Trinity Health

Hazard Communication

TRINITY HEALTH REQUIRED EDUCATION

Hazard Communication

Version Date: 11/30/2024

Course Description

Welcome to our annual course on Hazard Communication for healthcare professionals. This course is based on OSHA's Hazard Communication Standard. The standard requires both manufacturers and employers to provide information on hazardous chemicals employees handle in their work environment. In addition, it provides information on Personal Protective Equipment (PPE) that is required when working with hazardous chemicals.

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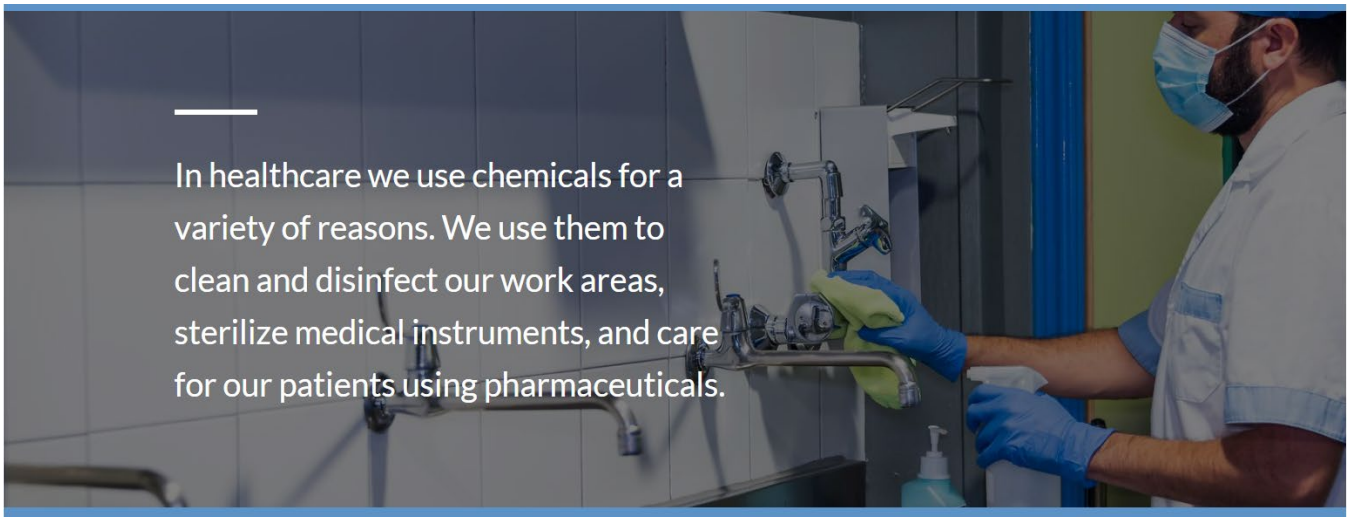

As someone working in a facility, you may handle hazardous chemicals as part of your job. Even if you work remotely or in an office, visiting one of our facilities could also expose you to these chemicals.

Do you know which chemicals are hazardous and what you can do to protect yourself from exposure?

Course Overview

This course will provide you with the knowledge you need to protect yourself while working with chemicals.

- Chemical Hazards
- Physical Hazards
- Health Hazards
- OSHA Communication Standard
- Labels & Pictograms
- Safety Data Sheets
- Personal Protective Equipment (PPE)
- Common Hazardous Chemicals

A Quick Glossary of Terms

Anesthetic Gases
Medicated air that causes a change in consciousness.

Acutely Toxic
The harmful effect from a single dose or short exposure to a substance.

Carcinogen
A substance that causes cancer.

Combustible
Capable of catching fire and burning easily.

Corrosive
The ability to weaken or destroy something gradually.

Disinfect
The process of cleaning equipment and supplies to remove harmful chemicals or germs.

Health Hazard
A chemical that causes harmful effects like eye irritation or damage, skin burns, respiratory issues, or organ toxicity.

Oxidizer
A substance that helps materials burn or catch fire faster by providing oxygen.

Personal Protective Equipment (PPE)
Equipment like gloves, masks, gowns, and goggles worn to protect against workplace hazards. These include chemical, radiological, physical, electrical, mechanical, and other hazards that can cause serious injuries and illnesses.

Physical Hazard
A chemical that can cause dangerous effects like explosions, fires, or metal corrosion.

Sterilize
To clean instruments and equipment so viral spores and bacteria are removed.

Toxic
Poisonous; can cause serious harm or death.

Toxicity
How harmful a chemical is to living things and the conditions that lead to this harm.

What Are Chemical Hazards?

Lesson 2 of 10

Take a moment to look around your work environment. Are there chemicals that you use as part of your job? Do you know which ones are hazardous? Know that a chemical is considered a hazard if it can **harm you**.

According to OSHA, there are two types of chemical hazards you need to be aware of.

They are:

Physical

Health

Let's look at both types in the next lesson.

