



WEEKLY SAFETY MEETING

BENZENE

Benzene is clear liquid solvent made from petroleum. Benzene has a recognizable odor described as “pleasant and sweet”. Benzene vapors are heavier than air and may travel to a source of ignition and flash back. The vapors are readily dispersed by wind movement and/or air currents. It evaporates into the air very quickly and dissolves slightly in water. Benzene is a highly flammable liquid that can accumulate static electricity. Liquid benzene tends to float on water and may travel to a source of ignition and spread fire. Benzene is highly reactive with no oxidizing materials. Gasoline contains 1% to 4% benzene which is the reason it is found at refineries. As a gasoline (petrol) additive, benzene increases the octane rating and reduces knocking. Benzene still ranks in the top 20 chemicals for production volume in the United States. Some industries use benzene to make other chemicals which are used to make plastics, resins, and nylon and synthetic fibers. Benzene is also used to make some types of rubbers, lubricants, dyes, detergents, drugs, and pesticides. Natural sources of benzene include volcanoes and forest fires. Benzene is also a natural part of crude oil, gasoline, and cigarette smoke. Toluene is now often used as a substitute for benzene. The solvent-properties of the two are similar, but toluene is less toxic and has a wider liquid range.

The following adverse health effects are important to remember where there may be a potential exposure to Benzene:

- + **Acute:** At high concentrations (1000 PPM) Benzene has an acute effect on the central nervous systems causing headaches, dizziness, drowsiness, unconsciousness, and possible death. Acute exposure can also cause breathlessness, irritability, and giddiness.
- + **Chronic:** Benzene has the chronic exposure effect on bone marrow (aplastic anemia leukemia). Chronic exposure can also cause convulsions, liver damage, heart damage, blood diseases (aplastic anemia), and cancer (leukemia). These symptoms can take months or years to surface and can develop without physical or visible indications.

Following are basic guidelines if an employee has been or is exposed to levels above OSHA permissible limits:

- + Regular jobsite inspections by the Project Manager or competent person.
- + Engineering controls help keep the source emissions low or limit the amount of exposure to the employee. Controls include ventilation systems that capture the contaminant at the source, or process changes to minimize the amount of time the employee spends around exposure sources.
- + The areas where benzene levels are above the permissible exposure limit of 1 ppm are called “exposure control areas”. These areas may change depending on the type of work that is done and the measured level of benzene in the air.
- + The boundaries of the exposure area must be marked. These are areas where exposures are dangerous without proper protection and training. If you aren’t authorized and trained to use a respirator, you can’t enter these areas.
- + Benzene liquid is highly flammable and vapors may form explosive mixtures in air. Fire extinguishers must be readily available in areas where benzene is used or stored.
- + Wash your hands before eating, drinking or smoking or using the bathroom.
- + Don’t eat, drink or smoke in the work area where you are exposed to benzene. Separate areas will be provided for break and lunch activities.
- + Cover containers when they aren’t in use. The rule points out that this helps prevent unnecessary vapor exposure and helps prevent spills.
- + Rigorous housekeeping is necessary to keep airborne benzene levels below permissible limits.
- + If benzene liquid could splash on your skin or eyes, you’ll need to wear protection.
- + You must wear an approved respirator in designated “exposure control areas” – the areas with the warning signs.
- + If benzene is spilled on you, or if you know or believe you have inhaled benzene, let your supervisor know immediately.
- + Leave the area immediately.
- + Do not attempt to clean up the spill.
- + As mentioned earlier, benzene has a pleasant sweet odor which most people detect at a level above the permissible limit. If you can smell it, it probably means you have been overexposed to it. If you smell it while wearing your respirator, then your respirator is leaking and either needs to be fit properly or the reason for the leak determined. If you develop any symptoms commonly associated with benzene exposure, we will make a medical exam available to you.
- + Benzene is one of the Lower Explosive Limit (LEL) components detected by our Winger MSA gas monitors.



Meeting Date: _____
 Supervisor: _____

Trainer: _____
 Location: _____

Attendees: (Please print clearly)

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WEEKLY SAFETY MEETING

BENZENE QUIZ

1. Benzene:
 - Is a clear liquid solvent made from petroleum.
 - Has a recognizable odor described as "pleasant and sweet".
 - Vapors are heavier than air and may travel to a source of ignition and flash back.
 - Vapors are readily dispersed by wind movement and/or air currents.
 - Evaporates into the air very quickly and dissolves slightly in water.
 - Is a highly flammable liquid that can accumulate static electricity.
 - Liquid benzene tends to float on water and may travel to a source of ignition and spread fire.
 - Is highly reactive with no oxidizing materials.

True or False?

2. Benzene does not cause any health effects. True or False? _____
3. Benzene has a Permissible Exposure Limit (PEL) of 1 ppm. True or False? _____
4. Benzene is not highly flammable. True or False? _____
5. If you are working in an area with the likelihood of benzene present, you do not have to wear any additional PPE. True or False? _____
6. Boundaries where benzene may be present must be marked. True or False? _____
7. Containers need to be closed to prevent spills and the escape of vapors present. True or False? _____
8. If you have inhaled benzene, notify your supervisor and safety director immediately. True or False? _____
9. Benzene is one of the Lower Explosive Limits (LEL) components detected by our Winger MSA gas monitors? True or False? _____
10. Personal hygiene such as washing your hands before eating, drinking, smoking or using the bathroom are required. True or False? _____



Printed Name: _____ **Trained by:** _____

Signature: _____ **Trained by Signature:** _____

Date: _____ **Location:** _____