



1,2-DICHLOROETHANE

FACT SHEET ON A DRINKING WATER CHEMICAL CONTAMINANT

GENERAL INFORMATION

Synonyms:

- Ethylene Dichloride; EDC; 1,2-Dichloroethane

Chemical Description:

- Synthetic organic compound; no natural sources

Properties:

- Clear, volatile, oily liquid
- Boiling point 83.7°C

Production and Use:

- Production in 1983 was 12 billion pounds
- Major use is in production of vinyl chloride
- Minor uses are as a starting material for production of other solvents, a lead scavenger in gasoline, metal degreaser, and an additive to solvents, paints, and adhesives

ENVIRONMENTAL PROFILE

Occurrence:

- Common in air in urban areas at concentrations less than 0.2 parts per billion
- Surface waters contain 0.5 to 20 parts per million—higher levels than ground water
- No available information on EDC in food

Releases:

- Releases result mainly from EDC use as a solvent and metal cleaner
- Released primarily to air with smaller amounts to surface and ground waters

Environmental Fate:

- Degrades in air within a few months
- Photooxidation is its predominant fate
- Binds to soil but also migrates to ground water where it may remain for months to years

HEALTH EFFECTS

Humans:

- Acute oral poisoning causes central nervous system (CNS) disorders and may cause adverse lung, kidney, liver, circulatory, and gastrointestinal effects; death most often due to circulatory and respiratory failure
- Data are inadequate to categorically state that EDC is a human carcinogen; however, there is ample animal data to classify EDC as a group B2 carcinogen, a probable human carcinogen

Experimental Animals:

- Single oral doses in mammals—CNS depression, cardiovascular collapse, renal damage, death
- Long-term inhalation exposure for 8 months in various mammalian species—lung congestion, myocarditis, degenerative changes in liver, kidney, adrenal, and heart, and increased clotting time
- No reproductive or developmental effects reported in mice following oral doses
- Oral doses for 78 weeks in rats—cancer of stomach, circulatory system, and mammary glands and in mice—cancer of mammary glands and lungs
- Mutagenic in some *in vitro* bacterial tests

REGULATORY HISTORY

Existing Standards:

- **Clean Air Act (CAA):** Being considered for listing
- **Clean Water Act (CWA):** Registered
- **Resource Conservation and Recovery Act (RCRA):** Listed for ground-water monitoring
- **Superfund (CERCLA):** Reportable Quantity 100 pounds
- **SARA:** Listed
- **Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA):** Not available
- **Toxic Substances Control Act (TSCA):** Not on inventory

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 zero for cancer-causing chemicals in water

MCLG for EDC = 0 mg/L

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

MCL for EDC = 0.005 mg/L (adopted 7/8/87)

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 = 0.74 mg/L

Longer-term HA for a child = 0.74 mg/L

Longer-term HA for an adult = 2.6 mg/L

ANALYTICAL METHODS

- Gas chromatography
EPA Method 502

WATER TREATMENT

Permanent Treatment:

Best Available Technology (BAT):

- granular activated carbon adsorption
- aeration
- boiling
- air stripping

SHORT-TERM HAZARD ELIMINATION

- If the drinking water standards are exceeded, install BAT or use an alternative drinking water supply such as bottled water
- Boiling for 5 to 10 minutes effectively removes 88% to 98% of EDC originally present—potential inhalation hazard

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, 8:30 a.m. to 4:30 p.m. EST:
 - **Safe Drinking Water:** 800-426-4791
 - **Air Quality:** 800-631-2700
 - **National Pesticides:** 800-858-PEST
 - **Superfund/RCRA:** 800-424-9346
800-343-3958
- For information on the Clean Water Act, call (202) 260-7301
- For information on the Toxic Substances Control Act, call (202) 554-1404