Physical Hazards

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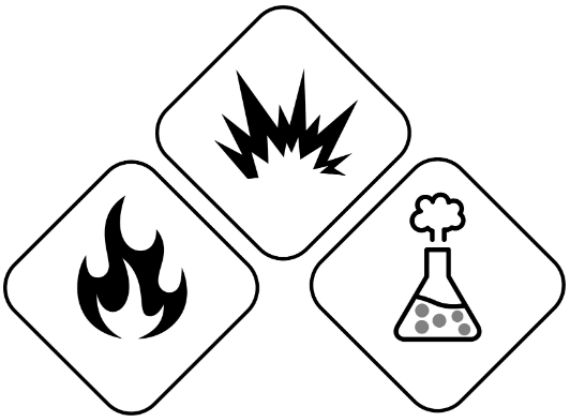

A chemical is considered a physical hazard if it:

- Burns or supports a fire
- Causes an explosion
- Reacts on its own or when exposed to water

Chemicals that are physical hazards include the following:

Flammable Liquids

Example: Gasoline

Compressed Gases

Example: Hydrogen

Health Hazards

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When is a chemical considered a health hazard?

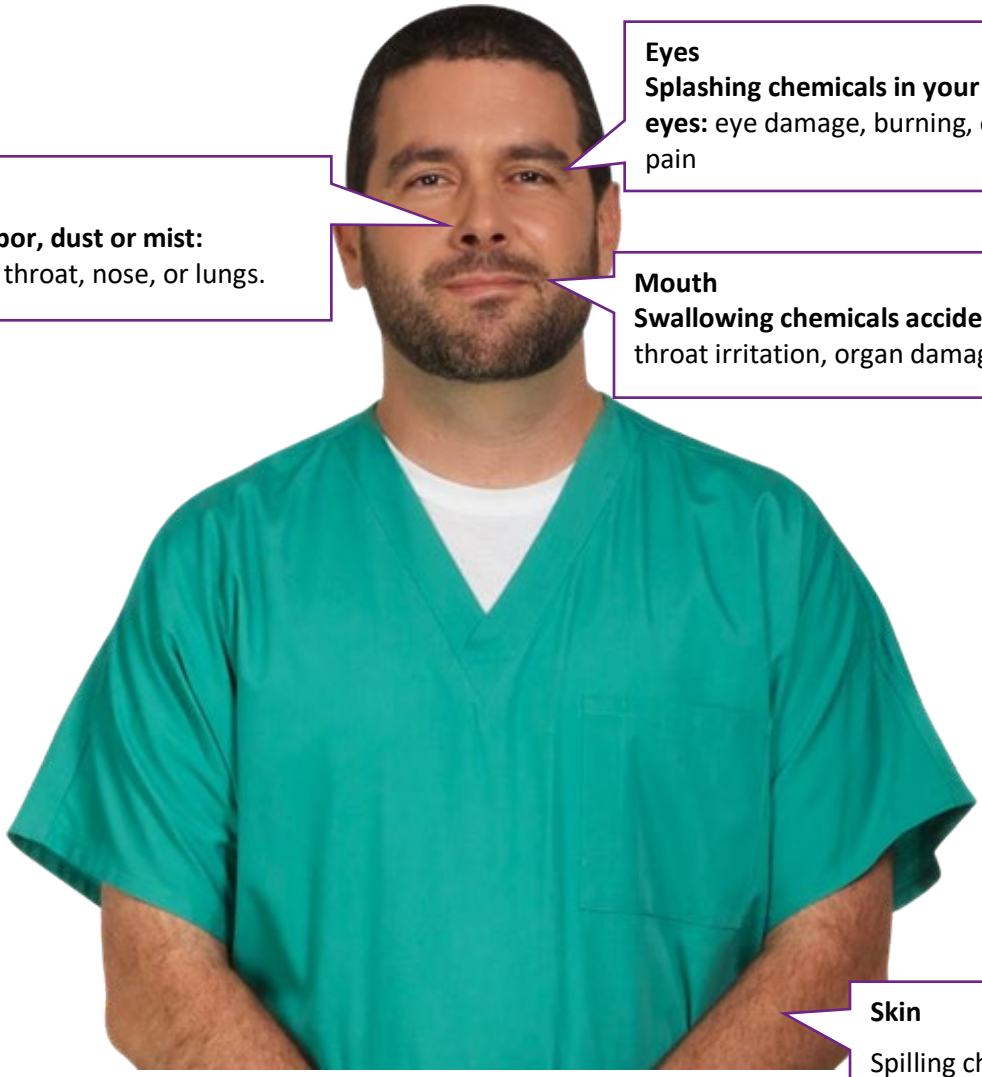
If a chemical causes harm to humans, it is considered a health hazard.

Chemicals that are health hazards can be toxic, corrosive, or carcinogenic.

Anyone who is exposed to these types of chemicals can experience injury or illness. Long term exposure can lead to chronic illness or even death.

How You Could be Exposed

There are a variety of ways that you can be exposed to harmful chemicals.



Eyes
Splashing chemicals in your eyes: eye damage, burning, or pain

Nose
Inhaling vapor, dust or mist: irritation of throat, nose, or lungs.

Mouth
Swallowing chemicals accidentally: throat irritation, organ damage.

Skin
Spilling chemicals on your skin: burning, pain, and skin damage.

OSHA Hazard Communication Standard

Lesson 5 of 10

Trinity Health follows the OSHA Hazard Communication Standard (HCS) for chemical safety. The Standard has specific requirements for employers.

What does OSHA require?

Labels & Safety Data Sheets:

A chemical-specific label and safety data sheet (SDS) for each hazardous chemical in the workplace.

