TOXAPHENE

FACT SHEET ON A DRINKING WATER CHEMICAL CONTAMINANT

GENERAL INFORMATION

Synonyms:
- Chlorinated Camphene; Camphechlor; Polychlorocamphene
- Trade Names: Camphoclor; Phenotox; Camphofene Huileux; Chlor Chem T-590; Strobane T; Cristoxo; Phenacide; Toxakil, etc.

Chemical Description:
- Complex mixture of at least 177 polychlorinated C_{10} compounds

Properties:
- Waxy, amber-colored solid with a mild turpentine-like odor
- Slightly water soluble
- Low vapor pressure

Production and Use:
- Prior to 1982, when the EPA cancelled most uses of toxaphene, it was a widely used pesticide and herbicide on many food and non-food crops, and was also used to eradicate undesirable fish species
- Currently used as an insecticide on cattle and sheep, and in certain crops in the Virgin Islands and Puerto Rico

ENVIRONMENTAL PROFILE

Occurrence:
- Not expected to be a common contaminant of drinking water supplies, but has been found at low levels in surface waters (and sediment), and air in areas where toxaphene was applied

Releases:
- May enter the environment from industrial discharges, agricultural runoff, atmospheric deposition, and accidental spills

Environmental Fate:
- **Extremely persistent in the environment:**
  - relatively stable under environmental conditions
  - will adsorb to soils (low mobility) and have a low potential for migration to ground water
  - will biodegrade slowly in certain soils
  - may photodegrade in strong sunlight
  - will be removed from surface water by adsorbtion to suspended particles and deposition in sediment
  - will volatilize from surface waters and on soil
  - high potential for bioaccumulation, especially in fish and other aquatic organisms

HEALTH EFFECTS

Humans:
- Case studies of toxaphene poisoning indicate that it causes diffuse stimulation of the central nervous system (CNS) resulting in salivation, restlessness, hyperexcitability, muscle tremors or spasms, convulsions, and sometimes loss of consciousness and death (due to respiratory failure)

Experimental Animals:
- Exposure may occur via ingestion, inhalation, or dermal contact
- Short-term, high-dose studies indicate that CNS depression and stimulation, with symptoms similar to those in humans, is the primary effect
- Long-term, high-dose studies revealed that liver and kidney degeneration, as well as CNS deprivation and stimulation, were chronic effects; may have immunosuppressive effects
- No fetotoxic or teratogenic effects reported
- Equivocal evidence of mutagenic potential
- High carcinogenic potential

REGULATORY PROFILE

Existing Standards:
- **Clean Air Act (CAA):** Not regulated
- **Clean Water Act (CWA):**
  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):**
  Not 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 Toxaphene = 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
- Current MCL = 0.005 mg/L

MCL for Toxaphene = 0.003 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 = 0.04 mg/L
Longer-term HA for a child =
Insufficient data to calculate
Longer-term HA for an adult =
Insufficient data to calculate
Lifetime HA = Not recommended

ANALYTICAL METHODS

- Microextraction and Gas Chromatography
  EPA Method 505
- Gas Chromatography with an Electron Capture Detector
  EPA Method 508

WATER TREATMENT

Permanent Treatment:

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

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