

**WAC 296-849-60010 Health information about benzene.** (1) You must include an explanation of the contents of this section to employees as required in Training, WAC 296-849-11050.

(2) You must provide a copy of this section to the licensed health care professional (LHCP) as required in Step 4 of the medical evaluation process found in Medical evaluations, WAC 296-849-12030.

**Table 7  
General Health Information About Benzene**

<p><b>What is benzene?</b></p> <p>Benzene is a clear, colorless liquid with a pleasant, sweet odor. It evaporates into air very quickly. The odor of benzene does not provide adequate warning of its hazard.</p> <p>In this chapter, "benzene " means:</p> <ul style="list-style-type: none"> <li>- Liquid benzene, benzene vapor, and benzene in liquid mixtures and the vapor released by these liquids. The CAS Registry Number that identifies benzene is 71-43-2.</li> </ul> <p>Synonyms for benzene include: Benzol, benzole, coal naphtha, cyclohexatriene, phenyl hydride, pyrobenzol.</p> <p>Benzin, petroleum benzin, and benzine are chemicals that do <b>not</b> contain benzene.</p>
<p><b>How am I exposed to benzene?</b></p> <p>Benzene exposure occurs when you:</p> <ul style="list-style-type: none"> <li>- Breathe in (<b>inhale</b>) vapor or liquid particles (from actions such as spraying or splashing) containing benzene;</li> <li>- Have skin or eye contact with liquid or vapor containing benzene. Benzene is absorbed through the skin. Absorption occurs more rapidly with abraded skin or when benzene is present in solvents (as an ingredient or contaminant) which are readily absorbed;</li> <li>- Swallow (<b>ingest</b>) benzene.</li> </ul>
<p><b>What happens after I'm exposed to benzene?</b></p> <p>Some benzene that enters your body will be absorbed into the bloodstream. Once in the bloodstream, benzene travels throughout your body and can be temporarily stored in the bone marrow and fat.</p> <p>Benzene is converted to products, called metabolites, in the liver and bone marrow. Some of the harmful effects of benzene exposure are caused by these metabolites.</p> <p>Most of the metabolites of benzene leave the body in the urine within 48 hours after exposure.</p>
<p><b>Why is medical monitoring necessary?</b></p> <p>Medical monitoring is necessary to detect changes in your body's blood-forming system, including the bone marrow. These changes can occur due to repeated or prolonged, unprotected exposure to benzene, even at relatively low concentrations. Such changes can lead to various blood disorders, ranging from anemia to <b>leukemia</b>, an irreversible, fatal disease. Many of these disorders may occur without symptoms.</p> <p>Benzene is classified as a confirmed <b>human carcinogen</b> (Group 1) by the International Agency for Research on Cancer (IARC).</p> <p>To learn more about the medical monitoring process, see Medical evaluation, WAC 296-849-12030.</p>

## **What health effects are linked to benzene exposure?**

Unprotected exposure to benzene is associated with various health effects including symptoms and diseases associated with either short-term (**acute**) exposure or long-term exposure (**chronic**).

### **Acute effects from inhaling high vapor concentrations:**

An **initial** stimulatory effect on the central nervous system (brain and spinal cord) can occur, characterized by exhilaration, nervous excitation (irritability), and/or giddiness. This may be followed by a period of depression, drowsiness, or fatigue.

Headache, dizziness, nausea, or a feeling of intoxication may develop.

A sensation of tightness in the chest may occur, accompanied by breathlessness. Ultimately the victim may lose consciousness.

In severe inhalation cases, tremors, convulsions, and death may follow due to respiratory paralysis or circulatory collapse in a few minutes to several hours.

### **Acute effects from inhaling liquid benzene:**

Aspiration of small amounts of liquid benzene immediately causes pulmonary edema (excessive accumulation of fluid in lung tissues) and hemorrhage of pulmonary tissue.

### **Skin contact:**

Direct contact may cause redness (erythema).

Benzene has a defatting action on skin. Repeated or prolonged contact may result in any of the following:

- Primary irritation;
- Dry skin;
- Scaling dermatitis (inflammation);
- Development of secondary skin infections.

### **Effects on the eyes and mucous membranes:**

Localized effects from vapor or liquid contact on the eye are slight. High concentrations of benzene are irritating to eyes (causing a stinging sensation) and mucous membranes of the nose and respiratory tract.

### **Effects due to prolonged exposure:**

The blood forming (hematopoietic) system is the main target for benzene's toxic effects. These effects can vary from anemia to **leukemia**, an irreversible, fatal disease. Many of the toxic effects may occur without symptoms.

Most importantly, prolonged exposure to **small** quantities of benzene vapor is damaging to the blood forming system. This damage has occurred at concentrations of benzene that may not cause irritation of mucous membranes or unpleasant sensory effects.

**Early signs and symptoms** are varied and often not readily noticed and nonspecific. These include:

- Subjective complaints of headache, dizziness, and loss of appetite may precede or follow clinical signs;
- Rapid pulse and low blood pressure, in addition to a physical appearance of anemia, may accompany a subjective complaint of shortness of breath and excessive tiredness.

**Other symptoms may occur as the condition progresses:**

- Bleeding from the nose, gums, or mucous membranes;
- AND
- Development of purpuric spots (small bruises).

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. WSR 18-22-116, § 296-849-60010, filed 11/6/18, effective 12/7/18; WSR 07-03-153, § 296-849-60010, filed 1/23/07, effective 6/1/07.]