

Chemical Safety

1. Chemical Safety

1.1 Chemical Safety

Chemical Safety



When completed in conjunction with on-site departmental and job-specific orientation to the hazardous materials in use in the work area.

This training meets the requirements of the Hazard Communication Federal Standard 29 CFR 1910.1200 and California Standard 8 CCR 5194.

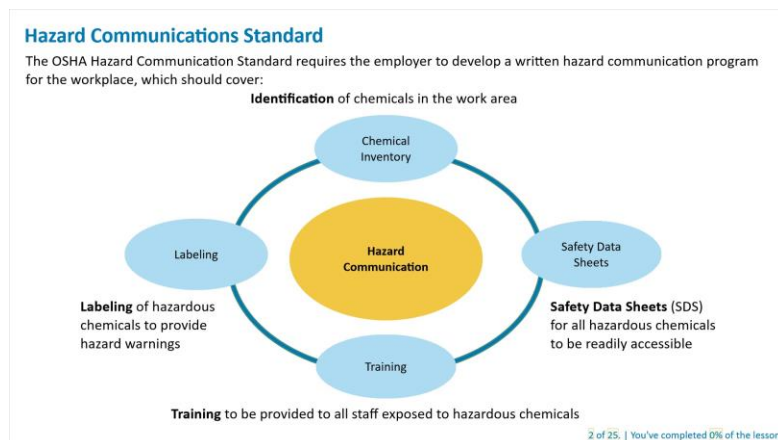
This section of the training contains information on the following programs:

- Hazard Communication
- Managing Hazardous Materials

1 of 25 | You've completed 0% of the lesson.

2. Hazard Communication

2.1 Hazard Communications Standard



2.2 Right to Know

Right to Know

Under the Hazard Communication Standard, you have the “Right To Know”

- All of the operations in your work area where hazardous chemicals are present, and the proper protective measure to safely work with these chemicals including:
 - Appropriate personal protective equipment (PPE) needed when using each chemical
 - Where emergency equipment is located (safety showers, eyewash stations, alarm pulls, fire extinguishers, spill kits)
- How to access chemical inventories for your work location
- How to access the Safety Data Sheets (SDS) for these chemicals
- How to access a copy of your facility’s written Hazard Communication Program



3 of 25. | You've completed 0% of the lesson.

2.3 CALIFORNIA ONLY: Employee Rights in California, Proposition 65

CALIFORNIA ONLY: Employee Rights in California, Proposition 65

California requires that employees are informed of their right:

- To receive information about hazardous substances in their work environment.
- For their physician or collective bargaining agent to receive that information.
- Against discharge or other discrimination due to the employee's exercise of these rights.
- To receive updated information on a timely basis when a new or revised safety data sheet is received. This must be within 30 days if the new information indicates significantly increased risks.

California voters approved proposition 65 which requires the state to publish a list of chemicals that are known to cause cancer, birth defects or other reproductive harm. That list is available on the California EPA web site.

Examples of listed chemicals in health care include cadmium, bis-phenol A (BPA) and some chemotherapy agents. Prop. 65 also requires that warnings appear on the label of listed products and that warning signs in the workplace be posted in conspicuous places where they're likely to be read and understood.

For questions regarding Prop. 65, contact your facility's EH&S department.

4 of 25. | You've completed 0% of the lesson.

2.4 Labeling System

Labeling System

One of the ways to find out about the hazards of the chemicals that you work with is by reviewing the container labels.



There are two types of container labels:

- **Primary Labels** are those which are attached to the product's original container and provided by the manufacturer/distributors.
- **Secondary Labels** are those that you or your department attaches to the smaller container after a hazardous chemicals is transferred from the original container.

It's important that all chemical containers are labeled.

5 of 25. | You've completed 0% of the lesson.

2.5 Labeling Systems: Primary and Secondary Labels

Labeling Systems: Primary and Secondary Labels

Click on each

Primary Label

Secondary Label

6 of 25. | You've completed 0% of the lesson.

Primary Label (Slide Layer)

Labeling Systems: Primary and Secondary Labels

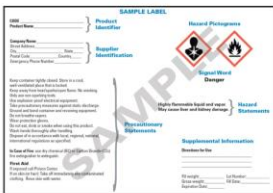
Click on each

Primary Label

Secondary Label

Primary Labels include:

- Product identifier (name of chemical);
- Signal word, either "danger" or "warning"
- Hazard statement(s) - Standardized and assigned phrases that describe the hazard(s) as determined by hazard classification
- Pictogram(s)
- Precautionary statement(s) – for Prevention, Response, Storage and Disposal
- Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party.



Click image to enlarge

6 of 25. | You've completed 0% of the lesson.

Secondary Label (Slide Layer)

Labeling Systems: Primary and Secondary Labels

Click on each


Primary Label

Secondary Label

The **secondary container labels** must include the following:

- Product identifier and
- Words, pictures, symbols, or a combination providing "general" information regarding the hazards of the chemicals

Note: The original manufacturer's label and SDS are used as sources of information.



6 of 25. | You've completed 0% of the lesson.

2.6 Globally Harmonized System (GHS)


Globally Harmonized System (GHS)

Standard pictograms are used as part of the international Globally Harmonized System (GHS) of classification and labeling of hazards.

Hazardous chemicals in the manufacturer's original container will have these symbols on them to quickly show hazard information without words.

Chemicals may have physical or health hazards. Some chemicals may have more than one type of hazard.

Next we will show the pictograms



7 of 25. | You've completed 0% of the lesson.

2.7 Pictograms and Hazards

Pictograms and Hazards

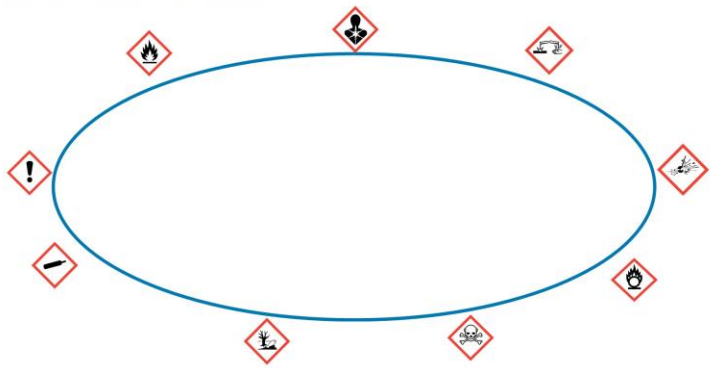
The types of hazardous chemicals you may work with depends on the operations in your work area. Hazards can be physical or health hazards, and some chemicals may have more than one hazard.

