



### General

- Benzene is a chemical regulated under [OSHA Standard 1910.1028](#)
- The [OSU Chemical Safety Committee](#) has classified benzene as a [High Hazard Carcinogen](#)
- See guidelines established in section [304: Chemical Carcinogen Safety Program](#) of the OSU Safety (SAF) Policy and Procedures Manual
- **Use of this chemical must be registered and controlled**

### Characteristics

- CAS # 71-43-2
- It is also known as: benzol, benzole, coal naphtha, cyclohexatriene, phenyl hydride
- Clear, sweet-smelling, **highly flammable** liquid
- Harmful if it is inhaled, absorbed through the skin or swallowed
- Although benzene is **carcinogenic**, it can be used with little risk to health if used properly

### Use Registration

- Each individual in charge of an activity using benzene must **register** this use with EHS on a [High Hazard Carcinogen Registration Form](#).

### Monitoring

- Whenever benzene is used outside an approved laboratory fume hood, EHS should be contacted to perform air sampling
- The **permissible exposure level (PEL)** for benzene is **1 ppm time weighted average (TWA)** over an 8-hour workday
- Additional precautions must be taken if benzene levels exceed the PEL
- Users may monitor their own benzene exposure after consulting with EHS
- Results of benzene monitoring must be documented, including:
  - dates, number, and results of testing;
  - methods used in testing and taking air samples;
  - description of the type of any respirators worn;
  - names and social security numbers of the people exposed
- Monitoring documentation must be kept on file for at least **30 years**
- Department responsible for using the benzene must show the **written results** of all benzene testing to all affected workers
- Notification must be made within 15 working days after receiving the results and must include actions to reduce the benzene level if the PEL has been exceeded
- All employees who work with benzene have the right to observe the testing procedures

### Training

- **Before workers use benzene**, they must be given information and training about how to use the chemical safely
- Reviewing and understanding this Safety Instruction will meet the minimum benzene training requirement
- Additional information about benzene is available from EHS and other sources such as the [OSHA Safety and Health Topics](#) webpage.

### Health Hazards of Benzene

- **Short-term exposure** to benzene (well above the levels where it can be smelled) can cause breathless, irritable, euphoric, or giddy feelings
- Throat, eyes, and nose may become irritated
- Symptoms include feeling dizzy, nauseated, intoxicated, or getting a headache
- Severe exposure can cause unconsciousness or convulsions
- **Long-term exposure**, even at very low concentrations, may cause incurable, fatal blood disorders such as anemia or leukemia
- Many of these disorders associated with benzene develop without early symptoms.

#### Contact EHS:

safety@oregonstate.edu  
oregonstate.edu/ehs/  
541 • 737 • 2273

## Protective Clothing and Equipment

- **Respirators** are required where laboratory fume hoods or other local exhaust system use is not feasible
- Respirators must be approved for use with benzene and properly fitted
- Cartridges must be replaced before their service life ends
- Wearers must be trained in use and understand limitations before using any respirator
- Respirator use is further described in the EHS [Respiratory Protection Program](#)
- Never enter an area without proper safety equipment if the area may have benzene concentrations that are too high
- **Protective clothing** should be worn to prevent skin contact if working with benzene
- Use boots, gloves, sleeves, aprons, etc. over any part of the body that might contact liquid benzene
- **Eye and Face protection** should be worn to prevent benzene from being splashed into eyes
- Gear includes safety glasses, splash-proof safety goggles, or a face shield

## Emergency and First Aid Procedures

### Splashed in eyes

- wash out immediately with large amounts of water
- if eyes remain irritated or vision becomes blurry, see a doctor as soon as possible

### Spilled on body

- take off the contaminated clothing
- thoroughly wash the contacted skin with soap and water immediately
- wash contaminated clothes before wearing them again

### Inhaled large amounts

- quickly get the exposed person to fresh air quickly
- apply artificial respiration if the person has stopped breathing
- call for medical assistance

### Swallowed

- **do NOT** induce vomiting
- call for medical assistance

## Precautions for Safe Use, Handling, and Storage

- Benzene is highly **flammable**
- Store in tightly closed containers in a cool, well-ventilated area away from sparks or flames
- **Transfer** of benzene from one container to another must be done in a well-ventilated area
- Transfer only with grounded, non-sparking equipment
- Benzene vapors are heavier than air so vapors may travel along the ground and ignite somewhere away from where it is being handled
- Fire extinguishers must be readily available

## Signs and Labels

- **WARNING SIGNS must be posted** at entrances to areas where exposure to benzene might reasonably be expected to exceed the PEL; Signs must contain the following wording:

**DANGER  
BENZENE  
MAY CAUSE CANCER  
HIGHLY FLAMMABLE LIQUID AND VAPOR – DO NOT SMOKE  
WEAR RESPIRATORY PROTECTION IN THIS AREA  
AUTHORIZED PERSONNEL ONLY**

- All benzene **CONTAINERS** must be labeled with chemical name and hazard information and should include a carcinogen pictograph label:

OSU version:



GHS version:



### **Spill and Disposal Procedure**

- Contact EHS for assistance in dealing with all benzene spills of **more than 500 ml**
- **Small spills** (less than 500 ml) should be immediately cleaned up using an appropriate absorbent
- **Waste material** should be contained and disposed of through per the directives described in the [Chemical Waste Disposal](#) section of the [Hazardous Material Disposal Guide](#)
- Benzene must not be poured down the sewer system.

### **Medical Surveillance**

- A **medical surveillance program** must be established for those people who work regularly with benzene **at or above the PEL**
- Contact EHS for the specific benzene levels and program procedures

### **Additional Information**

- Contact EHS for more information regarding safe handling procedures