Training on:

- How to properly read a label and SDS
- How to access personal protective equipment (PPE)

Written:

- Hazard communication plan
- Procedures for handling emergencies caused by exposure to hazardous chemicals

You should be trained to read and understand labels and SDSs before using hazardous chemicals. Let's take a look at each of these starting with labels.

Labels & Pictograms

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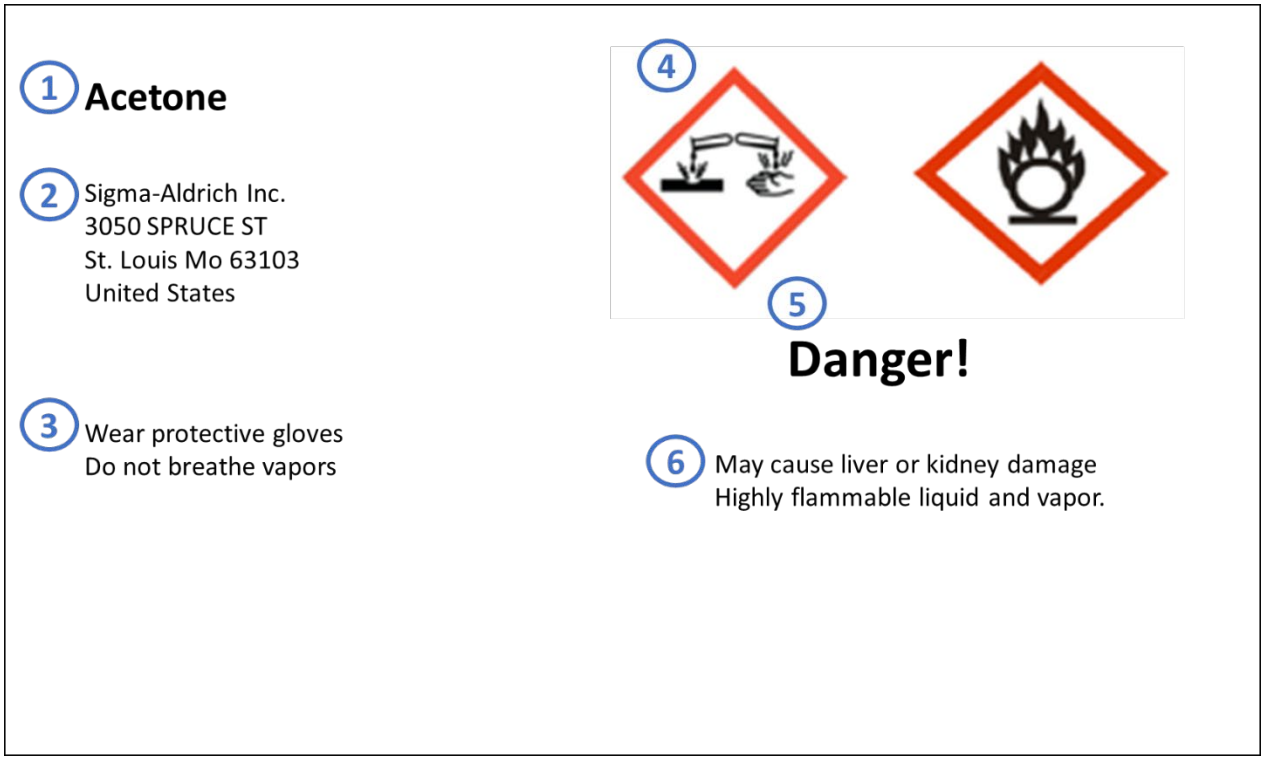
Labels

Manufacturers must provide labels that communicate hazard information on every chemical an employee handles. For example, labels will include information on proper storage as well as first aid for exposure to the chemical.

HCS compliant labels will include the following six sections:

1	**Product Identifier:** Identifies the chemical. This can include the chemical name, code, or batch number.
2	**Supplier Identification:** The name, address, and phone number of the chemical's manufacturer.
3	**Precautionary Statement:** Provides guidance on preventing or reducing harm from exposure.
4	**Pictogram(s):** Symbols that warn about the specific chemical hazard. Labels can have more than one pictogram.
5	**Signal Word:** Indicates how serious the chemical hazard is. The signal word will be either "Danger" for severe hazards or "Warning" for less severe hazards.
6	**Hazard Statement:** Explains the nature or degree of the hazard.



Pictograms

Pictograms are symbols that warn you of the dangers of working with a specific chemical.

There are nine pictograms (red diamonds with illustrations inside). A pictogram can have up to **six** hazards (we have only included **one hazard** per symbol below).

Flame Over Circle  Oxidizers	**Exploding Bomb**  Explosives	**Flame**  Flammables
Skull and Crossbones  Acute toxicity (fatal or toxic)	**Corrosion**  Skin corrosion/burns	**Gas Cylinder**  Gases under pressure
Health Hazard  Carcinogen	**Environment**  Aquatic toxicity	**Exclamation Mark**  Irritant (skin & eyes)

Safety Data Sheets

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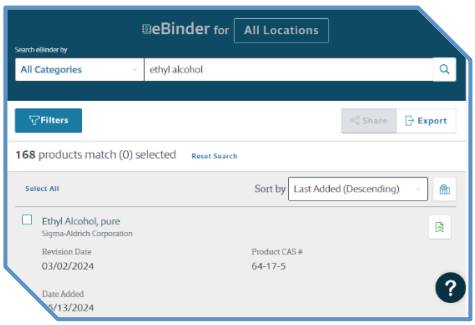
SDSs are required to be on file for every hazardous chemical in the workplace.

