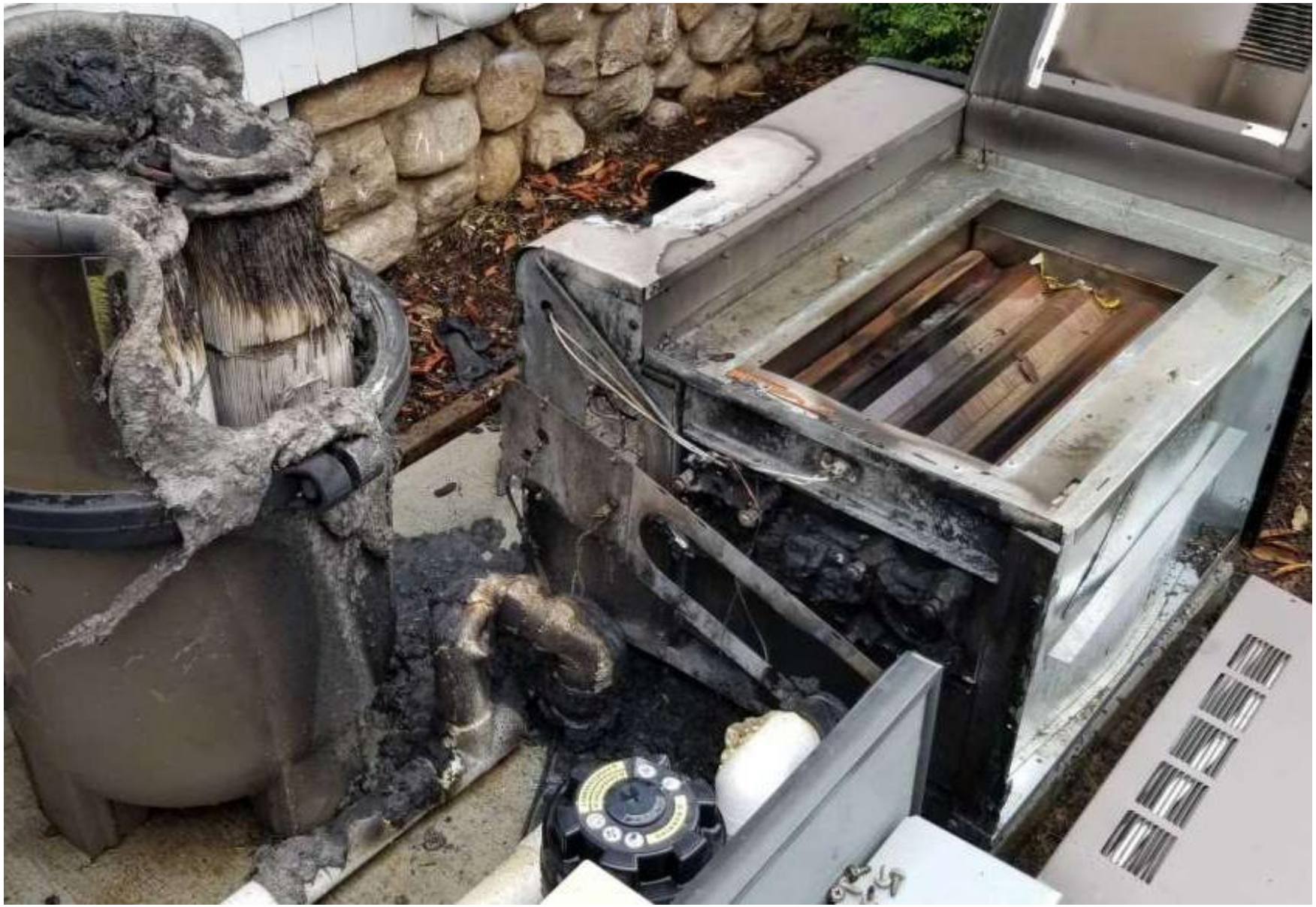
Response : Leaking gas fire: Do not extinguish, unless leak can be stopped safely. In case of leakage, eliminate all ignition sources.

Storage : Protect from sunlight. Store in a well-ventilated place.


885-4448
OMFORT
ENTRAL

Pool Equipment Fires

outside fire involving the pool heater.



Hazards of Hazardous Materials

Hazardous (classified) locations:

- Class I – flammable gases or vapors
  - Division 1
  - Division 2
- Class II – combustible dust
  - Division 1
  - Division 2
- Class III – ignitable fibers or flyings

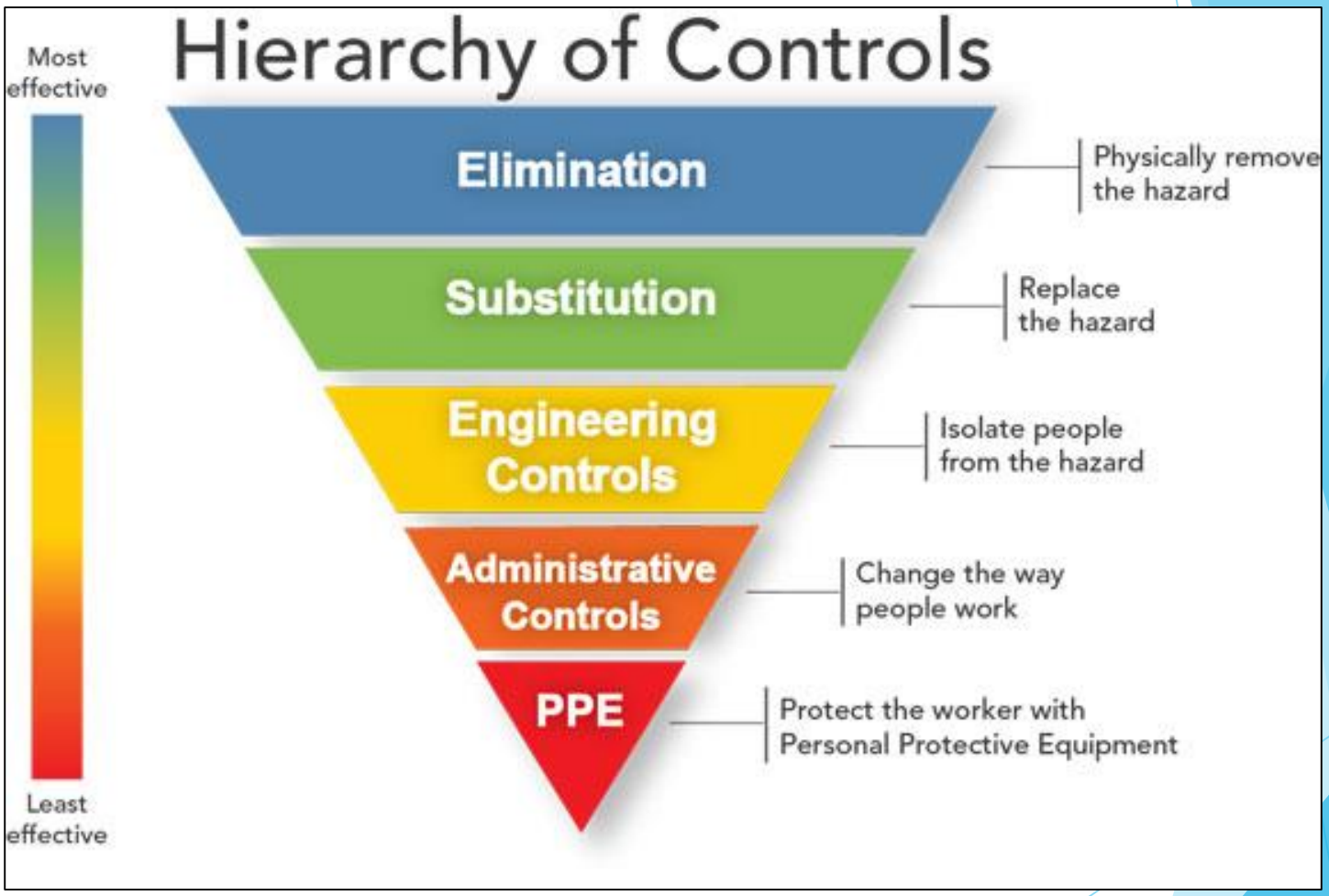
Hazards of Hazardous Materials

Confined spaces:

- Limited or restricted means for entry/exit; not designed for continuous occupancy
  - Example empty pool
- PRCS contains or has potential to contain hazardous atmospheres—especially during acid washing of an empty pool

