



ETHYLBENZENE

FACT SHEET ON A DRINKING WATER CHEMICAL CONTAMINANT

GENERAL INFORMATION

Synonyms:

- EB; Phenyl Ethane; Ethylbenzol

Chemical Description:

- A volatile synthetic compound produced commercially by the alkylation of benzene with ethylene

Properties:

- Aromatic, clear, flammable liquid
- Moderately soluble in water
- Very soluble in organic solvents
- Low vapor pressure

Production and Use:

- Uses include:
 - major component in gasoline
 - manufacture of styrene and acetophenone
 - solvent
 - asphalt and naphtha constituent
- Also present in mixed xylenes used in agricultural insecticide sprays

ENVIRONMENTAL PROFILE

Occurrence:

- An infrequent contaminant of both surface and ground waters

Releases:

- Releases to the environment are widespread and occur as a result of exhaust connected with its use in gasoline; also released through emissions, wastewater, and spills from its production and industrial use

Environmental Fate:

- **Released to soil:** will rapidly evaporate to air; moderate adsorption to soil, and likely to migrate to ground water (especially in soil with low organic content)
- **Released to air:** will chemically degrade rapidly; subject to wash-out by rain

- **Released to surface water:** will rapidly evaporate to air; will be removed by adsorption to sediment; fairly rapid biodegradation; once in ground water, it will have limited mobility, and be persistent due to slow evaporation and biodegradation rates
- High potential for bioaccumulation, especially in fish and other aquatic organisms

HEALTH EFFECTS

Humans:

- Short-term, inhalation study showed effects such as drowsiness, fatigue, headache, and mild eye and respiratory irritation

Experimental Animals:

- Although there is a general lack of data on the toxic effects of ethylbenzene, toxic effects have been observed predominantly in the liver, kidney, central nervous system (CNS) and eyes
- Low acute toxicity
- Non-mutagenic
- Inadequate data on carcinogenic potential

REGULATORY PROFILE

Existing Standards:

- **Clean Air Act (CAA):** Regulated
- **Clean Water Act (CWA):**
 - Criteria established
- **Resource Conservation and Recovery Act (RCRA):**
 - Not regulated
- **Superfund (CERCLA):**
 - Hazardous substance
- **SARA:** Toxic chemical
- **Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA):**
 - Not registered
- **Toxic Substances Control Act (TSCA):**
 - Regulated

HEALTH INFORMATION

Maximum Contaminant Level Goals (MCLG):

- Non-enforceable levels based solely on an evaluation of possible health risks and exposure, and taking into consideration a margin for public safety
- Set at 0.7 mg/L to protect against damage to the liver, kidneys, and nervous system

MCLG for Ethylbenzene = 0.7 mg/L
(effective July 1992)

Maximum Contaminant Levels (MCL):

- Legally enforceable levels for contaminants in public drinking water supplies
- Based on health risks associated with the contaminants, analytical methods for their assay, and water treatment feasibility and practicality aspects
- Exceedance of the MCL in drinking water may result in adverse effects which will depend upon the contaminant concentration in water, amount of water/contaminant ingested, length of exposure, and other biological parameters

MCL for Ethylbenzene = 0.7 mg/L
(effective July 1992)

EPA Health Advisories (HA):

- **Short-term HAs:** Provide acceptable concentrations of contaminants in water for up to 10 day exposures, primarily to evaluate the public health risk resulting from an accidental spill or an emergency contamination situation
- **Longer-term HAs:** Provide guidance for persistent water contamination situations to cover a period of up to 7 years
- **Lifetime HAs:** Derived in the same way as an MCLG

Health Advisories:

Short-term HA for a child = 3.2 mg/L
Longer-term HA for a child = 0.97 mg/L
Longer-term HA for an adult = 0.97 mg/L
Lifetime HA = 0.68 mg/L

ANALYTICAL METHODS

- Purge and Trap Gas Chromatography:
EPA Method 502.1
EPA Method 503.1

- Purge and Trap Column Gas Chromatography with Photoionization and Electrolytic Conductivity Detectors in Series:
EPA Method 502.2
- Purged Column Gas Chromatography/Mass Spectrometry:
EPA Method 524.1
- Capillary Column Gas Chromatography/Mass Spectrometry:
EPA Method 524.2

WATER TREATMENT

Permanent Treatment:

- **Best Available Technology (BAT):**
 - Granular Activated Carbon
 - Packed Tower Aeration

SHORT-TERM HAZARD ELIMINATION

- If the drinking water standards are exceeded, install BAT or use an alternative drinking water supply such as bottled water

ADDITIONAL HELP

- State or county health officials can indicate a certified laboratory for testing
- Experts in the state Department of Environmental Protection or Natural Resources may also be of help
- The EPA has toll-free numbers for further information on drinking water quality, treatment technologies, for obtaining Health Advisories, and for other regulatory information
- EPA Hotlines are available Monday through Friday
 - **Safe Drinking Water:** 800-426-4791
 - **National Pesticides:** 800-858-7378
 - **Superfund/RCRA:** 800-424-9346
- For information on the Clean Water Act, call (202) 260-7301
- For information on the Toxic Substances Control Act, call (202) 554-1404
- For information on the Clean Air Act, call (919) 541-2777