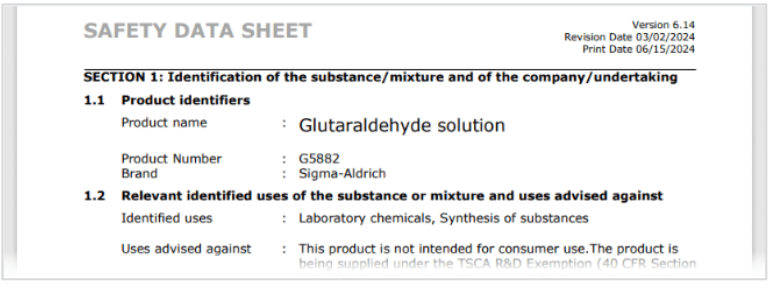
You should have access to both the **paper** and **electronic** versions of an SDS if you handle hazardous chemicals.

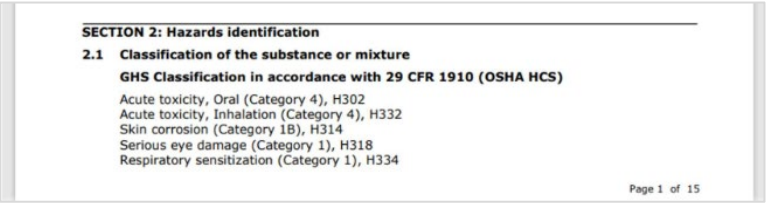
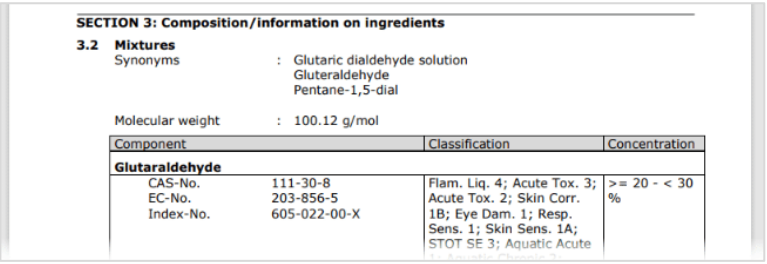
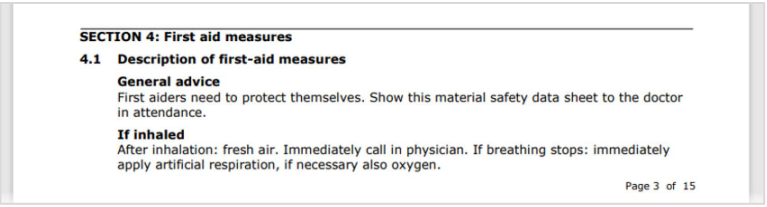
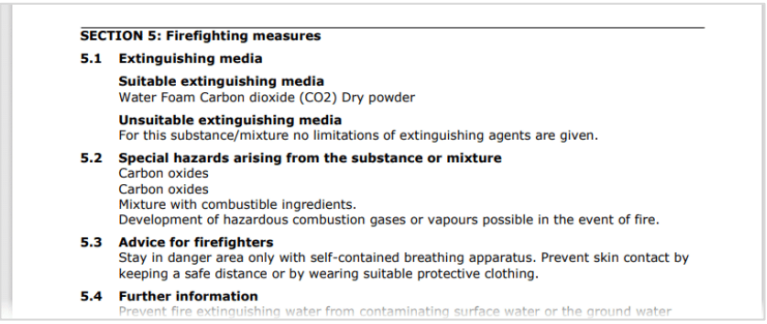
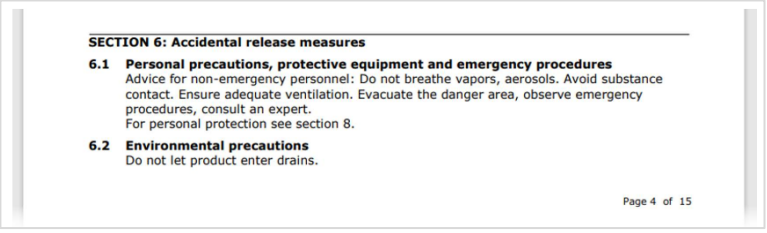