Source of photos: OSHA

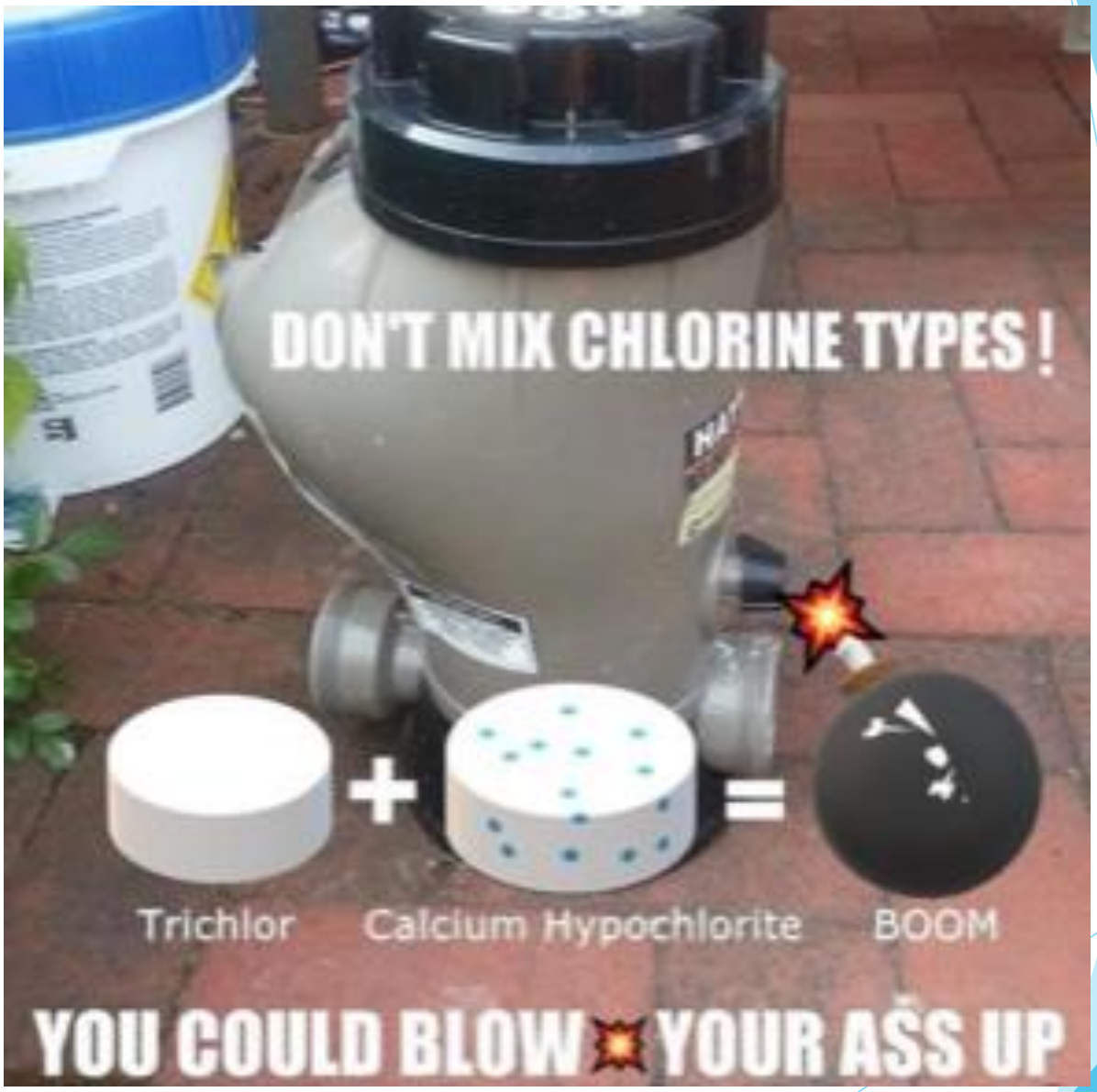
Controlling Physical Hazards



Source: NIOSH

Pool Chemical Hazard Triggers

- **Wetting of chemical**
  - Rain water from roof leak or from open or broken window
  - Wet floor when stored chemicals were not elevated off floor
  - Leakage from fire suppression sprinkler system
  - Hose down water generated during area cleanup
  - High humidity in summer weather(most unlikely)


DON'T MIX CHLORINE TYPES !
Trichlor
Calcium Hypochlorite
BOOM
YOU COULD BLOW YOUR ASS UP

- There is a real danger if someone puts cal-hypo tablets in a trichlor floater or feeder. This will cause an explosion. Cal-hypo is a [National Fire Protection Association] class 3 oxidizer, which means it will combust and become flammable when it comes into contact with any type of organic product. This includes even things like rainwater, soda pop, oil or grease, perspiration and also trichlor.”

Pool Chemical Hazard Triggers

- **Improper Mixing**
  - Intentional or accidental mix of incompatible chemicals that could cause chemical reaction that could create temperatures high enough to ignite nearby combustible material
  - Can also lead to release of highly toxic and corrosive chlorine gas.
  - Reactions can occur from mixing of old and new chemicals or other materials contaminate chemical
  - Improper mixing have occurred when:
    - Tools & equipment use between chemicals and not washed between
    - Spilled chemicals on floor and swept together and mixed
    - Containers, residues & wastes are disposed incorrectly that causes improper mixing in disposal containers

Intro to Pool Chemical Safety

Pool Chemical Hazard Controls—Proper Storage DO's

- Store Chemicals below 95°F and in conditions recommended by manufacturer(Ex: low humidity or out of direct sunlight)
- Protect Chemicals from getting wet
  - Do not store directly on floor
  - Store chemicals away from doors & windows
  - Cover opened containers with waterproof material
  - Look for damaged containers
  - Check chemical storage area regularly for water entry
    - Roofs, ceilings, windows, doors, walls, floor joints, water pipes/hoses, sprinkler systems and drains—especially if faulty or clogged
    - Ensure floors are sloped to keep water drained away

- Store chemicals Separately
  - Hazard class, avoid combustible—keep combustible away from flammable
  - Separate all chlorine products from one another
  - Store chemicals on shelves or pallets to keep containers off floor—beware of height when on shelves near ceiling, need clearance
  - Store combustible & flammable materials away from pool chemicals
  - Store ignition sources such as gasoline, diesel or gas powered equipment out of chemical storage area.
- Keep Pool Chemical Storage Area Well-Maintained & Ventilated space
  - Results in less spills, cross-contamination/reactions
  - Good Housekeeping—do not allow rags, trash, debris or other materials to clutter hazardous material storage area
- Store Chemicals in Secure Location
  - Out of reach of children
  - Store chemicals in original, manufacturer labeled containers
  - Look for any exposure

- Use all the Chemicals Before Disposal
- Use Caution when opening containers to avoid splashing
  - Reduce exposure

Storage: Label all Chemicals

- With:
  - Chemical Identity
  - Manufacturer's name & address
  - Physical hazards
  - Health hazards and
  - Degree or type of risk
- Label should explain:
  - Precautions to take
  - How to handle, store, and dispose of chemical
  - Sometimes hazard potential with # 0 to 4(4 is greatest risk)

What's wrong with the Labels?

Pool Chemical Hazard Controls—Proper Storage DON'Ts

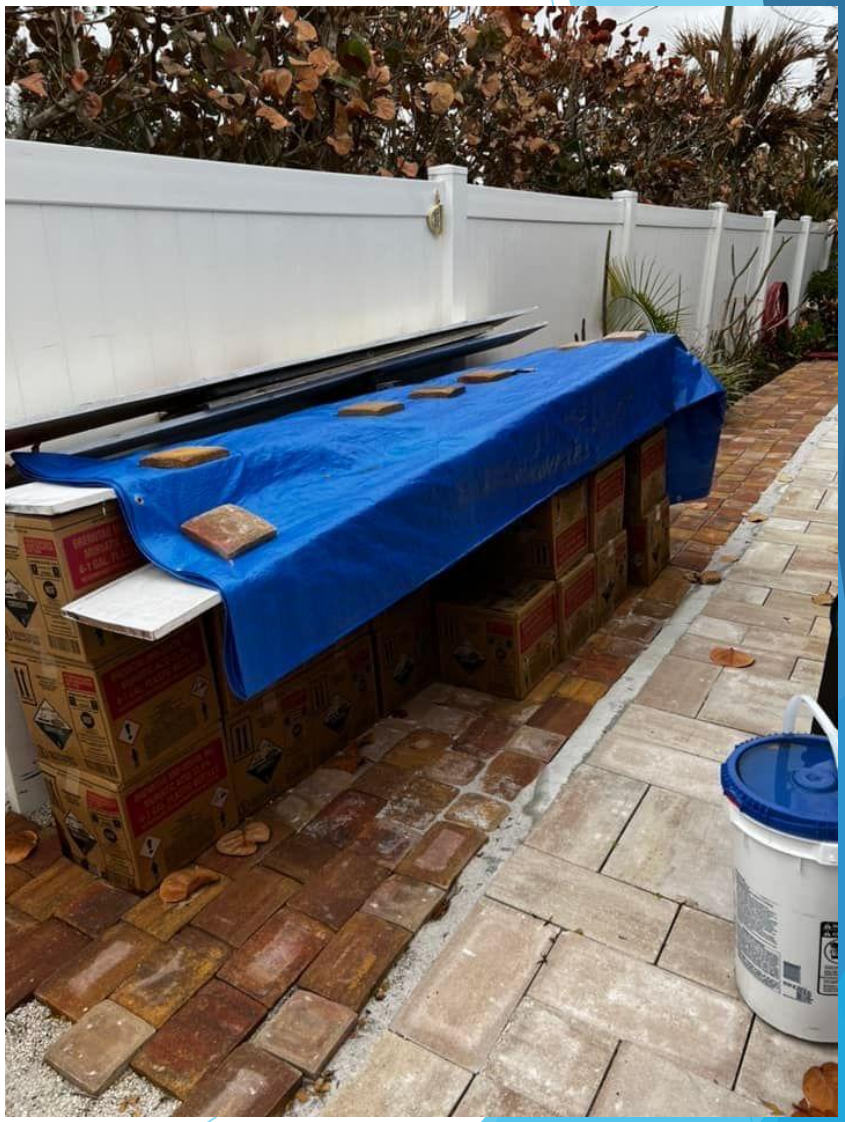
- Do not mix chemicals or chlorine products
- Do not store liquid chemicals above solid chemicals
  - In case they leak
- Do not allow chemicals to come in contact with oil, grease acid, etc.
- Do not smoke in vicinity of pool chemicals
- Do not use other cleaning compounds when cleaning up chemical spills
- Do not allow employees to store or consume food or beverages near chemicals

