General
- Benzene is a chemical regulated under OSHA Standard 1910.1028
- The OSU Chemical Safety Committee has classified benzene as a High Hazard Carcinogen
- 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.
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 entrance 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:
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