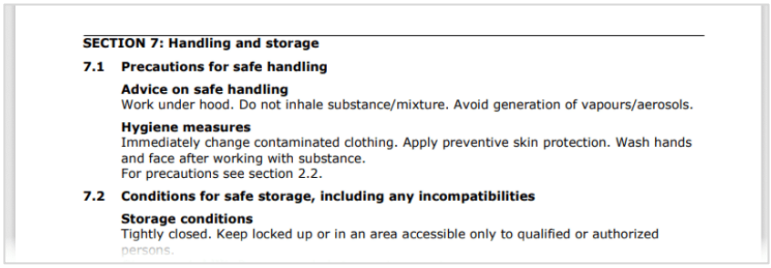
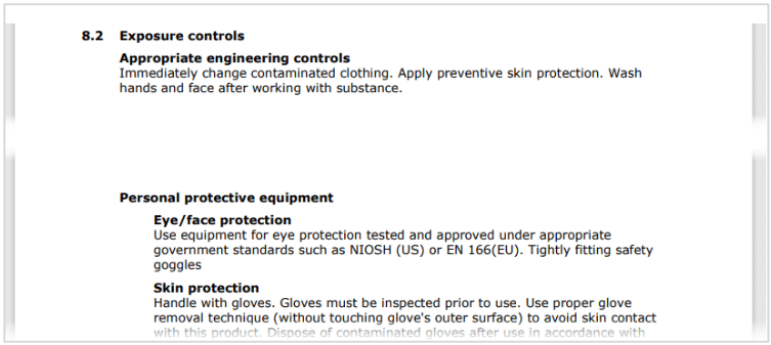
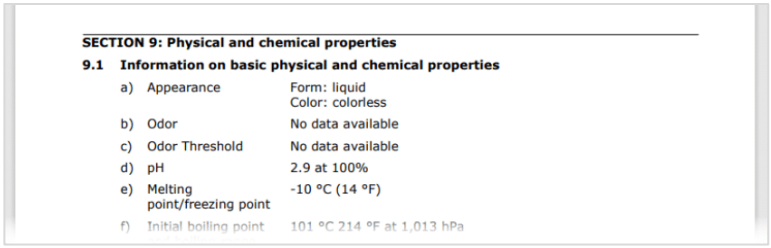
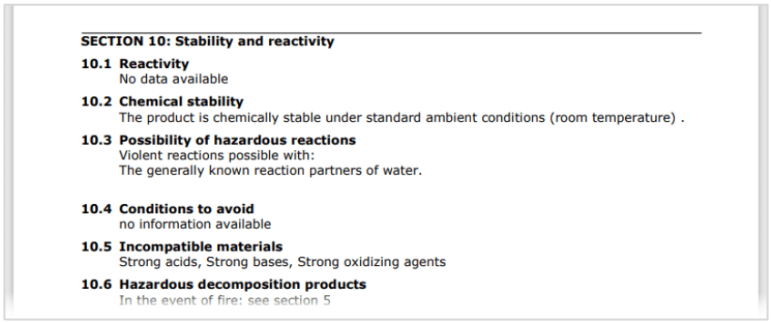
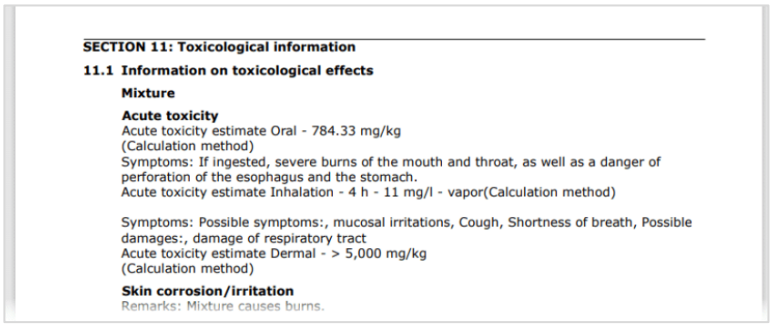
At Trinity Health you can access the electronic version of an SDS by using the **MSDSonline | eBinder** application. We'll show you how to use this application in the separate MSDSonline course that follows this one.

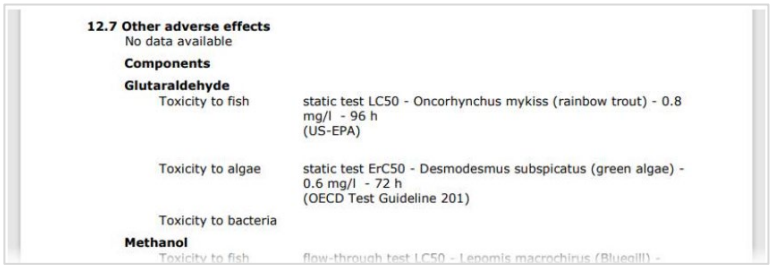
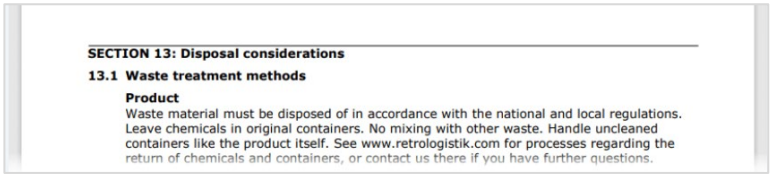
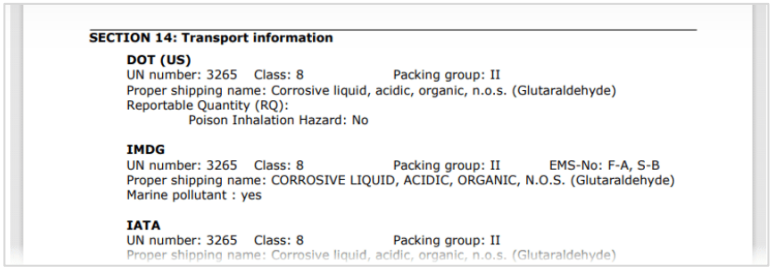
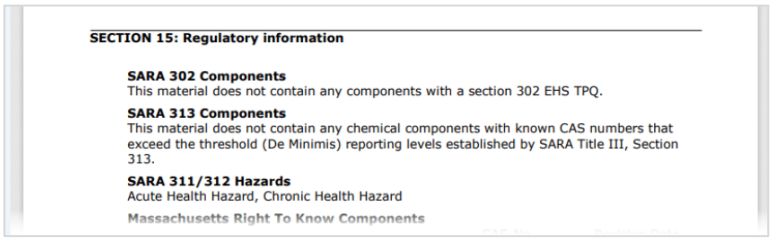
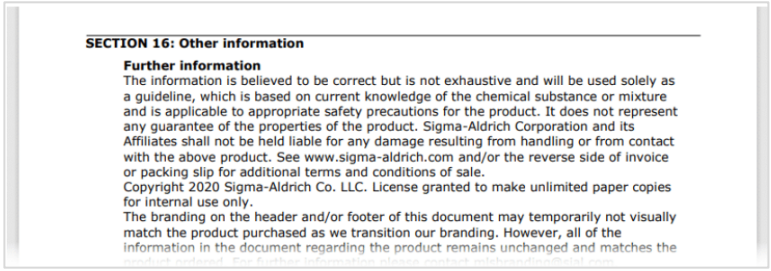
Safety Data Sheet Sections