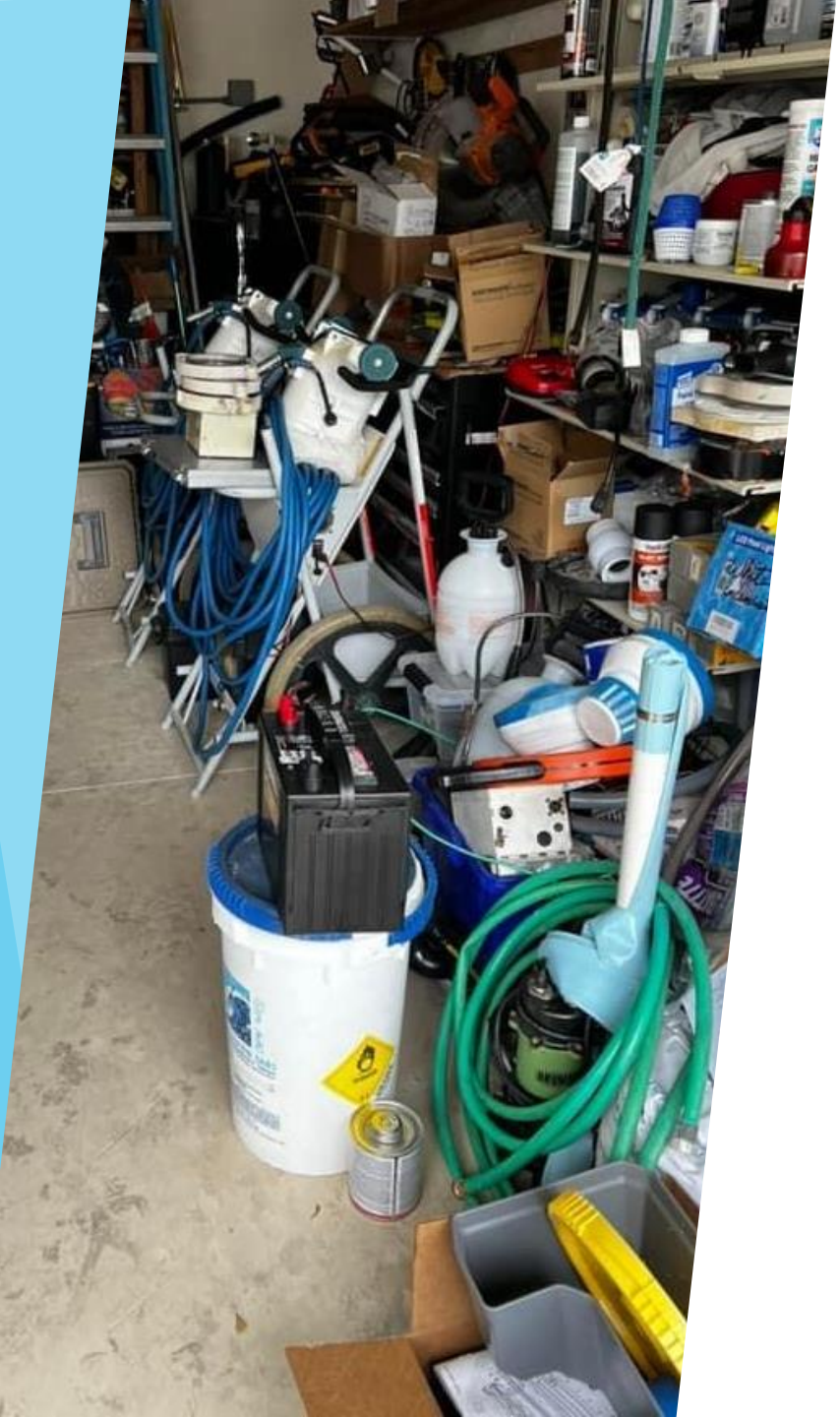
What's wrong??


LESLIE'S
Pool and Spa Water Treatment Tables
Leslie's Pledge to You
ECOLAB

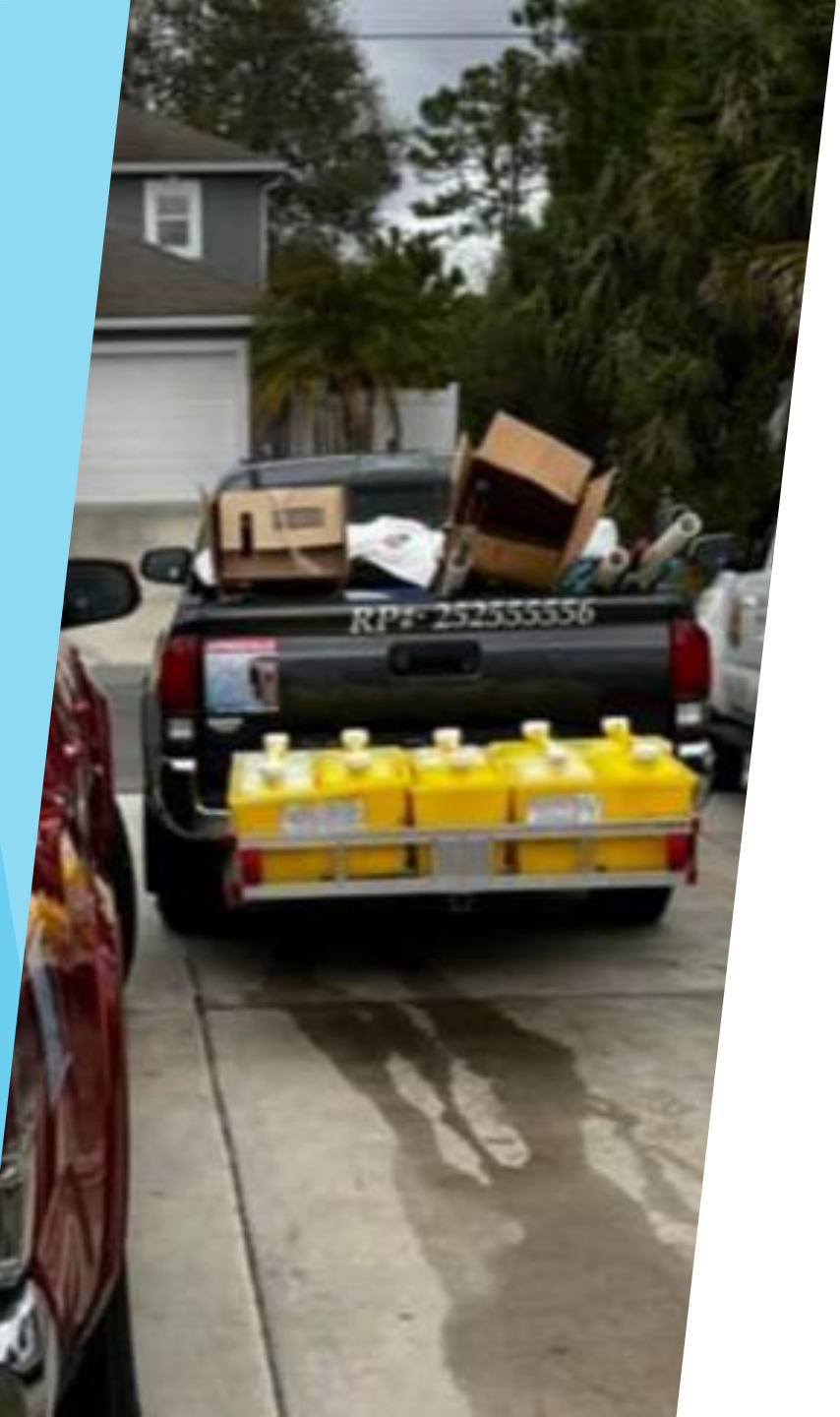

KOLAB
Aqua Balance
Total Alkalinity
Accu-Tab

What's wrong??





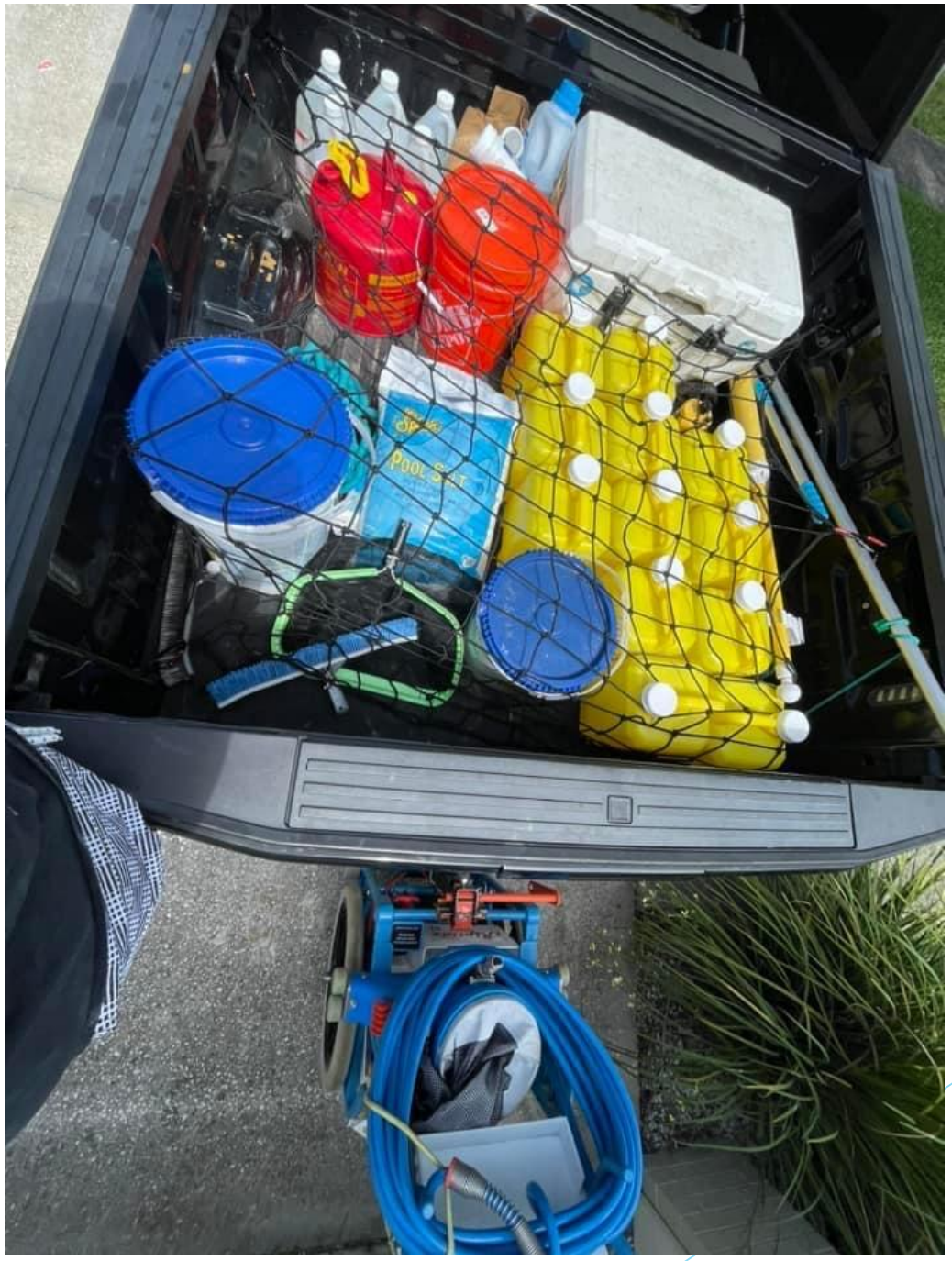
What's wrong here?? Hint: chemical related



What's bad here?