Health Hazard		Flame		Exclamation Mark	
Gases under pressure		Corrosion		Exploding Bomb	
Flame over Circle		Environment non-mandatory		Skull and Crossbones	

8 of 25. | You've completed 0% of the lesson.

2.8 Chemical Hazards Descriptions

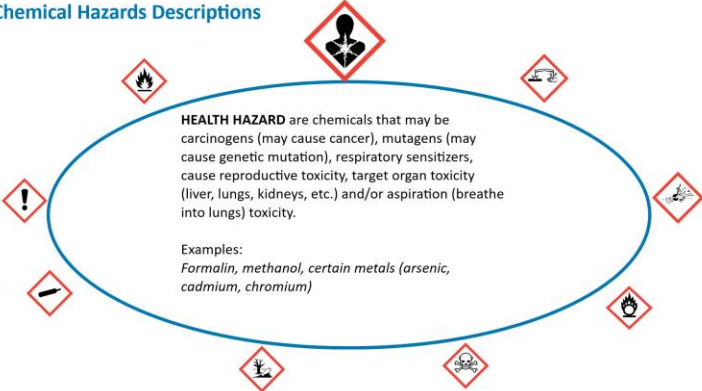
Chemical Hazards Descriptions



9 of 25. | You've completed 0% of the lesson.

Health Hazard (Slide Layer)

Chemical Hazards Descriptions



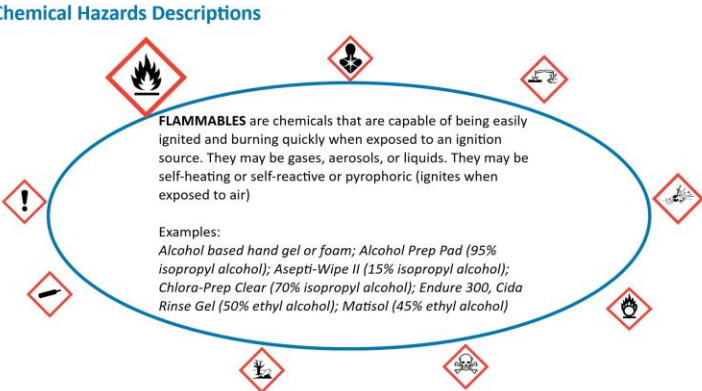
HEALTH HAZARD are chemicals that may be carcinogens (may cause cancer), mutagens (may cause genetic mutation), respiratory sensitizers, cause reproductive toxicity, target organ toxicity (liver, lungs, kidneys, etc.) and/or aspiration (breathe into lungs) toxicity.

Examples:
Formalin, methanol, certain metals (arsenic, cadmium, chromium)

9 of 25. | You've completed 0% of the lesson.

Flame - Flammables (Slide Layer)

Chemical Hazards Descriptions



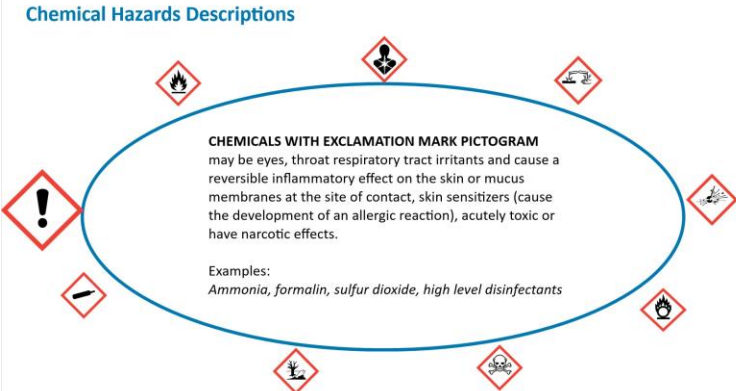
FLAMMABLES are chemicals that are capable of being easily ignited and burning quickly when exposed to an ignition source. They may be gases, aerosols, or liquids. They may be self-heating or self-reactive or pyrophoric (ignites when exposed to air)

Examples:
Alcohol based hand gel or foam; Alcohol Prep Pad (95% isopropyl alcohol); Asepti-Wipe II (15% isopropyl alcohol); Chloro-Prep Clear (70% isopropyl alcohol); Endure 300, Cida Rinse Gel (50% ethyl alcohol); Matisol (45% ethyl alcohol)

9 of 25. | You've completed 0% of the lesson.

Exclamation Mark (Slide Layer)

Chemical Hazards Descriptions



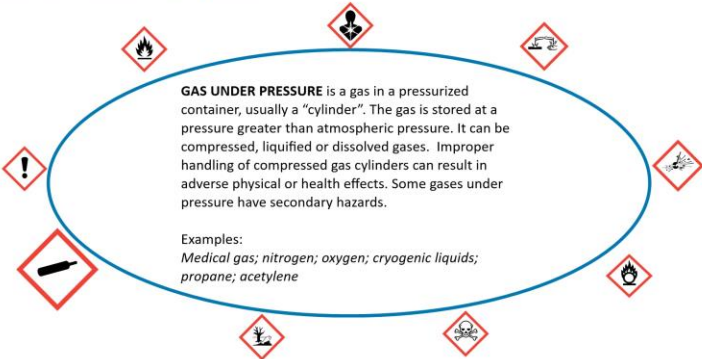
CHEMICALS WITH EXCLAMATION MARK PICTOGRAM may be eyes, throat respiratory tract irritants and cause a reversible inflammatory effect on the skin or mucus membranes at the site of contact, skin sensitizers (cause the development of an allergic reaction), acutely toxic or have narcotic effects.

Examples:
Ammonia, formalin, sulfur dioxide, high level disinfectants

9 of 25. | You've completed 0% of the lesson.

Gas Cylinder - Gas under pressure (Slide Layer)

Chemical Hazards Descriptions



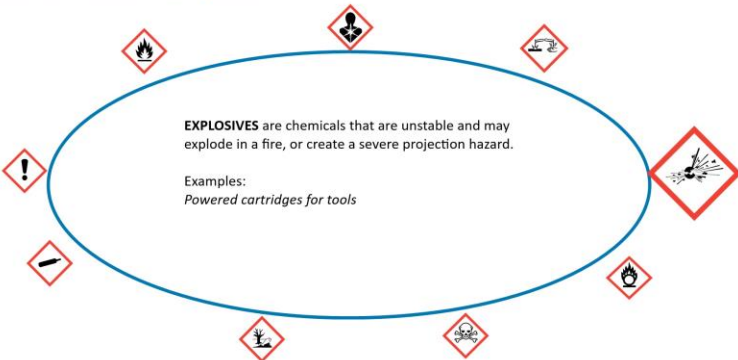
GAS UNDER PRESSURE is a gas in a pressurized container, usually a "cylinder". The gas is stored at a pressure greater than atmospheric pressure. It can be compressed, liquified or dissolved gases. Improper handling of compressed gas cylinders can result in adverse physical or health effects. Some gases under pressure have secondary hazards.