There are 16 required sections for a chemical's SDS. Review each section of a sample SDS for **Glutaraldehyde** below:

Section 1: Identification • Chemical Name • Essential contact information of the manufacturer (name, address, phone, emergency phone number). • Includes the recommended use for the chemical and restrictions on its use.	

Sections 2: Hazards Identification Describes the chemical hazard and any warning information related to it.	 **SECTION 2: Hazards identification** **2.1 Classification of the substance or mixture** **GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)** Acute toxicity, Oral (Category 4), H302 Acute toxicity, Inhalation (Category 4), H332 Skin corrosion (Category 1B), H314 Serious eye damage (Category 1), H318 Respiratory sensitization (Category 1), H334 Page 1 of 15
Sections 3: Composition/Information on Ingredients Lists the substances and mixtures in the chemical, except when this would reveal a trade secret.	 **SECTION 3: Composition/information on ingredients** **3.2 Mixtures** Synonyms : Glutaric dialdehyde solution Gluteraldehyde Pentane-1,5-dial Molecular weight : 100.12 g/mol Component / Classification / Concentration **Glutaraldehyde** CAS-No. 111-30-8 EC-No. 203-856-5 Index-No. 605-022-00-X Flam. Liq. 4; Acute Tox. 3; Acute Tox. 2; Skin Corr. 1B; Eye Dam. 1; Resp. Sens. 1; Skin Sens. 1A; STOT SE 3; Aquatic Acute >= 20 - < 30 %
Section 4: First-Aid Measures How to treat exposure, symptoms to look for, and suggestions for any necessary medical treatment.	 **SECTION 4: First aid measures** **4.1 Description of first-aid measures** **General advice** First aiders need to protect themselves. Show this material safety data sheet to the doctor in attendance. **If inhaled** After inhalation: fresh air. Immediately call in physician. If breathing stops: immediately apply artificial respiration, if necessary also oxygen. Page 3 of 15
Section 5: Fire-Fighting Measures Recommendations for extinguishing a chemical fire. Hazards caused by a chemical fire. Recommended protective equipment for those fighting the fire.	 **SECTION 5: Firefighting measures** **5.1 Extinguishing media** **Suitable extinguishing media** Water Foam Carbon dioxide (CO2) Dry powder **Unsuitable extinguishing media** For this substance/mixture no limitations of extinguishing agents are given. **5.2 Special hazards arising from the substance or mixture** Carbon oxides Carbon oxides Mixture with combustible ingredients. Development of hazardous combustion gases or vapours possible in the event of fire. **5.3 Advice for firefighters** Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing. **5.4 Further information** Prevent fire extinguishing water from contaminating surface water or the ground water
Section 6: Accidental Release Measures Recommendations on responding to and cleaning up leaks, spills, or releases.	 **SECTION 6: Accidental release measures** **6.1 Personal precautions, protective equipment and emergency procedures** Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert. For personal protection see section 8. **6.2 Environmental precautions** Do not let product enter drains. Page 4 of 15