Awesome spill containment


Mikey's Pool Service
863-326-7449




AQUA GUARD

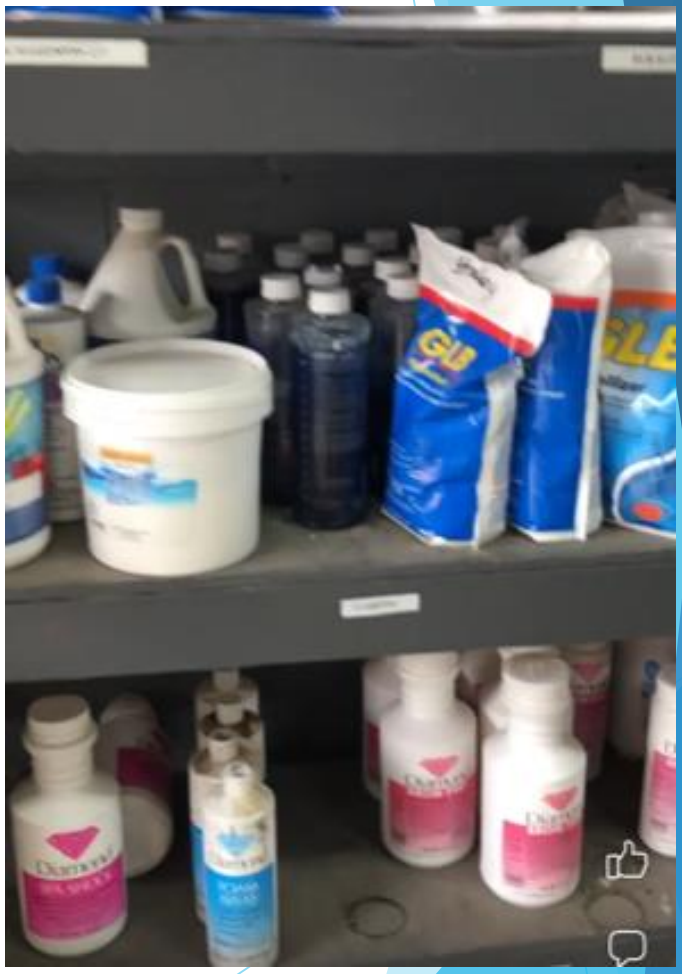

73
TOYOTA
TACOMA


BLUE HAWAIIAN
731-668-9222
www.bhpbackyard.com


Rest Room
8' Sanitizers
4' Liquids
8' Balancers
Warehouse
Lounges
Shock
8' Fountains & Lights
8' Testing Therm Patch Kits
4' Seasonal
16' Maintenance
Office #2
Office #1
Parts Repair
25# Stock-out
Shock
8' Toys & Games
8' Spa Chemicals
4' Seasonal
Floor Cleaners
Register
Office #3
Water Lab
Changing Room #1
Changing Room #2
Spa
Test Soak Room
7' Round Spa
Closet


QUICK DISSOLVE
timehop

Does this Look Safe Moving Chemicals in Warehouse??




#1
#2
EMERGENCY
SHUT OFF INSIDE
CONTAINMENT TANK

Liked by **primatepooltools** and **6 others**

poolenvywi Chemical safety starts with spill control. Having correctly sized containment can help prevent hazardous items such as acid from mixing with other chemicals. It can prevent floor damage and stop chemicals from entering the sanitary sewer.

Equipment areas: Storing Pool Chemicals

Physical Pool Equipment Room- Pool Chemical Storage

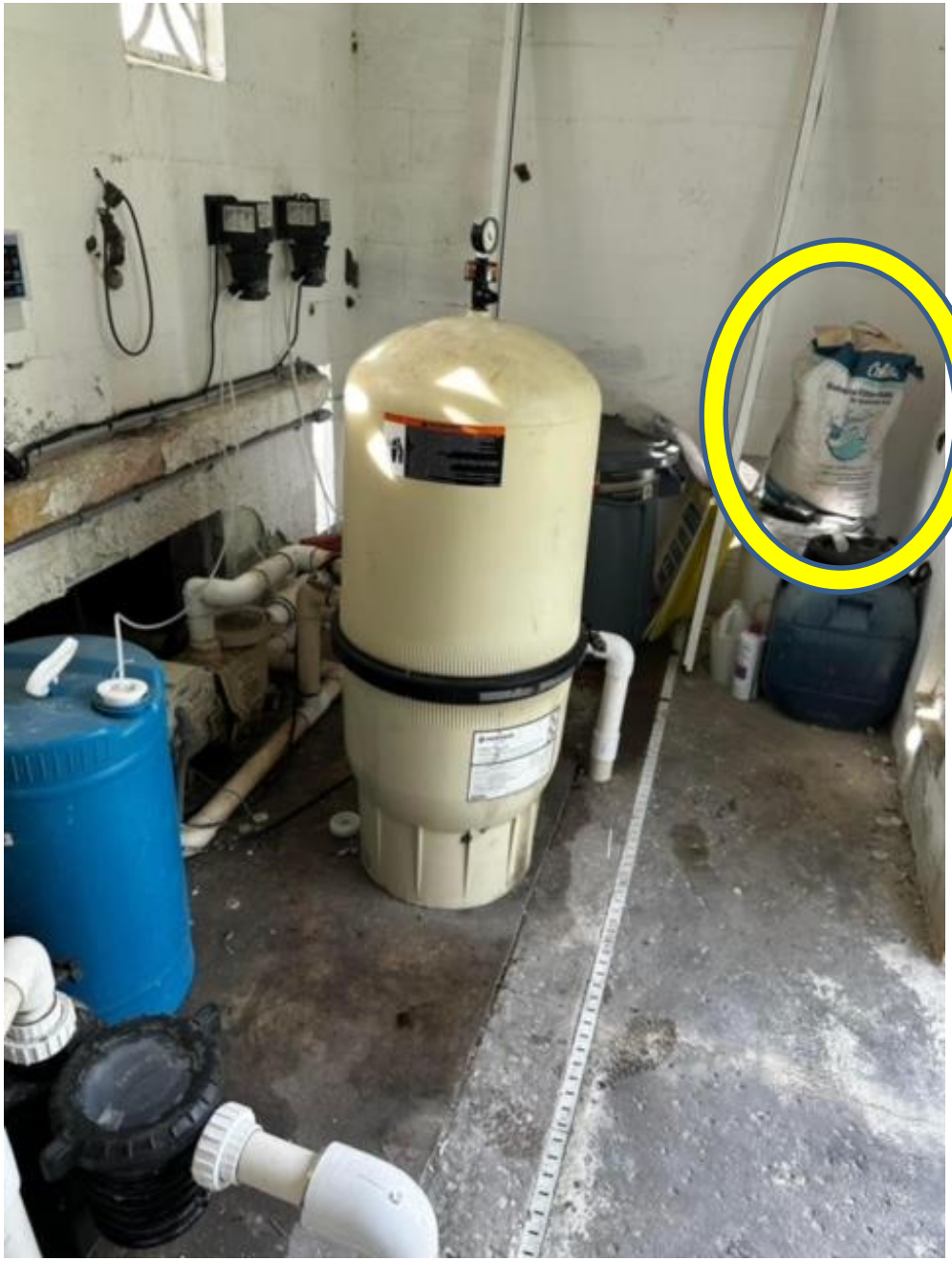
For Storage where There is Lack of Space --Store in Shed

Ventilation for Cal-Hypo Feeder


Muriatic Acid
for Swimming Pools
Acide muriatique pour les piscines
ECOLAB
Muriatic
17413
ECOLAB
17413
OXIDIZER
5.1


ECOLAB
Aqua Balance™
Total Alkalinity
Accu-Tab


ECOLAB
Aqua Balance™
Total Alkalinity



Victor A. Piñeiro and Eric Olsen 3 Comments

Like Comment Send

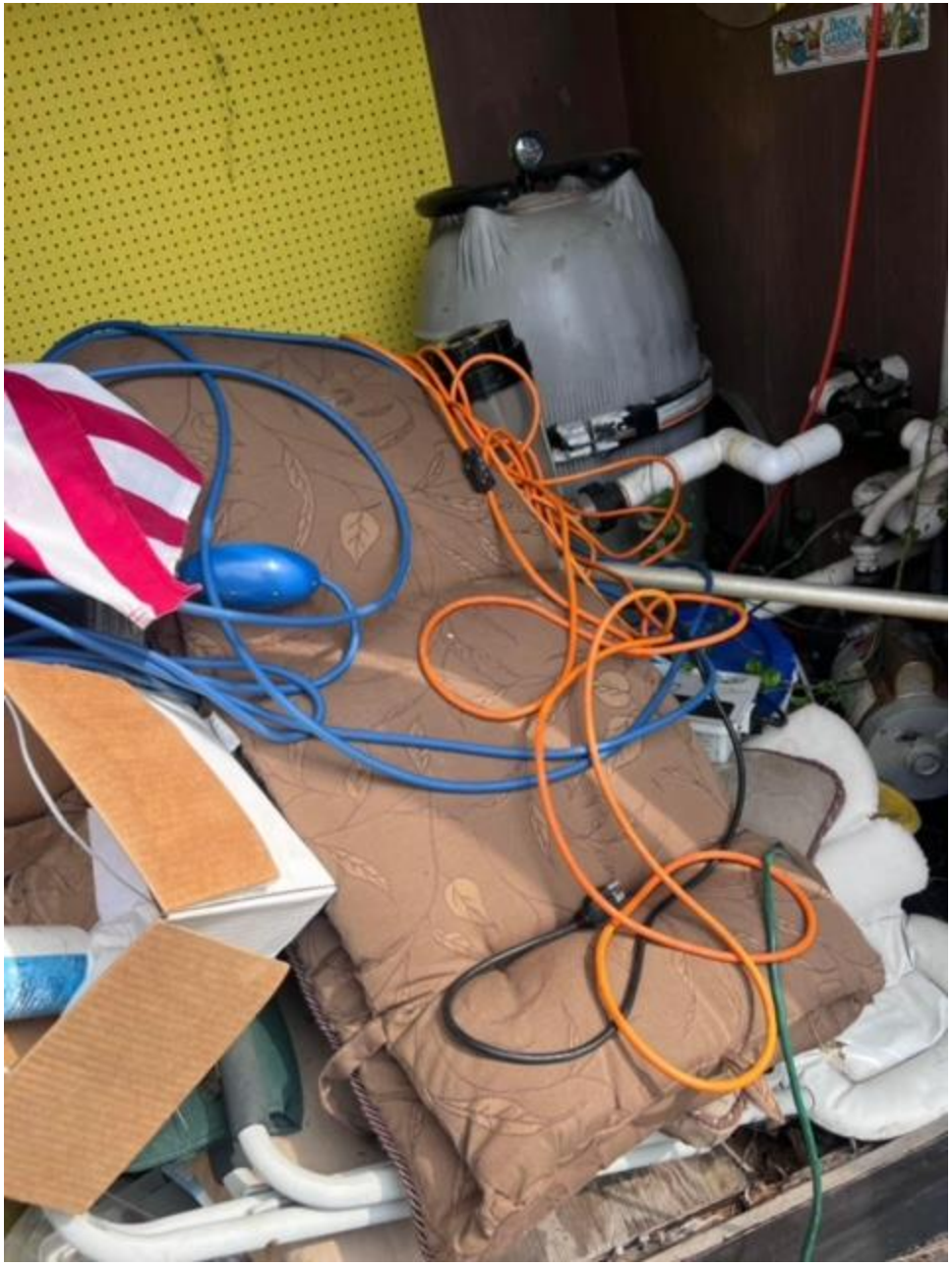
Brian Cadwallader
Acid and Cal-Hypo? Ah..... It's fine..... Nothing to see here!