Examples:
Medical gas; nitrogen; oxygen; cryogenic liquids; propane; acetylene

9 of 25. | You've completed 0% of the lesson.

Exploding Bomb - Explosives (Slide Layer)

Chemical Hazards Descriptions



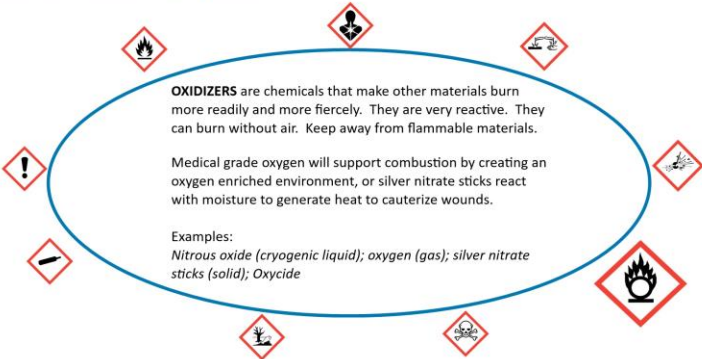
EXPLOSIVES are chemicals that are unstable and may explode in a fire, or create a severe projection hazard.

Examples:
Powered cartridges for tools

9 of 25. | You've completed 0% of the lesson.

Flame over Circle - Oxidizers (Slide Layer)

Chemical Hazards Descriptions



OXIDIZERS are chemicals that make other materials burn more readily and more fiercely. They are very reactive. They can burn without air. Keep away from flammable materials.

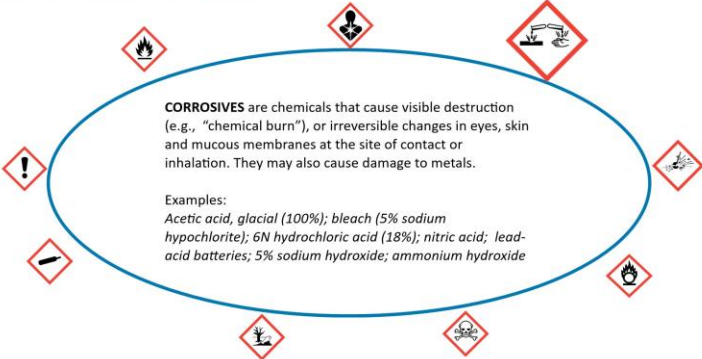
Medical grade oxygen will support combustion by creating an oxygen enriched environment, or silver nitrate sticks react with moisture to generate heat to cauterize wounds.

Examples:
Nitrous oxide (cryogenic liquid); oxygen (gas); silver nitrate sticks (solid); Oxycide

9 of 25. | You've completed 0% of the lesson.

Corrosion - Corrosives (Slide Layer)

Chemical Hazards Descriptions



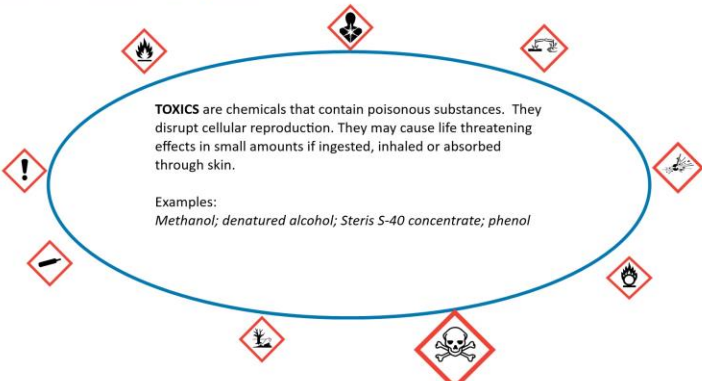
CORROSIVES are chemicals that cause visible destruction (e.g., "chemical burn"), or irreversible changes in eyes, skin and mucous membranes at the site of contact or inhalation. They may also cause damage to metals.

Examples:
Acetic acid, glacial (100%); bleach (5% sodium hypochlorite); 6N hydrochloric acid (18%); nitric acid; lead-acid batteries; 5% sodium hydroxide; ammonium hydroxide

9 of 25. | You've completed 0% of the lesson.

Skull Crossbones - Toxics (Slide Layer)

Chemical Hazards Descriptions



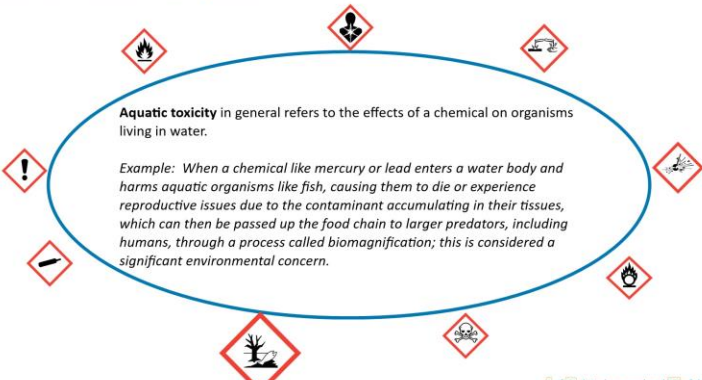
TOXICS are chemicals that contain poisonous substances. They disrupt cellular reproduction. They may cause life threatening effects in small amounts if ingested, inhaled or absorbed through skin.

Examples:
Methanol; denatured alcohol; Steris S-40 concentrate; phenol

9 of 25. | You've completed 0% of the lesson.

Environment (Slide Layer)

Chemical Hazards Descriptions



Aquatic toxicity in general refers to the effects of a chemical on organisms living in water.

Example: *When a chemical like mercury or lead enters a water body and harms aquatic organisms like fish, causing them to die or experience reproductive issues due to the contaminant accumulating in their tissues, which can then be passed up the food chain to larger predators, including humans, through a process called biomagnification; this is considered a significant environmental concern.*

9 of 25. | You've completed 0% of the lesson.

2.9 Safety Data Sheets (SDS) and Chemical Inventories

Safety Data Sheets (SDS) and Chemical Inventories

Safety Data Sheets, or **SDSs**, are important components of a hazard communication program. Standardized SDS include the sections below.

Section 1: Identification
Section 2: Hazard(s) identification
Section 3: Composition/information on ingredients
Section 4: First-aid measures
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Section 6: Accidental release measures
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Section 8: Exposure controls/personal protection
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

Use mouse to hover over the different sections of the SDS to see an example of the information provided in that section.

10 of 25. | You've completed 0% of the lesson.

