

# Oregon Department of Human Services

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## TECHNICAL BULLETIN

# HEALTH EFFECTS INFORMATION

Prepared by:  
Department of Human Services  
ENVIRONMENTAL TOXICOLOGY SECTION  
Office of Environmental Public Health  
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**ETHYLBENZENE**

**For More Information Contact:**

**Environmental Toxicology Section  
(971) 673-0440**

**Drinking Water Section  
(971) 673-0405**

## **SYNONYMS**

Ethyl benzene, Ethylbenzol, EB, Phenylethane

## **USES**

Ethylbenzene is used mostly as a gasoline and aviation fuel additive. It is also used as a solvent in industry, and as an ingredient in the manufacture of polystyrenes and various other organic chemicals. It may also be present in consumer products such as some paints, inks, plastics and pesticides.

## **CHEMICAL AND PHYSICAL PROPERTIES**

Ethylbenzene is a clear, colorless liquid at room temperature which evaporates rapidly when exposed to air. It's moderately soluble in water and very soluble in organic solvents. It has a gasoline-like odor and may be detectable by odor at levels of 29 parts per billion or less. Ethylbenzene's molecular formula is  $C_6H_5.CH_2-CH_3$ .

## **OCCURRENCE AND SOURCES OF ETHYLBENZENE**

Ethylbenzene is a normal constituent of petroleum and coal tar products. It can also be manufactured synthetically. It is used industrially as a solvent and as a solvent additive. Many fuels contain ethylbenzene. Gasoline contains about 2% by weight.

This compound evaporates readily and enters the air both as an evaporation product in fuel vapors, and as a constituent of exhaust from burned fuels. It is present as vapor in air discharges from industries that use it, and small amounts of it enter the air by evaporation from consumer products such as fuels, paints, inks and pesticides. It may also be present in liquid wastes and solid wastes from industries that manufacture or use it. Probably the greatest threats to groundwater are posed by large or continuous spills of fuels or other contaminated liquids, including leaking underground fuel tanks.

## **ENVIRONMENTAL FATE**

Vapors of ethylbenzene in the air are degraded continuously to less hazardous compounds. Air levels seldom pose a hazard to humans or animals except in enclosed areas such as factories or other places where ventilation is restricted and

there is a concentrated source of ethylbenzene. Small amounts of ethylbenzene in air can be dissolved in rainwater and carried into the soil. Serious soil contamination occurs when fuels or other products containing ethylbenzene are dumped, buried or spilled on the ground. The ethylbenzene can then leach downward into water supplies. Once it is underground it lasts longer (as long as a year in some cases) than if it were in the air or in surface water. In surface water ethylbenzene evaporates and biodegrades within hours or days (half-lives vary from a few hours to two weeks depending on weather and other conditions.) Groundwater in the U.S. very commonly contains ethylbenzene, but usually at levels of 100 ppb or less. The recommended drinking water limit is likely to be exceeded only when there is a significant, continuous contamination source such as a leaking fuel tank or industrial source.

## **DRINKING WATER STANDARDS**

The US Environmental Protection Agency has set a Maximum Contaminant Level (MCL) for Ethylbenzene of 0.7 mg/L (ppm). The Department of Human Services recommends that water containing more than 0.7 mg/l of ethylbenzene be avoided for any food or drinking purposes.

## **REMOVING ETHYLBENZENE FROM DRINKING WATER**

Aeration and activated carbon filtration can eliminate or reduce ethylbenzene levels in water to acceptable levels. Since no single treatment method can remove all possible contaminants and because all treatment methods have some disadvantages, we recommend that you call the Department of Human Services (971-673-0408) for advice before you buy or install any treatment equipment.