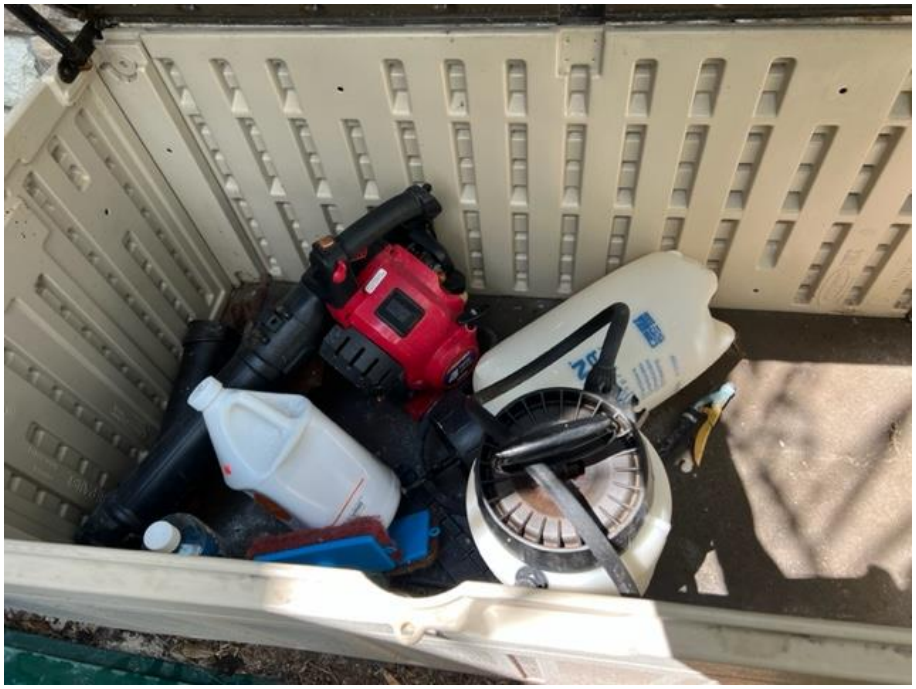

Messenger
Pool business for sale
$13,500 $15,000
Message sent to seller
Send an offer
See conversation


A.O.Smith
ProMax
25284
RE-FRESH


4140
Sodium Bicarbonate
Industrial Grade
net 50 lb (22.7 kg)


OR20N






THIS SIDE UP
NO DEPOSIT, NO RETURN
ATTENTION: RENVOI OU REMBOURSEMENT INTERDIT
F PRODUCT TO ACHIEVE
LABLE CHLORINE LEVEL
ES AVAILABLE CHLORINE LEVEL (ppm)
2.0
3.0
5.0
10.0
jumbo

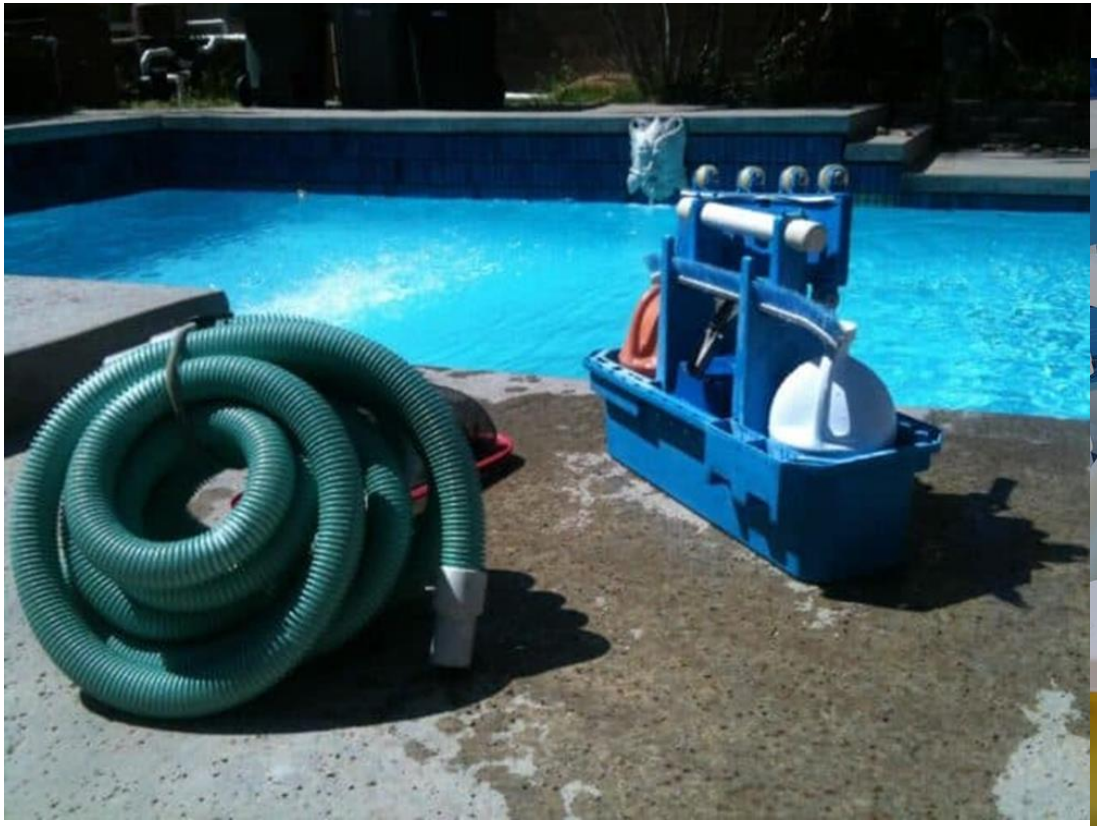

A.O.Smith
ProMax


WE
HE
Sani-Clor


ACID
Ace Roto-Mold
NSF


DANGER
MURIATIC
ACID


RIGHT TO KNOW
COMPLIANCE
BRADY
SAFETY DATA
SHEETS
GHS
EMERGENCY
EYE
WASH




SODIUM HYPOCHLORITE SOLUTION
KEEP OUT OF REACH OF CHILDREN
DANGER
FIRST AID


POOL FILTER CAPABILITIES
DETERMINING POOL VOLUME
COMMON SWIMMING POOL INFECTIOUS AGENTS

What's wrong here ?

What's wrong with this??

BEFORE YOU STORE POOL CHEMICALS

- Get trained in pool chemical safety (for example, during an operator training course).
- Ask for help if you are **not** trained for specific tasks.
- Read entire product label or Safety Data Sheets (SDS) before storing.
- Learn your pool's Emergency Chemical Spill Response Plan and practice steps (for example, evacuation).

STORING POOL CHEMICALS SAFELY

Follow product label directions for chemical storage:

- Wear appropriate safety equipment (for example, safety goggles and gloves).
- Separate incompatible chemicals (for example, acid and chlorine).
- Lock chemicals up to protect people and animals.
- Keep chemicals dry and do not mix different chemicals (for example, different types of chlorine products).
- Keep chemicals cool in a well-ventilated area that is away from direct sunlight.
- Keep chemicals closed in original, labeled container.
- Store liquid chemicals low to prevent accidental contact.

DISPOSAL OF POOL CHEMICAL CONTAINERS

Follow product label directions for safe disposal; never reuse containers.

- Contact your local or state hazardous materials agency for proper disposal procedures for pool chemicals in unlabeled containers.

Always respond to pool chemical spills immediately. Follow your pool's Emergency Chemical Spill Response Plan, and be sure to contact the proper authorities and management.

Pool Address and Phone Number: _____

Emergency Response Phone Number: _____

Local Health Department Phone Number: _____

CDC U.S. Department of Health and Human Services Centers for Disease Control and Prevention

www.cdc.gov/healthywater/swimming/aquatics-professionals

Storage

Pool Chemical Hazard Control—Proper Chemical Handling

- Only allow those who have been trained in safe chemical storage and handling practices to handle pool chemicals
- Post instructions on safe chemical handling practices in chemical storage area, pump room, pool store, pool truck or pool warehouse
- Read product labels and SDS sheets
- Use only pool chemicals in original manufacturer's labeled containers. Never guess identity of unlabeled chemicals. If chemical is unlabeled, do not use it.
- Use appropriate PPE when handling pool chemicals
- For applying chemical to the water directly at poolside, do so in an area where wind or ventilation carry product dust or fumes away from yourself or others.

- If product label directs pre-dissolving, add pool chemical to water, NEVER add water to pool chemical because violent (POTENTIALLY EXPLOSIVE) reaction can occur
- Close containers properly after each use
- Do not mix individual pool chemicals together or with any other substances
  - Like do not mix chlorine products with acid—create toxic gases
- Dedicate equipment—like scoops, buckets, crocks, and their lids—to one chemical. Do not use this equipment for any other chemical.
  - Label the equipment to indicate which chemical to use with it
- Use only dry equipment like scoops when handling chemicals
- Wash hands after working with pool chemicals

Pool Troopers Tampa FL Chem Labels Ready!


Polar Pop

ALWAYS...add chemical to water

NEVER... add Water to Chemical!