Section 1, Identification (Slide Layer)

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Section 16: Other information

Section 1: Identification - identifies the chemical on the SDS as well as its intended use. It also provides the essential contact information of the supplier.

1. Identification	
Product Name	Formalin, Buffered, 10%
Cat No. :	SF99-4; SF99-20
Synonyms	Formaldehyde solution, buffered (Acetate Buffer/Certified)
Recommended Use	Laboratory chemicals.
Uses advised against	Food, drug, pesticide or biocidal product use.
Details of the supplier of the safety data sheet.	
Company:	
Fisher Scientific Company	
One Reagent Lane	
Fair Lawn, NJ 07410	
Tel: (201) 796-7100	
Emergency Telephone Number	CHEMTREC: Inside the USA: 800-424-9300 CHEMTREC: Outside the USA: 001-703-527-3887

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Section 2, Hazards identification (Slide Layer)

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Section 16: Other information

Section 2: Hazard(s) Identification - outlines the hazards of the chemical and appropriate warning information.

2. Hazard(s) identification	
Classification. This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)	
Flammable liquids	Category 4
Skin Corrosion/Irritation	Category 2
Serious Eye Damage/Eye Irritation	Category 2
Skin Sensitization	Category 1
Germ Cell Mutagenicity	Category 2
Carcinogenicity	Category 1A
Specific target organ toxicity (single exposure)	Category 1
Target Organs - Respiratory system, Central nervous system (CNS), Optic nerve.	
Specific target organ toxicity - (repeated exposure)	Category 2
Target Organs - Kidney, Liver, Blood.	

10 of 25. | You've completed 0% of the lesson.

Section 3, Composition/information on ingredients (Slide Layer)

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Section 16: Other information

Section 3: Composition/Information on ingredients - identifies the ingredient(s) of the chemical product identified on the SDS, including impurities and stabilizing additives.

3. Composition/Information on Ingredients		
Component	CAS No	Weight %
Water	7732-18-5	82 - 82.9
Formaldehyde	50-00-0	3.9 - 4.0
Sulfuric acid	177-86-3	1.8 - 2.0
Methyl alcohol	67-56-1	2

10 of 25. | You've completed 0% of the lesson.

Section 4, First-aid measures (Slide Layer)

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Section 15: Regulatory information
Section 16: Other information

Section 4: First-aid Measures - describes the initial treatment protocol for untrained responders to incidents of chemical exposure.

4. First-aid measures	
General Advice	Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.
Eye Contact	Rinse immediately with plenty of water; also under the eyelids, for at least 15 minutes. If eye irritation persists: Get medical advice/attention.
Skin Contact	Wash off immediately with plenty of water for at least 15 minutes. If skin irritation persists, call a physician.
Inhalation	Remove to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.
Ingestion	Do NOT induce vomiting. Call a physician or poison control center immediately.
Most important symptoms and effects	Difficulty in breathing. May cause allergic skin reaction. Irritating to eyes. Irritating to skin. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing.
Notes to Physician	Treat symptomatically.

10 of 25. | You've completed 0% of the lesson.

Section 5, Fire-fighting measures (Slide Layer)

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Section 16: Other information

Section 5: Fire-fighting measures - provides recommendations for fighting a fire caused by the chemical.

5. Fire-fighting measures	
Suitable Extinguishing Media	Water spray, carbon dioxide (CO ₂), dry chemical, alcohol-resistant foam. Water mist may be used to cool closed containers.
Unsuitable Extinguishing Media	No information available
Flash Point	90 °C / 194 °F
Method -	No information available
Autoignition Temperature	No information available
Explosion Limits	No data available
Upper	No data available
Lower	No data available
Sensibility to Mechanical Impact	No information available
Sensibility to Static Discharge	No information available
Specific Hazards Arising from the Chemical Combustible material. Risk of ignition. Containers may explode when heated. Keep product and empty container away from heat and sources of ignition.	
Hazardous Combustion Products Carbon monoxide (CO), Carbon dioxide (CO ₂).	
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. Thermal decomposition can lead to release of irritating gases and vapors.	

Section 6, Accidental release measures (Slide Layer)

Safety Data Sheets (SDS) and Chemical Inventories

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Section 16: Other information

Section 6: Accidental release measures - details the appropriate response to chemical spills, leaks, or releases, including containment, and cleanup to prevent or minimize exposure to people, property, or the environment.

6. Accidental release measures	
Personal Precautions	Use personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Ensure adequate ventilation. Remove all sources of ignition. Take precautionary measures against static discharges. Should not be released into the environment. Do not flush into surface water or sanitary sewer system. See Section 12 for additional Ecological Information.
Environmental Precautions	
Methods for Containment and Clean Up	Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Remove all sources of ignition.

10 of 25. | You've completed 0% of the lesson.

Section 7, Handling and storage (Slide Layer)

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Section 7: Handling and storage - provides guidance on the safe handling practices and conditions for safe storage of chemicals.

7. Handling and storage	
Handling	Use only under a chemical fume hood. Do not get in eyes, on skin, or on clothing. Do not breathe mist/vapors/spray. Wear personal protective equipment/face protection. Do not ingest. If swallowed then seek immediate medical assistance. Keep away from open flames, hot surfaces and sources of ignition.
Storage	Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat, sparks and flame.

10 of 25. | You've completed 0% of the lesson.

Section 8, Exposure controls/personal protection (Slide Layer)

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Section 16: Other information

Section 8: Exposure controls/personal protection - list chemical exposure limits, engineering controls, and personal protective measures that can be used to minimize worker exposure.

8. Exposure controls / personal protection				
Exposure Guidelines.				
Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
Formaldehyde	TWA: 0.1 ppm STEL: 0.3 ppm	(Vacated) TWA: 3 ppm (Vacated) STEL: 10 ppm (Vacated) Ceiling: 5 ppm TWA: 0.75 ppm STEL: 2 ppm	IDLH: 20 ppm TWA: 0.016 ppm Ceiling: 0.3 ppm	Ceiling: 0.3 ppm
Methyl alcohol	TWA: 200 ppm STEL: 250 ppm Skin	(Vacated) TWA: 200 ppm (Vacated) TWA: 250 mg/m ³ (Vacated) STEL: 250 ppm (Vacated) STEL: 325 mg/m ³ Skin TWA: 200 ppm TWA: 250 mg/m ³	IDLH: 6000 ppm TWA: 200 ppm TWA: 250 mg/m ³ STEL: 250 ppm STEL: 325 mg/m ³	TWA: 200 ppm STEL: 250 ppm

10 of 25. | You've completed 0% of the lesson.

Section 9, Physical and chemical properties (Slide Layer)

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Section 9: Physical and chemical properties - identifies physical and chemical properties associated with the product.