Section 7: Handling and Storage Provides suggestions on safely handling the chemical and guidelines for properly storing it.	 **SECTION 7: Handling and storage** **7.1 Precautions for safe handling** **Advice on safe handling** Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols. **Hygiene measures** Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance. For precautions see section 2.2. **7.2 Conditions for safe storage, including any incompatibilities** **Storage conditions** Tightly closed. Keep locked up or in an area accessible only to qualified or authorized persons.
Section 8: Exposure Controls/Personal Protection Indicates exposure limits and suggested ways to prevent injury (i.e. such as using required PPE).	 **8.2 Exposure controls** **Appropriate engineering controls** Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance. **Personal protective equipment** **Eye/face protection** Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Tightly fitting safety goggles **Skin protection** Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with
Section 9: Physical and Chemical Properties Identifies physical and chemical properties of the substance or mixture (odor, color, melting/freezing point).	 **SECTION 9: Physical and chemical properties** **9.1 Information on basic physical and chemical properties** a) Appearance — Form: liquid, Color: colorless b) Odor — No data available c) Odor Threshold — No data available d) pH — 2.9 at 100% e) Melting point/freezing point — -10 °C (14 °F) f) Initial boiling point — 101 °C 214 °F at 1,013 hPa
Section 10: Stability and Reactivity Describes any hazards caused by a chemical reaction.	 **SECTION 10: Stability and reactivity** **10.1 Reactivity** No data available **10.2 Chemical stability** The product is chemically stable under standard ambient conditions (room temperature) . **10.3 Possibility of hazardous reactions** Violent reactions possible with: The generally known reaction partners of water. **10.4 Conditions to avoid** no information available **10.5 Incompatible materials** Strong acids, Strong bases, Strong oxidizing agents **10.6 Hazardous decomposition products** In the event of fire: see section 5
Section 11: Toxicological Information Provides information on routes of exposure, symptoms after exposure, and whether the chemical is a carcinogen.	 **SECTION 11: Toxicological information** **11.1 Information on toxicological effects** **Mixture** **Acute toxicity** Acute toxicity estimate Oral - 784.33 mg/kg (Calculation method) Symptoms: If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach. Acute toxicity estimate Inhalation - 4 h - 11 mg/l - vapor(Calculation method) Symptoms: Possible symptoms:, mucosal irritations, Cough, Shortness of breath, Possible damages:, damage of respiratory tract Acute toxicity estimate Dermal - > 5,000 mg/kg (Calculation method) **Skin corrosion/irritation** Remarks: Mixture causes burns.

Section 12: Ecological Information (non-mandatory) Explains the environmental impact if the chemical is released in the environment.	 **12.7 Other adverse effects** No data available **Components** **Glutaraldehyde** Toxicity to fish: static test LC50 - Oncorhynchus mykiss (rainbow trout) - 0.8 mg/l - 96 h (US-EPA) Toxicity to algae: static test ErC50 - Desmodesmus subspicatus (green algae) - 0.6 mg/l - 72 h (OECD Test Guideline 201) Toxicity to bacteria **Methanol** Toxicity to fish: flow-through test LC50 - Lepomis macrochirus (Bluegill) -
Section 13: Disposal Considerations (non-mandatory) Offers guidance on proper disposal, recycling, and safe handling of the chemical and its container.	 **SECTION 13: Disposal considerations** **13.1 Waste treatment methods** **Product** Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself. See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.
Section 14: Transport Information (non-mandatory) Provides information on classifying and safely transporting hazardous chemicals by road, rail, sea, or air.	 **SECTION 14: Transport information** **DOT (US)** UN number: 3265 Class: 8 Packing group: II Proper shipping name: Corrosive liquid, acidic, organic, n.o.s. (Glutaraldehyde) Reportable Quantity (RQ): Poison Inhalation Hazard: No **IMDG** UN number: 3265 Class: 8 Packing group: II EMS-No: F-A, S-B Proper shipping name: CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (Glutaraldehyde) Marine pollutant : yes **IATA** UN number: 3265 Class: 8 Packing group: II Proper shipping name: Corrosive liquid, acidic, organic, n.o.s. (Glutaraldehyde)
Section 15: Regulatory Information (non-mandatory) Identifies safety, health, and environmental regulations for the chemical not found anywhere else on the SDS.	 **SECTION 15: Regulatory information** **SARA 302 Components** This material does not contain any components with a section 302 EHS TPQ. **SARA 313 Components** This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313. **SARA 311/312 Hazards** Acute Health Hazard, Chronic Health Hazard **Massachusetts Right To Know Components**
Section 16: Other Information (non-mandatory) Identifies safety, health, and environmental regulations for the chemical not found anywhere else on the SDS.	 **SECTION 16: Other information** **Further information** The information is believed to be correct but is not exhaustive and will be used solely as a guideline, which is based on current knowledge of the chemical substance or mixture and is applicable to appropriate safety precautions for the product. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2020 Sigma-Aldrich Co. LLC. License granted to make unlimited paper copies for internal use only. The branding on the header and/or footer of this document may temporarily not visually match the product purchased as we transition our branding. However, all of the information in the document regarding the product remains unchanged and matches the

Personal Protective Equipment (PPE)