USE POOL CHEMICALS SAFELY
Protect yourself and swimmers from the thousands of preventable injuries that occur each year.
BEFORE YOU USE POOL CHEMICALS
Get trained in pool chemical safety (for example, during an operator training course).
Ask for help if you are not trained for specific tasks.
Read entire product label or Safety Data Sheets (SDS) before using.
Learn your pool's Emergency Chemical Spill Response Plan and practice steps (for example, evacuation).
USING POOL CHEMICALS SAFELY
Wear appropriate safety equipment (for example, safety goggles and gloves).
Read product label before each use:
Handle in a well-ventilated area.
Minimize dust, fumes, and splashes.
Measure carefully.
Open one container at a time and close it before opening another.
Never mix:
Chlorine products with acid; this could create toxic gases.
Different pool chemicals (for example, different types of chlorine products) with each other or with any other substance.
Only pre-dissolve pool chemicals when directed by product label
If label directs pre-dissolving, add the pool chemical to water. NEVER add water to the pool chemical because a violent (potentially explosive) reaction can occur.
Always respond to pool chemical spills immediately. Follow your pool's Emergency Chemical Spill Response Plan, and be sure to contact the proper authorities and management.
Pool Address and Phone Number:
Emergency Response Phone Number:
Local Health Department Phone Number:
CDC
U.S. Department of Health and Human Services
Centers for Disease Control and Prevention
www.cdc.gov/healthywater/swimming/aquatics-professionals

Handling

Opened a bucket this morning and this what I saw! WTH the smell was so strong too 🤮! In the ten years of being in the industry I have never seen this!

Joey Babinec
They got wet
10m Like Reply

Joey Babinec
That crap will about knock you out.
10m Like Reply

John Poma
As stated above they got wet.
9m Like Reply

Jason Evans
I can taste this picture
6m Like Reply

Todd Davies
Somebody left the lid off at one point
6m Like Reply

Eric Taylor
Just add water..
1m Like Reply

Tom Fox
Those tabs got wet.


Be careful opening those chlorine buckets...
TikTok
@poolboyinthehouse
Play

Mike Tellegen -

Don't put Cal-Hypo in skimmer if you have TriChlor tabs in feeder! 😲

Whoops. Customer har a bright idea of putting calhypo in chlorinator. Haha. My gosh.

Heather Linton and 53 others 28 Comments

Like Comment

MY CHLORINATOR IS BUILDING UP STRONG CHLORINE GAS

- This can be a very dangerous situation, particularly if you inhale this chlorine gas.
- You should always be careful when opening the chlorinator.
- Turn off pool pump before opening your chlorine feeder.
- When removing the lid, stand aside, hold breath to not inhale chlorine gas. Should be wearing respirator if needed

- Always stand back and hold your breath slightly while opening it, just in case there is a dangerous buildup of fumes inside the unit.
- Probably a bad check valve in the chlorinator. It is not allowing any water to move through the chlorinator, and any water that is there simply sits there and builds up a yellowish chlorine gas.

Look Away When Opening Chlorinators

- Any pool technician who has worked with erosion feeders (puck feeders) knows how incredibly important it is to turn your face away and close your eyes before twisting open a chlorinator. It also is a good idea to hold your breath while doing this as well. Typically I would close my eyes and face away from the chlorinator and as soon as I crack the lid open I get up and vacate the area for a minute or two. 95% of the time it would not be a big deal and minimal, if any, chlorine gas has built up...but the other few times opening the lid is full on chemical warfare!

- Chlorine gas is nothing to be trifled with, and pretty much all of us have been gassed out before, and that is how most of us learned to be wary of chlorinators. Equally as important, or even more so perhaps, is be wary when opening questionable buckets of chlorine.

CAUTION – READ CAREFULLY

This chlorine feeder is designed to use only Trichloro-S-Triazinetrione tablets - slow dissolving type. NEVER MIX with other types of chlorine or chemicals. Explosion or fire may result.

Exercise extreme caution when opening or servicing your feeder. Always shut off pump and available valves before opening. Do not inhale fumes from any chemical feeder or container. Protect your eyes, skin and clothing from chemicals at all times.

NEVER open chlorinator when pump is running.

To prevent build up of gas in chlorinator, be sure pool return line valve(s) is kept open - except when opening/servicing unit.

Always read label and carefully follow chlorine manufacturer's and dealer's recommendations for proper water conditioning and daily chlorine requirements for your particular pool and area.

Chlorine malfunction at Yucaipa Regional Park pool sends swimmers to hospital

By JONAH VALDEZ | jvaldez@scng.com | San Gabriel Valley Tribune

PUBLISHED: August 14, 2021 at 5:08 p.m. | UPDATED: August 14, 2021 at 5:21 p.m.

A lineup of ambulances transported swimmers at Yucaipa Regional Park to the hospital on Friday after they were exposed to high levels of chlorine due to a pump malfunction at the pool, officials said.

Twenty five people had injuries, including 15 who were taken to a local hospital, said Cal Fire San Bernardino. The governor's Office of Emergency Services, however, announced that 27 people were hospitalized. Neither agency could be reached on Saturday.

The malfunctioning pump released five to 10 gallons of chlorine into the regional park's pool, which at the time was occupied by swimmers, the OES Hazardous Materials Spill Report said.

Cal Fire paramedics responded to the regional park at 33900 Oak Glen Road sometime before 2:30 p.m. and began to treat patients at the scene and transported others to Loma Linda University Medical Center, authorities said.

When someone is exposed to high concentrations of chlorine, they may experience symptoms such as blurred vision, burning pain on the skin, difficulty breathing and shortness of breath, and vomiting, according to the Centers for Disease Control and Prevention.

When someone is exposed to high concentrations of chlorine, they may experience symptoms such as blurred vision, burning pain on the skin, difficulty breathing and shortness of breath, and vomiting, according to the Centers for Disease Control and Prevention.

Hazmat teams were able to contain the chlorine, preventing it from going into storm drains, sewage drains or waterways, the state report said.

During the summer months, the Yucaipa pool draws many swimmers looking to find relief from the heat. At the time of the incident, weather service reports clocked temperatures in the area at just under 90 degrees.

The pool remained closed to the public on Saturday, park officials said

Electrical Interlock on Liquid Chemical Feeders Important

- Install a device that automatically deactivates the chlorine and acid feed pumps when there is no flow in the recirculation system ▫
- Install an alarm to alert staff if the recirculation pump shuts down ▫
- Install check valves in chemical feed lines, which will allow chemicals to flow in only one direction and stop suction events from causing overfeeding of chemicals

- To minimize blending of chlorine & acid, install chlorine and & acid injection points minimum of 10 pipe diameters apart.
- Chemical tubing that is subject to wear and deterioration inside liquid chemical pump and connecting tubes should be replaced on regular interval per manufacturer to remove any leaks of these chemicals
- When performing maintenance, service repairs, or work to the chlorination or chemical feeding system, isolation of the chemical feeders from the rest of the water circulation system with closing block valves should be done in conjunction with standard Lockout/Tagout(LOTO) procedures.
  - Locked units prevents accidental startup and unintended chemical feeding from the unit(s).

- Pool operators have been known to fill other containers that are not properly labeled.
  - May only label lid
  - Operator gets confused or distracted and inadvertently put lids on wrong containers.
  - Next operator to fill the chemical adds the wrong ones to the wrong containers and blend 2 chemicals like acid and liquid chlorine
  - Creates life threatening toxic chlorine case
- Solution: Label containers instead of the lids


ZAPPIT
MURIATIC ACID


962 TVG


Spotted in ft Myers Florida

Good


DIFFERENT
CHLORINE TYPES
YOU GOTTA KEEP
'EM SEPARATED
orenda
academy

Bad


AQUA GUARD
2.5 GALLONS

What do you think??


timehop

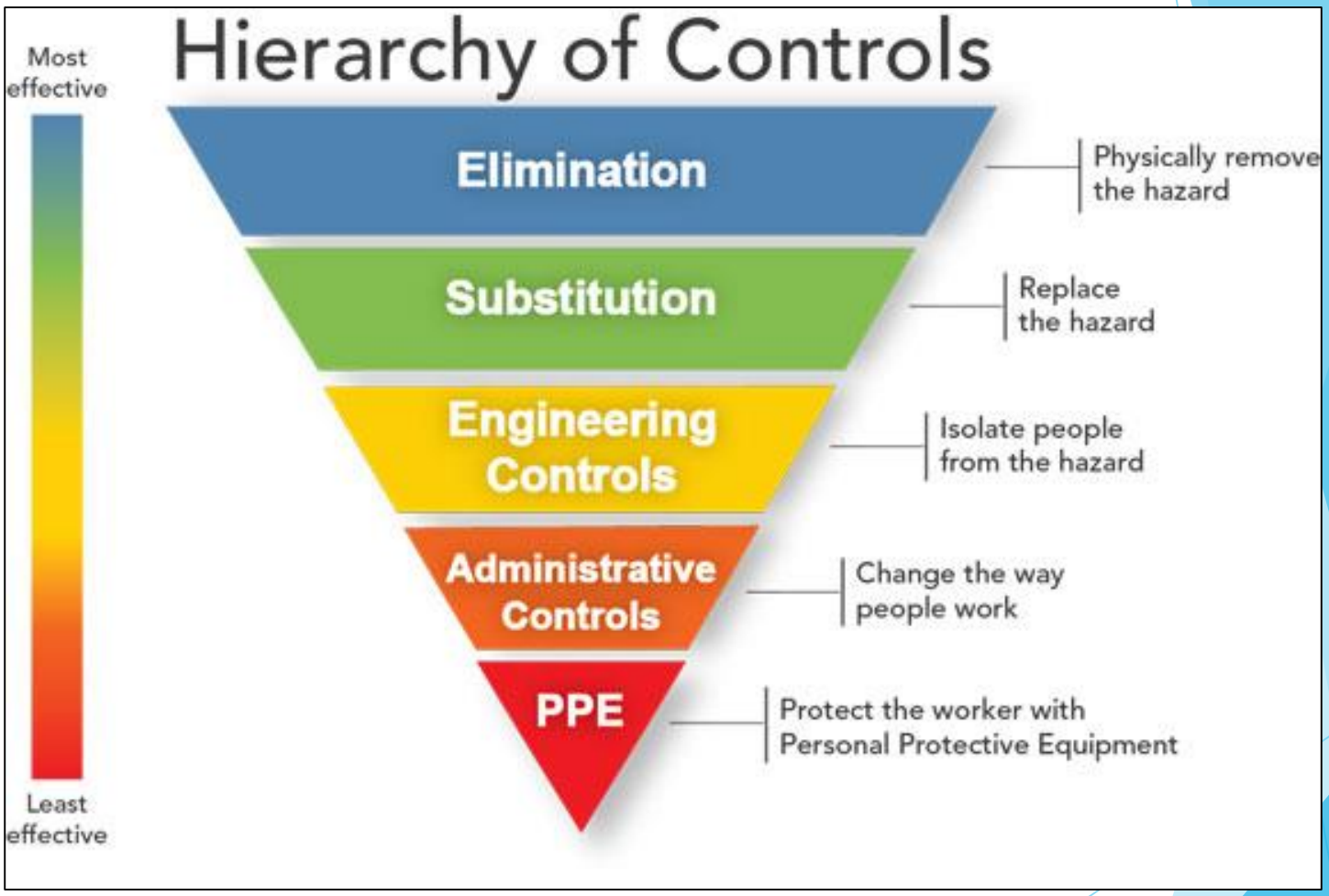
Controlling Physical Hazards

Compressed gases:

