

When hazardous chemicals are used on the job, workers may be at risk for a variety of health problems if safety precautions are not followed, including:

- Wheezing or Shortness of Breath
- Red, Itchy, or Burning Eyes
- Sore Throat or Coughing
- Headaches or Dizziness
- Skin Rashes or Burns
- Nosebleeds
- Asthma



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When used safely, chemicals can be important tools that help workers complete their daily job tasks. But when warnings are ignored, chemicals can cause hazardous short-term side effects and even severe injuries or illness.

- Mists, vapors, and gases from chemicals can irritate the eyes, nose, throat, and lungs.
- When splashed or spilled on the body, chemicals can be irritating to the skin or can cause rashes.
- Chemicals that are corrosive can cause severe burns if they get on the skin or in the eyes.
- Sometimes chemicals can cause asthma or trigger asthma attacks.
- Mixing cleaning products that contain bleach and ammonia can cause severe lung damage.

Workers that handle chemicals or are in a work environment where chemicals are used, have a right to know the dangers of those chemicals. The more workers know about a hazardous material, the better equipped they are to safely work with that material.

**OSHA Standard 1910.1200(h)(1)** *Employers shall provide employees with effective information and training on hazardous chemicals in their work area at the time of their initial assignment, and whenever a new chemical hazard the employees have not previously been trained about is introduced into their work area.*

The main source of detailed information about hazardous materials is the safety data sheet (SDS). The safety data sheet provides valuable information for every chemical. The SDS includes:



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- Hazardous chemical ingredients
- Symptoms and health problems that may be caused by the chemical
- First-aid measures if workers are exposed
- Recommended PPE, such as gloves, safety goggles, or respirators
- Proper procedures for cleaning up spills
- Safe handling procedures and recommended storage guidance

All employees should know where to find and have easy access to a list of chemical hazards that may be encountered on the job and the safety data sheet for each one of those substances.

- Companies that use, handle, or store hazardous materials should keep all safety data sheets in a central location for easy reference. SDSs must be readily accessible to employees.

Chemical exposure at hazardous levels usually occurs in one of three ways:

- Inhalation – Breathing in contaminated air in the form of gas, vapors, mist, dust, fumes, or smoke
- Ingestion – Swallowing chemicals via contaminated food or unwashed hands
- Skin Contact – Spilling or wiping chemicals directly onto the skin, or into the eyes

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**OSHA Standard 1910.133(a)(1) and 1926.102(a)(1)** *The employer shall ensure that each affected employee uses appropriate eye or face protection when exposed to eye or face hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation.*

Chemical hazards and toxic substances pose a wide range of health hazards and physical hazards.



**Skin Irritants** cause the skin to become cracked, dry, or inflamed or can burn the skin.

- Many chemicals can be harmful to the skin including dyes, pigments, fertilizers, adhesives, paint remover, disinfectants, solvents, and some cleaning products.



**Corrosives** have the ability to destroy body tissue, which could be anything they come in contact with like the skin, eyes, respiratory system, or digestive tract.

- Dangerous corrosive chemicals include hydrochloric acid, nitric acid, and caustic soda.



**Carcinogens** may cause cancer depending on many factors like exposure time and duration.

- Some well-known carcinogens include asbestos, formaldehyde, cadmium, and benzene.



**Respiratory Tract Irritants** are substances that can cause inflammation when inhaled and can lead to symptoms like coughing and wheezing.

- Toxic chemicals that can cause respiratory distress include chlorine, ammonia, and sulfur dioxide.



**Respiratory Sensitizers** can trigger a permanent, allergic reaction in the respiratory system. Once this happens, further exposure to the same chemical will produce the allergic response.

- Substances found to be respiratory sensitizers include mineral oils, wood dust, and latex.



**Flammables and Combustibles** can cause fires or explosions.

- A combustible liquid like diesel fuel has a flash point over 100°F while flammable liquids like gasoline and acetone can produce ignitable vapors at normal (lower) temperatures.



**Reactive Chemicals** have the potential to explode, ignite spontaneously, release toxic fumes, or otherwise react dangerously upon contact with air, water, or other incompatible substance.

- Because chemical reactions can be sudden and violent, it's important to always read the container label and SDS for any chemicals you are working with to understand the hazards.

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**OSHA Standard 1910.1200(g)(8)** *The employer shall maintain in the workplace copies of the required safety data sheets for each hazardous chemical and shall ensure that they are readily accessible during each work shift to employees when they are in their work area(s).*

- Read the container label before using any chemical product. Understand the warnings and follow the instructions for use.
- Refer to the safety data sheet (SDS) for additional information on any chemical used at work. The SDS will communicate proper handling and storage procedures, emergency response actions, and first aid guidance.
- Always wear recommended personal protective equipment (PPE) when using chemicals. The container label and the SDS will tell you what PPE to use, which might include gloves, goggles, protective clothing, or respiratory protection.
- Never mix cleaning products, especially products that contain bleach and ammonia. Dangerous gases can be released that when inhaled can cause severe lung damage.
- Never use chemicals at full strength if the instructions say to dilute it.
- Always follow the exact instructions on the label to correctly dilute chemicals. Never exceed the dilution ratio for concentrated chemicals.
- Only use chemicals in work areas that are well-ventilated and have good air distribution or exhaust systems.
- Store chemicals in their original containers in a cool, dry place, or in a storage location advised on the label or SDS. Keep chemical containers closed when they are not in use.



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