

BENZENE

➤ What is benzene?

- Benzene is a chemical that is a colorless or light yellow liquid at room temperature. It has a sweet odor and is highly flammable.
- Benzene evaporates into the air very quickly. Its vapor is heavier than air and may sink into low-lying areas.
- Benzene dissolves only slightly in water and will float on top of water.

➤ How could you be exposed to benzene?

- Outdoor air contains low levels of benzene from tobacco smoke, gas stations, motor vehicle exhaust, and industrial emissions.
- Indoor air generally contains levels of benzene higher than those in outdoor air. The benzene in indoor air comes from products that contain benzene such as glues, paints, furniture wax, and detergents.
- The air around hazardous waste sites or gas stations can contain higher levels of benzene than in other areas.
- Benzene leaks from underground storage tanks or from hazardous waste sites containing benzene can contaminate well water.
- People working in industries that make or use benzene may be exposed to the highest levels of it.
- A major source of benzene exposure is tobacco smoke.

➤ How does benzene work?

- Benzene works by causing cells not to work correctly. For example, it can cause bone marrow not to produce enough red blood cells, which can lead to anemia. Also, it can damage the immune system by changing blood levels of antibodies and causing the loss of white blood cells.
- The seriousness of poisoning caused by benzene depends on the amount, route, and length of time of exposure, as well as the age and preexisting medical condition of the exposed person.

➤ Immediate signs and symptoms of exposure to benzene

- People who breathe in high levels of benzene may develop the following signs and symptoms within minutes to several hours:

- Drowsiness
 - Dizziness
 - Rapid or irregular heartbeat
 - Headaches
 - Tremors
 - Confusion
 - Unconsciousness
 - Death (at very high levels)
- Eating foods or drinking beverages containing high levels of benzene can cause the following symptoms within minutes to several hours:
 - Vomiting
 - Irritation of the stomach
 - Dizziness
 - Sleepiness
 - Convulsions
 - Rapid or irregular heartbeat
 - Death (at very high levels)
 - If a person vomits because of swallowing foods or beverages containing benzene, the vomit could be sucked into the lungs and cause breathing problems and coughing.
 - Direct exposure of the eyes, skin, or lungs to benzene can cause tissue injury and irritation.
 - Showing these signs and symptoms does not necessarily mean that a person has been exposed to benzene.

➤ **What are long-term health effects of exposure to benzene?**

- The major effect of benzene from long-term exposure is on the blood (long-term exposure means exposure of a year or more). Benzene causes harmful effects on the bone marrow and can cause a decrease in red blood cells, leading to anemia. It can also cause excessive bleeding and can affect the immune system, increasing the chance for infection.
- Some women who breathed high levels of benzene for many months had irregular menstrual periods and a decrease in the size of their ovaries. It is not known whether benzene exposure affects the developing fetus in pregnant women or fertility in men.
- Animal studies have shown low birth weights, delayed bone formation, and bone marrow damage when pregnant animals breathed benzene.
- The Department of Health and Human Services (DHHS) has determined that benzene causes cancer in humans. Long-term exposure to high levels of benzene in the air can cause leukemia, cancer of the blood-forming organs.

➤ **How can you protect yourself, and what should you do if you are exposed to benzene?**

- First, if the benzene was released into the air, get fresh air by leaving the area where the benzene was released. Moving to an area with fresh air is a good way to reduce the possibility of death from exposure to benzene in the air.
 - If the benzene release was outside, move away from the area where the benzene was released.
 - If the benzene release was indoors, get out of the building.
- If you are near a release of benzene, emergency coordinators may tell you to either evacuate the area or to “shelter in place” inside a building to avoid being exposed to the chemical.
- If you think you may have been exposed to benzene, you should remove your clothing, rapidly wash your entire body with soap and water, and get medical care as quickly as possible.
- **Removing your clothing**
 - Quickly take off clothing that may have benzene on it. Any clothing that has to be pulled over the head should be cut off the body instead of pulled over the head.
 - If you are helping other people remove their clothing, try to avoid touching any contaminated areas, and remove the clothing as quickly as possible.
- **Washing yourself**
 - As quickly as possible, wash any benzene from your skin with large amounts of soap and water. Washing with soap and water will help protect people from any chemicals on their bodies.
 - If your eyes are burning or your vision is blurred, rinse your eyes with plain water for 10 to 15 minutes. If you wear contacts, remove them after washing your hands and put them with the contaminated clothing. Do not put the contacts back in your eyes (even if they are not disposable contacts). If you wear eyeglasses, wash them with soap and water. You can put your eyeglasses back on after you wash them.
- **Disposing of your clothes**
 - After you have washed yourself, place your clothing inside a plastic bag. Avoid touching contaminated areas of the clothing. If you can't avoid touching contaminated areas, or you aren't sure where the contaminated areas are, wear rubber gloves or put the clothing in the bag using tongs, tool handles, sticks, or similar objects. Anything that touches the contaminated clothing should also be placed in the bag.

- Seal the bag, and then seal that bag inside another plastic bag. Disposing of your clothing in this way will help protect you and other people from any chemicals that might be on your clothes.
- When the local or state health department or emergency personnel arrive, tell them what you did with your clothes. The health department or emergency personnel will arrange for further disposal. Do not handle the plastic bags yourself.
- If you think your water supply may have benzene in it, drink bottled water until you are sure your water supply is safe.
- If someone has swallowed benzene, do not try to make them vomit or give them fluids to drink. Also, if you are sure the person has swallowed benzene, do not attempt CPR. Performing CPR on someone who has swallowed benzene may cause them to vomit. The vomit could be sucked into their lungs and damage their lungs.
- Seek medical attention right away. Dial 911 and explain what has happened.

➤ **How is benzene poisoning treated?**

Benzene poisoning is treated with supportive medical care in a hospital setting. No specific antidote exists for benzene poisoning. The most important thing is for victims to seek medical treatment as soon as possible.