- Compressed gas cylinders shall be in a safe condition to the extent that this can be determined by visual inspection.
- Will be more covered in separate presentation on compressed gas safety

Source of graphics: OSHA

Controlling Health Hazards

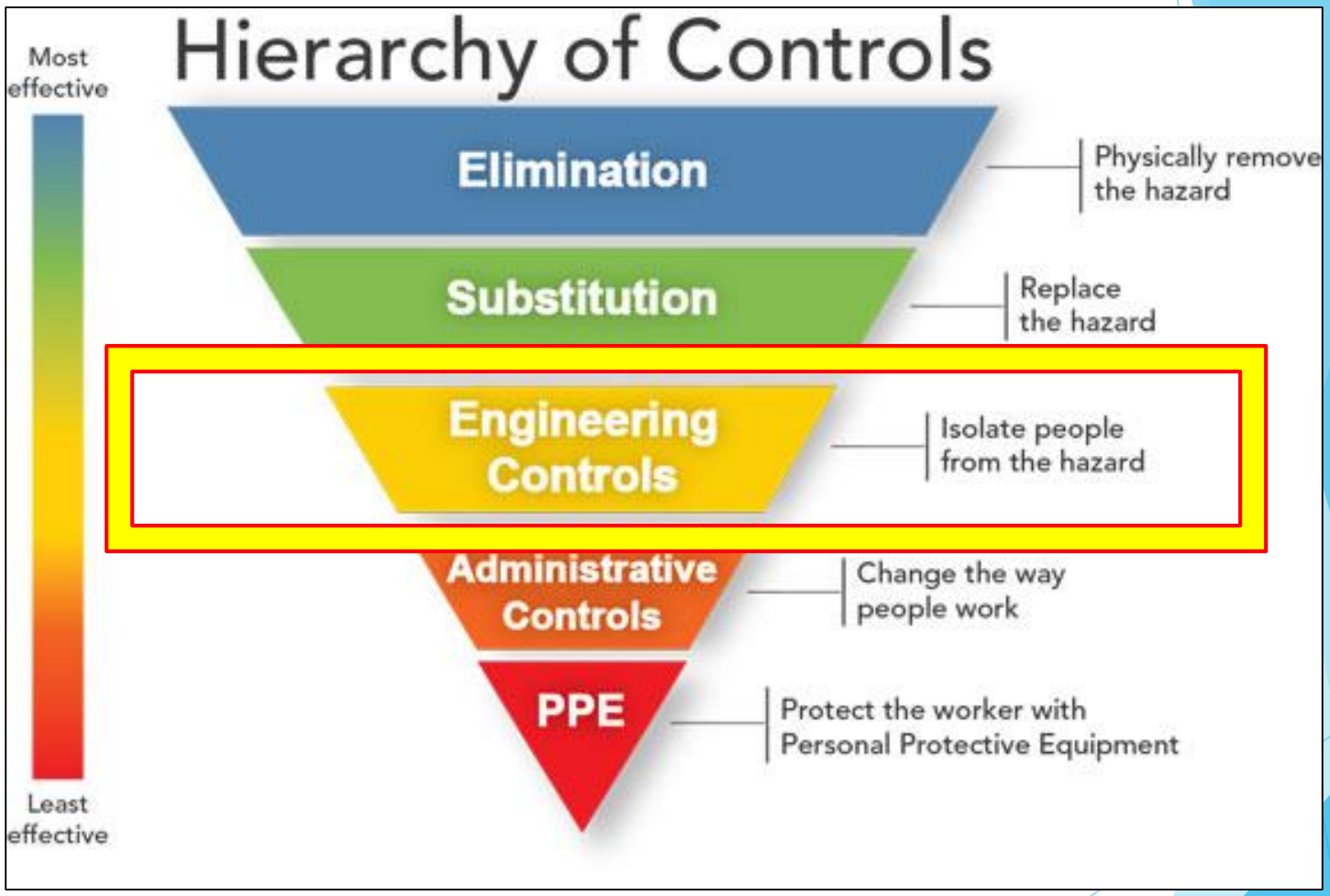


Source: NIOSH

Controlling Health Hazards

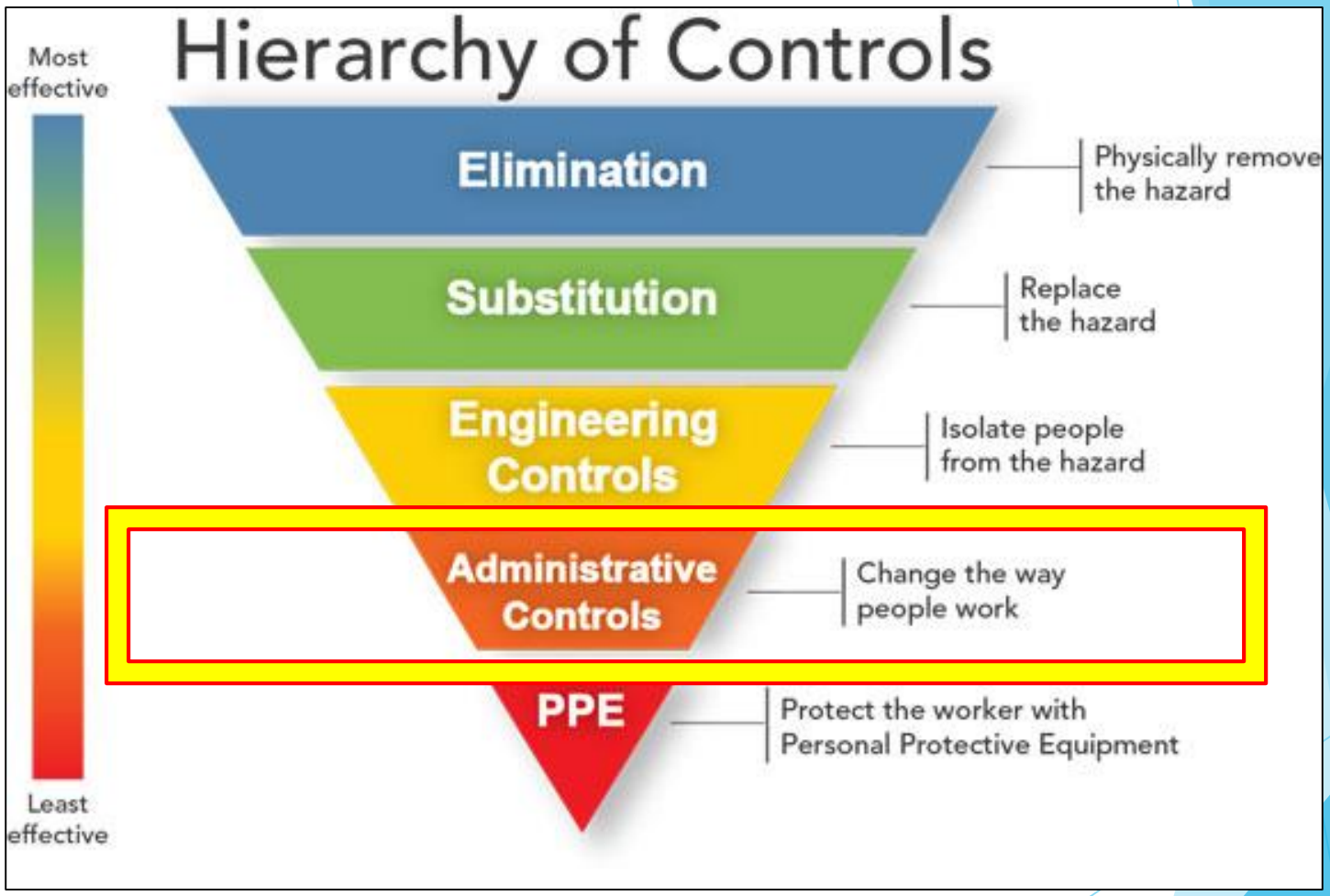
Source: OSHA

Controlling Health Hazards



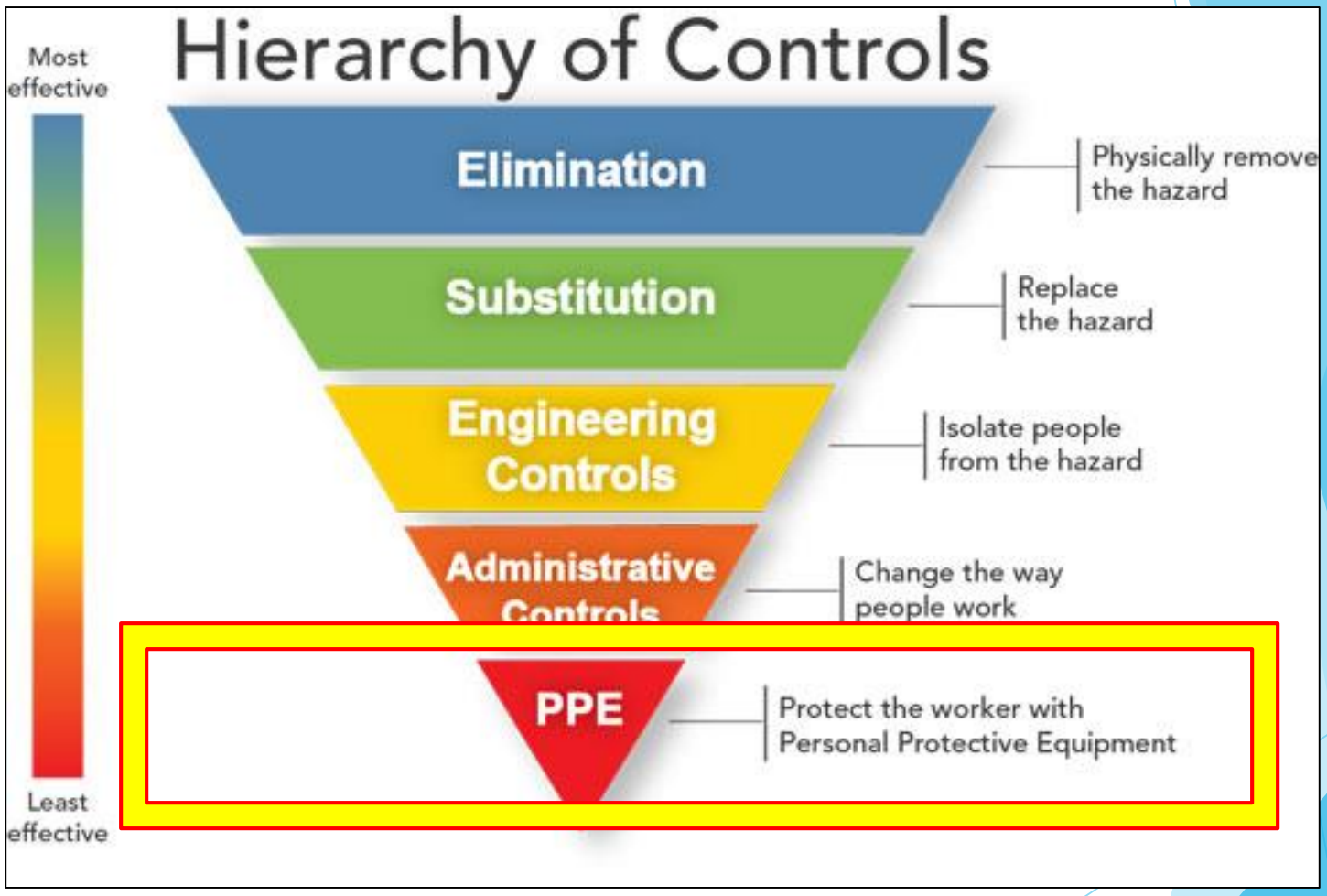
Source: NIOSH

Controlling Health Hazards



Source: NIOSH

Controlling Health Hazards



Source: NIOSH

Hazardous Materials Worksheet

Hazard Anticipation

Anticipated or Potential Hazardous Materials (Check all that Apply):

☐ Gases ☐ Vapors ☐ Fumes ☐ Dusts ☐ Fibers ☐ Mists

Anticipated or Potential Physical Hazards (Check all that Apply):

☐ Fire ☐ Explosion ☐ Oxidizer ☐ Corrosive to Metal ☐ Gas under Pressure ☐ Self-Heating Substance

Anticipated or Potential Health Hazards (Check all that Apply):

☐ Toxic ☐ Skin/Eye Irritant ☐ Respiratory/Aspiration Hazard ☐ Carcinogen ☐ Reproductive Toxicity

- ☐ Confined or enclosed spaces (hazardous atmospheres).
- ☐ Contaminated soil conditions (hazardous atmospheres).
- ☐ Unsanitary conditions (poor housekeeping, poorly kept toilet facilities, etc.).
- ☐ Presence of hazardous materials (dangerous coatings on structures & metal containing alloys).
- ☐ The use of hazardous chemicals (gases, solvents, glues and concrete).
- ☐ The presence of residues left by degreasing agents, usually chlorinated hydrocarbons (chloroform and carbon tetrachloride).
- ☐ Older buildings and structures; unoccupied dwellings (fungi/mold, asbestos & lead).
- ☐ Homes built before 1978 – suspect to contain lead-based paint, according to the EPA.
- ☐ Extreme temperatures (hot & cold environments).
- ☐ Radiological exposures (nuclear power plants, antennas, hospitals, laboratories and the sun).
- ☐ Loud noise (use of tools and equipment).
- ☐ Hot work (welding and cutting).
- ☐ The presence of plant and/or animal wildlife (poisonous venom, feces, rabies…).
- ☐ Other: _____

Source: Construction Safety Council, used with permission.

Hazardous Materials Worksheet

Hazards Identification

Description of Health Hazard: _____

☐ Gas ☐ Vapor ☐ Fume ☐ Dust/Fiber ☐ Mist ☐ Fungi (Mold)

☐ Radiation ☐ Other _____

C.A.S # _____ Flash Point (FP) _____ Vapor/Gas Density _____ Lower Flammable Limit (LFL) ____

PEL: _____ TLV: _____ REL: _____ AL: _____ C: _____ STEL: _____

- Is there a safe alternative? Yes/No (If yes, describe: _____)
- Is the work being performed by qualified people? Yes/No (List special training, certification and/or licensing required): _____
- Does the work involve entry into confined or enclosed spaces? Yes/No (if yes, follow confined space entry procedures).
- Is there a Safety Data Sheet (SDS) available on the job-site for all hazardous chemicals? Yes/No
- Are hazard controls being implemented in order of preference? Yes/No

  1. Engineering; ventilation & wet methods.
  2. Administrative; work practices, scheduling workers to minimize exposure, extended breaks, etc.
  3. Personal Protective Equipment (PPE); respiratory and hearing protection, protection of face, hand, feet, eyes & whole body.

Source: Construction Safety Council, used with permission.

Hazardous Materials Worksheet

Hazards Evaluation

Health Hazard Route of Entry(s)

☐ Inhalation ☐ Ingestion ☐ Absorption ☐ Injection ☐ Other _____

Environmental & Personal Air Monitoring:

- Air monitoring does not measure you or what you are doing, but rather what you are exposed to on the job.
- Air monitoring must be done by a trained health professional (industrial hygienist or technician).
- Monitoring can be done by measuring the air in a fixed location in the work area *(area monitoring)* or by placing the monitoring equipment on individual workers and measuring the amount they are exposed to *(personal monitoring)*.

Hazard Evaluation (Employee Exposure Monitoring and/or Medical Surveillance)

☐ Exposure Records: TWA: _____ C: _____ STEL: _____
(This information must be maintained by employer for 30 years.)