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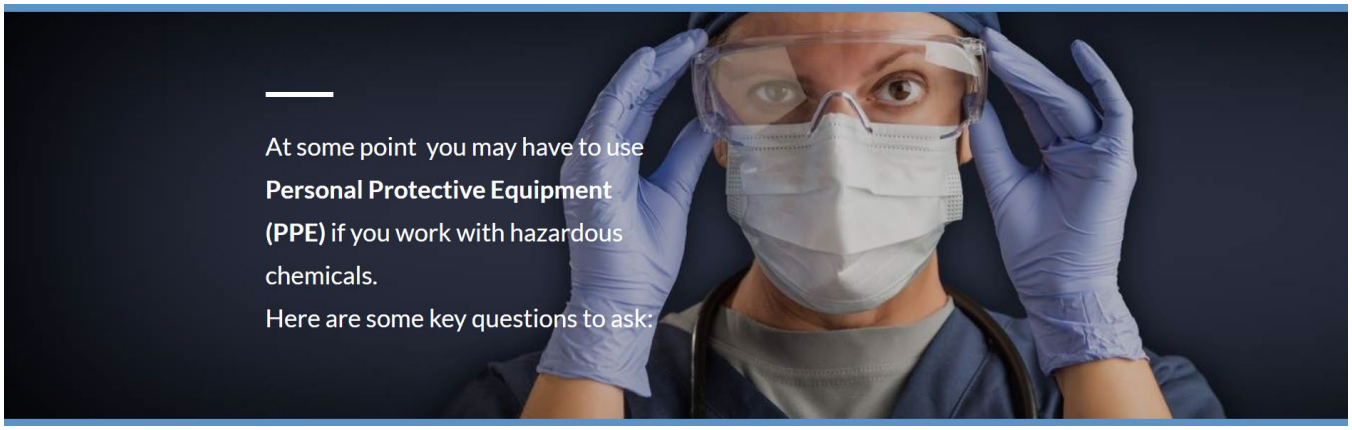


Who must wear PPE?

Anyone who works with hazardous chemicals must wear PPE. Wearing PPE minimizes exposure to dangerous chemicals and can prevent injury or illness.

Who is responsible for providing PPE?

Your employer is responsible for identifying the PPE needed for working with hazardous chemicals. In addition, they must supply the PPE and provide training on how to use it.

What should training on PPE include?

Your employer must provide training that includes:

- When to use PPE
- Type(s) of PPE to use
- Putting on, adjusting, and removing PPE
- Disposing of single-use PPE
- Storing and maintaining reusable PPE, including proper cleaning

What types of PPE should be used?

PPE may include, but is not limited to the following:

Gloves

Protects your hands from chemical exposure. Make sure to use gloves that are right for the chemical you're handling.

Protective Clothing

Shields you from chemical splashes to your clothes or skin.

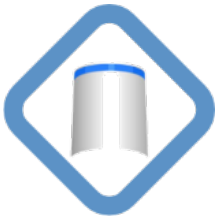
Respirator

Covers your nose and mouth so you don't breathe in dangerous substances. They work best when:

- You use the right type of respirator
- You have proper training
- The respirator fits well
- The respirator is regularly maintained

Goggles

Protects your eyes from chemical splashes. Regular glasses don't offer the same protection as goggles.



Face Shield

Protects your entire face.

Note: *Different types of PPE may be required depending on the chemical you're handling. Your employer will provide guidance on what PPE to use based on that chemical's safety data sheet.*

Common Chemical Hazards

Lesson 9 of 10

There are many hazardous chemicals that you may come across in your work area. You should receive training on how to handle these chemicals safely before starting a new job or whenever new chemicals are introduced.

Here are three common chemicals you might see in your work area:

Glutaraldehyde

Glutaraldehyde is used as a high-level sterilant.

Where You Could Be Exposed	Health Effects	Protection & Treatment
• Dialysis units • Endoscopy areas • Laboratories • Operating rooms (OR) • Locations where surgical instruments are sterilized	• Asthma-like symptoms and breathing difficulty • Throat and lung irritation • Nose irritation, sneezing, wheezing, and nosebleeds • Burning eyes and conjunctivitis • Rash, contact or allergic dermatitis, and hives • Staining of the hands (brownish or tan) • Headaches and nausea	• Store glutaraldehyde products in closed containers in well-ventilated areas. • Wear proper PPE, such as goggles, gloves, and gowns, when working with glutaraldehyde. • Ensure an eyewash station is nearby if there is a risk of splashing.

Ethylene oxide

Ethylene oxide (ETO) is a chemical sterilant.

Where You Could Be Exposed	Health Effects	Protection & Treatment
• Procedural areas • Laboratories • Instrument processing departments	• Eye irritation and injury to the cornea • Blisters, skin irritation, or frostbite • Lung injury, respiratory irritation, shortness of breath • Headache, nausea, vomiting • Cancer and reproductive effects	• Ensure proper ventilation when working with ETO gas. • Use ETO detector systems and room monitors to detect gas leaks. • Wear proper PPE and use a dosimeter to measure personal exposure.

Formaldehyde

Formaldehyde is a chemical that can be set to specimens or used for chemical sterilization.

Where You Could Be Exposed	Health Effects	Protection & Treatment
• Laboratories • Operating rooms	• Causes an immune system response, possibly leading to severe allergic reactions in the skin, eyes, and respiratory tract with additional exposure. • Formaldehyde is a cancer hazard. • Can be fatal if ingested or inhaled over a long period of time, even at low levels.	If there's a risk of splashes with solutions containing 0.1% or more formaldehyde, the facility must have an eyewash station near the work area for emergencies.

Wrap-up

Lesson 9 of 10

Course Summary

In this course, you have learned important information on how to protect yourself when working with hazardous chemicals.

These topics were covered in the course:

- Chemical Hazards
- Physical Hazards
- Health Hazards
- OSHA Communication Standard
- Labels & Pictograms
- Safety Data Sheets (SDSs)
- Personal Protective Equipment (PPE)
- Common Hazardous Chemicals

References

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