9. Physical and chemical properties	
Physical State	Liquid
Appearance	Clear
Odor	pungent
Odor Threshold	No information available
pH	7
Melting Point/Range	0 °C / 32 °F
Boiling Point/Range	No information available - 100 °C / - 212 °F
Flash Point	90 °C / 194 °F
Evaporation Rate	> 1.0
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	No information available
Vapor Density	1.0
Specific Gravity	1.10
Solubility	miscible
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	No information available
Viscosity	No information available

10 of 25. | You've completed 0% of the lesson.

Section 10, Stability and reactivity (Slide Layer)

Safety Data Sheets (SDS) and Chemical Inventories

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Section 10: Stability and reactivity - describes the reactivity hazards of the chemical and chemical stability information. This section is broken into three parts: reactivity, chemical stability, and other.

10. Stability and reactivity	
Reactive Hazard	None known, based on information available
Stability	Stable under normal conditions.
Conditions to Avoid	Incompatible products. Excess heat. Keep away from open flames, hot surfaces and sources of ignition.
Incompatible Materials	Strong oxidizing agents
Hazardous Decomposition Products	Carbon monoxide (CO), Carbon dioxide (CO ₂)
Hazardous Polymerization	Hazardous polymerization does not occur.
Hazardous Reactions	None under normal processing.

10 of 25. | You've completed 0% of the lesson.

Section 11, Toxicological information (Slide Layer)

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Section 14: Transport information
Section 15: Regulatory information
Section 16: Other information

Section 11: Toxicological - identifies toxicological and health effects information, if applicable.

11. Toxicological information			
Acute Toxicity:			
Product Information			
No acute toxicity information is available for this product.			
Based on ATE data, the classification criteria are not met. ATE > 2000 mg/kg.			
Oral LD50			
Based on ATE data, the classification criteria are not met. ATE > 2000 mg/kg.			
Dermal LD50			
Based on ATE data, the classification criteria are not met. ATE > 20 mg/L.			
Vapor LC50			
Component Information			
Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Water			
Formaldehyde	500 mg/kg (Rat)	LD50 = 270 mg/kg (Rabbit)	0.578 mg/L (Rat) 4 h
Sodium acetate	LD50 = 3530 mg/kg (Rat)	LD50 = 10 g/kg (Rabbit)	LC50 = 30 g/m ³ (Rat) 1 h
Methyl alcohol	LD50 = 1187 - 2769 mg/kg (Rat)	LD50 = 17100 mg/kg (Rabbit)	LC50 = 128.2 mg/L (Rat) 4 h
Toxicologically Synergistic Products			
No information available			

10 of 25. | You've completed 0% of the lesson.

Section 12, Ecological information (Slide Layer)

Safety Data Sheets (SDS) and Chemical Inventories

Safety Data Sheets, or SDSs, are important components of a hazard communication program. Standardized SDS include the sections below.

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 controls/personal protection

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

Section 12: Ecological information - This section explains the environmental impact of a chemical(s) if released to the environment.

12. Ecological information

Ecotoxicity.
Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. The product contains following substances which are hazardous for the environment. Contains a substance which is: Toxic to aquatic organisms.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Formaldehyde	Not listed	Leuciscus stiz, LC50 = 15 mg/L, 96h	Not listed	EC50 = 20 mg/L, 96h
Sodium acetate	-	LC50 = 100 mg/L, 96h semi-static (Daphn. test)	≈ 7200 mg/L, EC50 Pseudomonas putida 18 h	EC50 = 2 mg/L, 48h (Daphnia magna)

10 of 25. | You've completed 0% of the lesson.

Section 13, Disposal considerations (Slide Layer)

Safety Data Sheets (SDS) and Chemical Inventories

Safety Data Sheets, or SDSs, are important components of a hazard communication program. Standardized SDS include the sections below.

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 controls/personal protection

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

Section 13: Disposal considerations - covers proper disposal, recycling or reclamation of the chemical(s) or its container, and safe handling practices.

13. Disposal considerations

Waste Disposal Methods
Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Formaldehyde - 60-00-0	U122	-
Methyl alcohol - 67-56-1	U154	-

10 of 25. | You've completed 0% of the lesson.

Section 14, Transport information (Slide Layer)

Safety Data Sheets (SDS) and Chemical Inventories

Safety Data Sheets, or SDSs, are important components of a hazard communication program. Standardized SDS include the sections below.

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 controls/personal protection

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

Section 14: Transport information - explains classification information for shipping and transporting of hazardous chemical(s) by road, air, rail, or sea.

14. Transport information

DOT.
COMBUSTIBLE LIQUID, NOT REGULATED FOR TRANSPORT IN THIS QUANTITY
According to 49 CFR §173.1507(i), this material should be reclassified as NA1993, Combustible Liquid, NOS if it is shipped in bulk.

UN No	NA1993
Proper Shipping Name	Combustible liquid, n.o.s.
Packing Group	III
TDG	Not regulated
IATA	Not regulated
IMDG/IMO	Not regulated

10 of 25. | You've completed 0% of the lesson.

Section 15, Regulatory information (Slide Layer)

Safety Data Sheets (SDS) and Chemical Inventories

Safety Data Sheets, or SDSs, are important components of a hazard communication program. Standardized SDS include the sections below.

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 controls/personal protection
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

Section 15: Regulatory Information - identifies the safety, health, and environmental regulations specific to the product.

15. Regulatory information				
United States of America Inventory:				
Component	CAS No	TSCA	TSCA Inventory notification - Active/Inactive	TSCA - EPA Regulatory Flags
Water	7732-18-9	X	ACTIVE	-
Formaldehyde	50-00-0	X	ACTIVE	-
Sodium acetate	127-08-3	X	ACTIVE	-
Methyl alcohol	67-58-1	X	ACTIVE	-

Legend:
TSCA: US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
- - Not Listed

TSCA 12(b) - Notices of Export Not applicable

10 of 25. | You've completed 0% of the lesson.

Section 16, Other information (Slide Layer)

Safety Data Sheets (SDS) and Chemical Inventories

Safety Data Sheets, or SDSs, are important components of a hazard communication program. Standardized SDS include the sections below.

Section 1: Identification
Section 2: Hazard(s) identification
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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

Section 16: Other Information - tells you when the SDS was originally prepared or the last known revision date. This section of the SDS may also state where changes have been made to the previous version.

16. Other information	
Prepared By	Regulatory Affairs Thermo Fisher Scientific Email: EMSDS.RA@thermofisher.com
Creation Date	26-Sep-2009
Revision Date	24-Dec-2021
Print Date	24-Dec-2021
Revision Summary	This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).
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 SDS

10 of 25. | You've completed 0% of the lesson.