☐ Medical Records (List):

(This information must be maintained by employer for duration of employment, plus 30 years.)

Source: Construction Safety Council, used with permission.

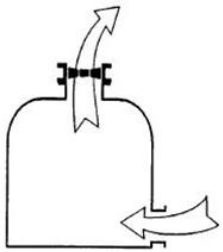
Hazardous Materials Worksheet

Hazards Controls - Engineering

Engineering Controls (Select engineering controls to be implemented):

- ☐ Dust suppression (*wet methods*): _____
- ☐ Dust collection systems *(vacuum)*: _____
- ☐ General (dilution) ventilation; works best when air contaminants are widely disbursed through the area.
- ☐ Local (exhaust) ventilation system; works well when air contaminants are generated at a single source.

Describe mechanical ventilation system used:



General (Dilution) Ventilation…

Forces fresh air into an area and dilutes contaminants; this allows air to move through a space which ensures a fresh continual supply.

Local (Exhaust) Ventilation…

Removes contaminated air at its source; this prevents harmful dust, fumes & mists from contaminating the breathing air of the worker.

If no engineering controls are being implemented, person authorizing the non-use of engineering controls:

Name: _____ Date: _____ Reason (explain):

Source: Construction Safety Council, used with permission.

Hazardous Materials Worksheet

Hazards Controls - Administrative

Administrative Controls (used with personal protective equipment):

- ☐ Gather all specialty equipment, including, ventilators, warning signs, personal protective equipment, etc. (list all specialty equipment needed for job): _____
- ☐ Operations that involve toxic substances are scheduled at times when other workers are not present? Yes/No (describe): _____
- ☐ Work is isolated to just a few protected employees; signs posted and controlled access zones established? Yes/No (describe): _____
- ☐ Employees are rotated in and out of jobs to minimize exposure? Yes/No (describe):

  _____
- ☐ Employees removed from working around hazardous substances once they have reached a predetermined level of exposure? Yes/No (describe): _____
- ☐ Are hot and cold work environments considered? Yes/No (describe): _____
- ☐ Employees trained on proper housekeeping & good personal hygiene? Yes/No
- ☐ Employees trained on the proper procedures that minimize exposures? Yes/No
- ☐ Employees trained on how to inspect and maintain process and equipment on a regular basis? Yes/No
- ☐ No eating, drinking, smoking, chewing tobacco or gum, and applying cosmetics in hazardous areas? Yes/No

Source: Construction Safety Council, used with permission.

Hazardous Materials Worksheet

Hazards Controls - PPE

Controlling a hazard at its source is the best way to protect workers. However, when engineering, work practices and administrative controls are not feasible* or do not provide sufficient protection, employers must provide ***personal protective equipment (PPE)*** to the employee and ensure its proper use.

Description of personal protective equipment being used: ☐ Eye/Face Protection ☐ Foot Protection

☐ Body Protection ☐ Gloves ☐ Respirator ☐ Other _____ ☐ Other _____

- ☐ Is the device approved? Yes/No (describe): _____
- ☐ Is the device appropriate for the type of hazard? Yes/No (explain): _____
- ☐ Is the worker wearing the device properly trained to understand the use, limitations and care instructions of the device? Yes/No (explain): _____
- ☐ Does the material have sufficient strength to withstand the environment? Yes/No (explain): _____
- ☐ Will the material withstand repeated use after contamination and decontamination? Yes/No (explain): _____
- ☐ Is the material flexible or pliable enough to allow end users to perform needed tasks? Yes/No (describe): _____
- ☐ Will the material maintain its protective integrity and flexibility under hot and cold extremes? Yes/No (explain):

Source: Construction Safety Council, used with permission.

Summary

Stop health hazards before they stop you!

Source: Construction Safety Council, used with permission.

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Thank You!

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