



# DIBROMOCHLOROPROPANE

## FACT SHEET ON A DRINKING WATER CHEMICAL CONTAMINANT

### GENERAL INFORMATION

#### Synonyms:

- DBCP; 1,2-Dibromo-3-Chloropropane
- Trade Names: Nemagon; Fumazone; Nemaflume; Nemaset; BBC12; OS-1897; Nemanex; Nemanex; Oxy DBCP, etc.

#### Chemical Description:

- Organic chemical used as a pesticide

#### Properties:

- Amber colored liquid with a pungent odor
- Slightly soluble in water
- Low vapor pressure

#### Production and Use:

- Used as a soil fumigant for nematode control before 1979 when EPA cancelled all uses except on pineapple fields in Hawaii

### ENVIRONMENTAL PROFILE

#### Occurrence:

- Results of EPA's 1990 National Pesticide Survey (NPS) indicate that DBCP was present above the MCL of 0.0002 mg/L in rural domestic wells nationwide, but was not found in Community Water System (CWS) wells

#### Releases:

- Because DBCP is applied by subsurface injection, the potential for migration and contamination of ground water is high
- May enter ground water from direct entry into a well through accidental chemical spills or improper storage near a well

#### Environmental Fate:

- **Highly persistent in the environment:**
  - will volatilize rapidly from the soil surface and from surface waters (major route of removal in both media)
  - will degrade slowly in soil by microbial action and hydrolysis (shown to persist in soils for more than two years)
  - highly mobile in soil (low adsorption to soil) with a high potential for migration to groundwater and is more likely to be present in ground water than surface water

- May have potential for bioaccumulation

### HEALTH EFFECTS

#### Humans:

- No case studies of acute exposure, but chronic exposure caused reduced sperm production in male chemical plant and agricultural workers

#### Experimental Animals:

- Short-term, high-dose studies indicate that DBCP exposure causes detrimental effects upon functions of the liver, kidneys, and testes
  - primary effects are impaired function and degeneration of liver and kidneys, as well as decreased spermatogenesis and degeneration of the testes and seminiferous tubules
- Long-term, high-dose studies indicate effects similar to those of short-term exposure
  - additional effects include occurrence of stomach nodules, lesions of the kidneys, nasal cavity, and upper respiratory system, and increased mortality
- Causes reduced sperm counts in males, (may be due to the fact that epichlorohydrin is a major metabolite of DBCP in mammals) but recovery of normal sperm counts is expected once exposure ceases
- Equivocal evidence of mutagenicity
- High fetotoxic and carcinogenic potential

### REGULATORY PROFILE

#### Existing Standards:

- **Clean Air Act (CAA):** Not regulated
- **Clean Water Act (CWA):**
  - No criteria established
- **Resource Conservation and Recovery Act (RCRA):**
  - Hazardous waste
- **Superfund (CERCLA):**
  - Hazardous substance
  - **SARA:** Toxic chemical
- **Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA):**
  - 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 zero mg/L to protect against cancer

**MCLG for Dibromochloropropane = Zero 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 Dibromochloropropane = 0.0002 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 = 0.02 mg/L

Longer-term HA for a child =

Not recommended

Longer-term HA for an adult =

Not recommended

Lifetime HA = Not recommended

## ANALYTICAL METHODS

- Microextraction and Gas Chromatography  
EPA Method 504

## 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, Natural Resources, or Agriculture 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