2.10 Safety Data Sheets (SDS) and Chemical Inventories

Safety Data Sheets (SDS) and Chemical Inventories

Kaiser Permanente utilizes a web-based safety data sheet and chemical inventory management platform so that this can provide readily available information.

You can access your site-specific chemical inventory and SDSs through your Kaiser Permanente location intranet site or National EH&S SafetyNet.

See [Resources](#) menu for link to SafetyNet.

Once you've clicked the SafetyNet URL, scroll down the page to find your site specific link.



If you are not sure how to access an SDS or Chemical Inventory, contact your supervisor or your facility EH&S Department.

11 of 25. | You've completed 0% of the lesson.

Chemical Inventory and SDS Search

Upon accessing the SDS website, there are two ways to search for an SDS.

Click each button

Inventory Tab

SDS Tab

If you are not sure how to access an SDS or Chemical Inventory, contact your supervisor or your local EH&S Department.

12 of 25. | You've completed 0% of the lesson.

The screenshot shows the 'Chemical Inventory and SDS Search' application. The interface includes a top navigation bar with 'Home', 'SDS', 'Inventory', 'Report Center', and 'Help'. The 'Inventory' tab is selected. On the left, there are two buttons: 'Inventory Tab' and 'SDS Tab'. The main content area is divided into two sections. The left section, titled '1. Select Search Inventory', shows a search for 'Mentica (CV)' with a list of locations: 'My locations', 'Central Valley (NCAL)', and 'Mentica (CV)'. The right section, titled '2. On the left choose your location in the inventory tier (highlights blue)', shows a search for 'Mentica (CV)' with a list of products: 'Green Products Co.', 'Green Products Co.', and 'Green Products Co.'. The 'Show All' button is highlighted. The bottom section, titled '3. Click Show All to see the chemicals in inventory', shows a table of products with columns for 'Product Name', 'Manufacturer Name', and 'Location'. The table lists 'Green Products Co.' and 'Green Products Co.' with locations 'Employee Health/Occupational Medicine (RACB01)' and 'Special Procedures (RACB01)'. The 'Show All' button is highlighted. The bottom right section, titled '4. Click Actions and then click View SDS next to the product you are looking for in the inventory', shows the 'Actions' column with a 'View SDS' link highlighted.

Chemical Inventory and SDS Search

Click each button

1. Select Search Inventory

Home SDS **Inventory** Report Center Help

Inventory Search **Inventory**

2. On the left choose your location in the inventory tier (highlights blue).

3. Click Show All to see the chemicals in inventory.

4. Click Actions and then click View SDS next to the product you are looking for in the inventory.

If you are not sure how to access an SDS or Chemical Inventory, contact your supervisor or your local EH&S Department.

12 of 25. | You've completed 0% of the lesson.

Chemical Inventory and SDS Search

Click each button

Inventory Tab

SDS Tab

Kaiser Foundation Health Plan Inc.

Home **SDS** Inventory Report Center Help

SDS

Corporate Documents 3E SDS Library

Search for

Product Name contains Formalin

< choose a criterion >

Filter results by SDS Language, Country

Product Documents

10% Buffered Formalin

Search Show All

1. Enter the product name and click Search

2. Click on next to product you are looking for to see Product Documents

3. Choose View to open the SDS in another window.

Product Name	Manufacturer Name	Mfg Part #
10% Alcoholic Formalin	IMEB Inc.	AF-100
10% Buffered Formalin	Thermo Fisher Scientific	SF99-20 SF99-4
10% Buffered Formalin	American MasterTech Scientific, Inc.	FXBF01KCS
10% Buffered Formalin	American MasterTech Scientific, Inc.	FXBF0500CS

If you are not sure how to access an SDS or Chemical Inventory, contact your supervisor or your local EH&S Department.

12 of 25. | You've completed 0% of the lesson.

2.12 Hierarchy of Controls

Hierarchy of Controls

Let's look at some ways to protect you from exposure to hazardous chemicals using the hierarchy of controls.

Click each level of the Hierarchy of controls

The diagram shows a funnel with five levels, from top to bottom:

- Elimination**: Physically remove the hazard
- Substitution**: Replace the hazard
- Engineering Controls**: Isolate people from the hazard
- Administrative Controls**: Change the way people work
- PPE**: Protect the worker with Personal Protective Equipment

A vertical color bar on the left indicates effectiveness, with blue at the top (Most effective) and red at the bottom (Least effective).

Image by NIOSH
https://www.niosh.gov/HealthTopics/Prevention/default.html

13 of 25. | You've completed 0% of the lesson.

PPE (Slide Layer)

Personal Protective Equipment (PPE)

Personal Protective Equipment is **worn to minimize exposure** to chemical hazards by providing a barrier between you and the chemical.

Inspect PPE prior to use.

- Wear appropriate eye protection (goggles or face shield) if there is a potential for a chemical splash to eyes or face
- Wear appropriate gloves to avoid potential contact with hazardous materials
 - Nitrile gloves are typically worn for chemical use
 - Cryogenic gloves if handling chemicals like liquid nitrogen
 - Chemotherapy gloves if handling hazardous drugs
- Wear chemical resistant aprons/gowns if there is a potential for a chemical splash to the body
- When required, wear a respirator to reduce airborne exposure to chemicals
(NOTE: Typically chemical use at Kaiser Permanente does not require respiratory protection; however, if you are assigned a respirator for chemical use, you will receive additional training on how to use it properly)

Follow your department's requirements for PPE use.

Close

Administrative (Slide Layer)

Administrative Controls

Administrative controls are work procedures/practices that reduce the duration, frequency, and severity of exposure to hazardous chemicals.

Safe work practices include:

- Know and follow department-specific procedures for chemical use
- Follow the precautionary statements printed in the SDS and labels
- Keep containers closed and workspaces clutter-free.
- Store chemicals properly
 - below eye level
 - with compatible chemicals
 - in storage cabinet when applicable
 - not on the floor
- Clean any spills promptly with the appropriate spill kit
- Wash your hands after handling chemicals
- Do not eat, drink, or chew gum near chemicals

NOTICE
No eating, drinking or gum chewing

Close

Engineering (Slide Layer)

Engineering Controls

Engineering controls (e.g. local exhaust ventilation and chemical management systems) reduce chemical exposure by removing it or enclosing it from the workspace.

Local Exhaust Ventilation (LEV)

LEV examples include:

- laboratory fume hoods
- prefabricated grossing stations
- glove boxes
- slot exhaust
- snorkel exhaust

Chemical Management Systems

These systems reduce the need for handling/pouring chemicals. Some examples include auto-feed in SPD scope reprocessors or automated dilution systems (e.g. OxyCide dispenser and metered dose chemical dispensers for flammable liquids.).

If your department uses LEV, it is important that:

- it is inspected at least annually (there is a sticker showing most recent inspection date)
- you know how to properly use it
 - keep chemicals close to exhaust
 - keep exhaust area clutter free
 - keep sash within certified height
- if alarms are sounding, let your manager know so that it can be checked
- do not perform work within LEV if it is not functioning properly



Close

Substitution (Slide Layer)

Substitution

Look for ways to reduce exposures to hazardous chemicals by substituting them for a less hazardous alternative. This includes:

- Using green/environmentally friendly chemicals and cleaners
- Using a diluted version if clinically feasible (e.g. 10% formalin instead of concentrated 37% formalin)
- Using a less volatile form of the chemical (e.g. paste/topical application instead of a liquid spray/aerosol)

For example: Replacing a chemical with steam for sterilization



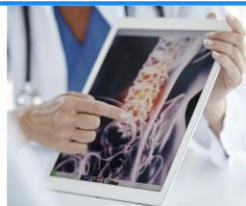
Close

Elimination (Slide Layer)

Elimination

Kaiser Permanente looks for ways to eliminate hazardous chemicals where we can. This may include changing the technology we use to accomplish the task.

For example, healthcare now uses digital technology to eliminate chemical use during X-ray processing and to remove mercury from thermometers.



Close

2.13 Methods of Detecting a Chemical Presence or Release

Methods of Detecting a Chemical Presence or Release

1. You may learn about the presence of a hazardous chemical in your area by:
 - Your manager informing you
 - Continuous monitoring devices (e.g. oxygen sensors where liquid nitrogen is stored, fume hood alarms)
 - Air sampling reports provided as a result of periodic monitoring for certain chemicals (e.g., formaldehyde survey in laboratories).



14 of 25. | You've completed 0% of the lesson.

2.14 Methods of Detecting a Chemical Presence or Release

Methods of Detecting a Chemical Presence or Release

2. Be familiar with the chemicals that are in your area (e.g. odor and the color) so that you know if conditions have possibly changed. It is important that you stay alert to the signs of a chemical spill or release, such as:
 - An unusual or strong smell
 - An unidentifiable substance in an area where chemicals are used
 - Leaks from chemical containers or equipment
 - Change in color of chemical that is not normal

Managers should provide department-specific information, as appropriate, for the chemicals in your work area on how to detect a spill or accidental chemical release.



15 of 25. | You've completed 0% of the lesson.

2.15 Spill Response

Spill Response

Click on each

Incidental Spill Response

Emergency Spill Response

If a spill occurs, refer to the Rainbow Chart or other quick reference guide (such as Code Flip Chart) on emergency procedures. You can also refer to the SDS for accidental release measures.

The NEH&S Hazardous Chemical Spill Management website also provides a list of common chemicals used within KP and their specific threshold limits and response procedures for incidental vs. emergency spills, appropriate spill kits and PPE.

In general, you should follow these procedures for response to a spill.

16 of 25. | You've completed 0% of the lesson.

Incidental Spill Response (Slide Layer)

Spill Response

Click on each

Incidental Spill Response

Emergency Spill Response

Example of Incidental Spill Response:
The NEH&S Hazardous Chemical Spill Management website also provides a list of common chemicals used within KP and their specific threshold limits and response procedures for incidental vs. emergency spills, appropriate spill kits and PPE. A link is available in **Resources** menu.

INCIDENTAL SPILL RESPONSE

With the proper training, incidental spills can be cleaned by departmental staff.

Isolate	<p>Isolate the area.</p> <p>Evacuate everyone from the area surrounding the spill.</p> <p>Secure the area and establish a wide perimeter to prevent people from tracking through the spill.</p> <p>Contact: Manager and/or EH&S Department per local procedures.</p>
Contain	<p>Stop the source of the spill, if possible.</p> <p>Obtain appropriate spill kit.</p> <p>Apply neutralizer within 10 minutes to reduce vapors.</p>
PPE	<p>Don PPE in the following order to clean up spill:</p> <ol style="list-style-type: none"> 1. Inner gloves 2. Gown with cuff over inner gloves 3. Outer gloves 4. Respiratory protection (as applicable) 5. Goggles and face shield
Clean	Contact EVS to clean the area with germicidal detergent and water.
Discard	Contain and dispose of all materials as bulk RCRA hazardous waste.

16 of 25. | You've completed 0% of the lesson.

Emergency Spill Response (Slide Layer)

Spill Response

Click on each

Incidental Spill Response

Emergency Spill Response

Emergency Spill Criteria:
Follow your site's emergency response protocol for these large spills.

EMERGENCY (HAZWOPER) SPILL

An Emergency Spill, also known as a HazWopER Spill, is a spill that meets any of the criteria:

1. Uncontrolled release of a hazardous substance (e.g., free flowing, unable to turn off the source, etc.)
2. Evacuation of employees
3. **Poses an Immediate Danger to Life and Health (IDLH)**
4. Poses a serious threat of fire or explosion
5. An imminent danger exists
6. **High levels of exposure to toxic substances**
7. Uncertainty that resources (e.g., trained personnel, equipment, etc.) are available to deal with the severity of the hazard
8. Situation is unclear and/or critical information is lacking

Most common Emergency Spill situations at KP due to high levels may cause irreversible effects

16 of 25. | You've completed 0% of the lesson.

2.16 Hazard-Specific Fact Sheets

Hazard-Specific Fact Sheets

Some job duties include working with hazardous chemicals that require specific safe work procedures and/or the use of engineering controls, and/or personal protective equipment.

The **Resources** menu contains fact sheets for the following commonly used chemicals at Kaiser Permanente. The fact sheets provide more information on the application, use, control and disposal of selected products. If you use any of the chemicals below, read its fact sheet.

Anesthetic Agents
Nitrous Oxide, Halogenated Anesthetic Agents (Desflurane, Isoflurane and Sevoflurane)

Cleaning Agents
Bleach, Oxycide

High Level Disinfectants and Sterilants
Cidex OPA-C, 2.6% Glutaraldehyde (Cidex 14-Day, MetriCide™ 28-Day and Wavicide, Ortho-Phthalaldehyde (OPA) (Cidex OPA 14-Day and MetriCide OPA Plus), Peridox RTU, Rapicide PA Part A, Revital-Ox RESERT, STERRAD Sterilant, Steris S-40 Concentrate, Trophon EPR Sonex-HL

Other Chemicals
Alcohol (ethanol, isopropyl and methanol), 3.7% Formaldehyde (10% Neutral Buffered Formalin), Hydrochloric Acid, Phenol, Xylene

Bleach

Control of Exposure

What is Bleach?
Bleach is a common household cleaning product. It is a solution of sodium hypochlorite (NaOCl) in water. It is used to clean and disinfect surfaces.

What are the hazards?
Bleach is a strong oxidizing agent and can cause skin and eye irritation. It can also cause respiratory irritation if inhaled. It is important to use bleach properly and to avoid contact with skin and eyes.

What can be done to reduce the risk of exposure?
Wear gloves and eye protection when using bleach. Avoid inhaling the fumes. Use bleach in a well-ventilated area.

What are the symptoms of exposure?
Skin and eye irritation, respiratory irritation, and difficulty breathing.

What should be done if exposed?
If you get bleach on your skin or eyes, wash with plenty of water. If you inhale the fumes, move to a well-ventilated area and seek medical attention if necessary.

What are the first aid measures?
If you get bleach on your skin or eyes, wash with plenty of water. If you inhale the fumes, move to a well-ventilated area and seek medical attention if necessary.

What are the disposal instructions?
Bleach should be disposed of according to local regulations. Do not mix bleach with other chemicals.

What are the storage instructions?
Bleach should be stored in a cool, dry place. Keep the container tightly closed.

What are the handling instructions?
Bleach should be handled with care. Avoid contact with skin and eyes. Use proper ventilation.

What are the PPE requirements?
Wear gloves and eye protection when using bleach.

What are the training requirements?
Employees who use bleach should receive training on the proper use and handling of the product.

What are the references?
OSHA 1910.120, NFPA 704, MSDS for Bleach.

17 of 25. | You've completed 0% of the lesson.

Hazard Communication Courses in KP Learn

This concludes the General Hazard Communication course.

Additional chemical specific training is available on KP Learn and may be required by your department or site to inform you of the chemical hazards in your department.

Chemical Specific Courses

- Cadmium Exposure Prevention Training
- Formaldehyde Hazard Training
- High Level Disinfectant Hazard Training
- Phenol Hazard Training
- Respirable Crystalline Silica Training for Dental Operations
- Respirable Crystalline Silica Training for GI

Waste Anesthetic Gases

- Waste Anesthetic Gas Hazard Training
- Waste Anesthetic Gases Management (Clinical Staff)

Other Courses

- Chemical Hygiene Training for Lab Employees
- Corrosives, Irritants, Sensitizers Training
- Dry Ice Management Guidelines
- Emergency Eyewash and Deluge Shower Training
- Flammables Training
- Gases Under Pressure Training
- Latex Allergy Awareness Training
- Toxics Training

18 of 25 | You've completed 0% of the lesson.

Summary

It's important that all chemical containers are labeled.

As a reminder, if you transfer a chemical to a new container, you need to add a secondary label.


Hazardous Material – Safe Chemical Storage

It's important to store chemicals safely. Follow the manufacturer's recommendations. These are usually found on the chemical container, label, or safety data sheet (SDS).

Other things to remember...


- Store hazardous chemicals below eye level.
- Separate chemicals that could cause a hazardous reaction if they are mixed. For instance, acids and bases can be very reactive together.
- Consider whether your chemicals need to be stored in a special cabinet, such as a flammables or a caustics cabinet.
- Do not store chemicals in containers normally used for other purposes—for example, a cleaning detergent or water bottle.
- Chemical containers should not be stored on top of each other or on the floor where they could accidentally be knocked over.
- Chemicals should never be stored with food.

Do not dispose of hazardous materials in regular trash or down the drain.



! DANGER

Flammable Liquids
No smoking, open flames, or sparks



Líquidos Inflamable
No fumar, llamas abiertas, o chispas

20 of 25. | You've completed 0% of the lesson.

3.2 Compressed Gas Safety

Compressed Gas Safety

- A tank which is not secured may be knocked over. If the valve is knocked off or the tank ruptures, the cylinder would become a projectile causing severe injury or even death.



Only store in approved areas.

- A leaking oxygen cylinder can be a fire and explosion hazard.

- Cylinders containing compressed gases are a serious hazard when not handled or stored correctly.

- Leaks of compressed gases which displace oxygen, such as nitrogen, liquid nitrogen, nitrous oxide or carbon dioxide, can put people at risk for asphyxiation.

21 of 25. | You've completed 0% of the lesson.

3.3 Hazardous Material - Compressed Gas Cylinder Storage

Hazardous Material - Compressed Gas Cylinder Storage

- All compressed gas cylinders must be upright and secured to a fixed object or held in a portable transport cart/holder. Cylinders should be secured at both the top and the bottom.
- In patient areas, only 12 small "E-Cylinders" of oxygen or one "H-Cylinder" (a maximum of 300 cubic feet) can be stored in a smoke compartment without special enclosures. In use "E-Cylinders" of oxygen may be found on gurneys, wheelchairs or crash carts. These in use "E-Cylinders" are not to be included in the smoke compartment storage count limitation.

Store only in approved areas.

"E-Cylinders"



"H-Cylinder"



Information on safe handling and storage of compressed medical gas cylinders is available in the Resources of this Course.

22 of 25. | You've completed 0% of the lesson.

3.4 Activation of Emergency Eye/Face Wash

Using an Emergency Eyewash

You need to know:

- **Chemicals you use** that can cause damage to your eyes or skin
- The **location** of the nearest eyewash *Can you get there with your eyes shut?*

Emergency eyewashes and/or showers must be in accessible locations that require **no more than 10 seconds for the injured person to reach**.

Next we will show the steps to activate an Emergency Eyewash.



3.5 Emergency Equipment

Emergency equipment must be readily accessible at all times.

Click each image below to learn more about how to ensure equipment is readily accessible.

Nearby



From the chemical.

Unobstructed



Unobstructed (no stairs, locks, face wash, etc.).

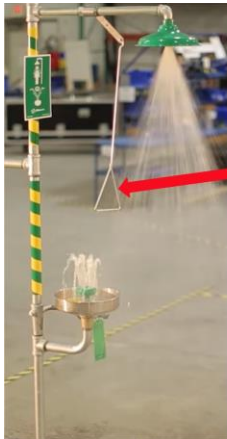
Code allows entry through a single door that swings in the direction of travel towards the emergency equipment (not towards the hazard).

You should not have to move or negotiate around items to get to the equipment.

Identified



3.6 Activation Emergency Shower



Activation of an Emergency Shower

Click on the numbers for steps to activate an Emergency Shower

1 Pull  lever

1

Shower lever should easily activate within 1 second and stay open without further use of your body. The water should be clear. If this is an eyewash/shower combination unit, you will need to also activate the eyewash lever.

2 Remove contaminated clothing

2

Thoroughly flush the contaminant from the skin. Clothing can trap contaminants against the skin and cause further damage to the skin.

3 Rinse skin for 15 minutes

3

Seek medical attention after flushing skin, even if you no longer feel pain or itch.