



2,4-D

FACT SHEET ON A DRINKING WATER CHEMICAL CONTAMINANT

GENERAL INFORMATION

Synonyms:

- 2,4-Dichlorophenoxyacetic acid
- Trade names (more than 1500 products): Agrotect; Amidox; Amoxone; Aqua Kleen; Barwell; Dinoxol; Estone; Herbidal; Hormatox; Phenox; Salvo; Tributon; Weedone; Weed-B-Gon; Weed-No-More; Transamine; Miracle

Chemical Description:

- Chlorinated hydrocarbon herbicide applied as an acid and as various esters and amine salts of the acid compound

Properties:

- White, crystalline powder at room temperature
- Slightly soluble in water
- Low vapor pressure

Production and Use:

- Used chiefly as an herbicide to control grasses and broadleaf weeds in numerous crops; also used in non-crop sites (industrial and home/garden settings) to control perennial weeds and grasses
- Used primarily on wheat, corn, rangeland/pastures, sorghum, barley, and lawns; generally applied after plant emergence by aerial spray or ground equipment
- Approved for use in and around water (lakes, ponds, estuaries, drainage ditches, etc.)

ENVIRONMENTAL PROFILE

Occurrence:

- Infrequent contaminant of drinking water supplies, with greater potential for contamination of surface waters than ground waters
- Has not been reported to occur above the MCL in ground water or surface water derived drinking water supplies

Releases:

- Enters surface water as a result of runoff from treated soil or direct application to water
- May enter ground water from direct entry into a well through accidental chemical spills or improper storage near a well

Environmental Fate:

- Non-persistent in the environment:
 - will biodegrade (major removal process) with almost complete biodegradation in soil and surface water within 2 to 8 weeks
 - metabolized by plants
 - readily degraded by soil bacteria
 - will not volatilize from either soil or water
 - mobile in soil, but rate is dependant upon soil type (will only adsorb to certain soils); may migrate to ground water
 - susceptible to photodegradation
 - subject to wash-out by rain from the atmosphere
 - low potential for bioaccumulation

HEALTH EFFECTS

Humans:

- Cases of human exposure indicate that 2,4-D causes damage to the nervous system

Experimental Animals:

- Limited animal data, but both acute and chronic studies indicate that 2,4-D has adverse effects upon functions of the nervous system, liver, and kidneys
- Has fetotoxic effects, but is only weakly teratogenic or nonteratogenic
- Equivocal evidence of mutagenic potential
- Little data on 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 0.07 mg/L to protect against damage to the liver, kidneys, and nervous system

MCLG for 2,4-D = 0.07 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 = 0.1 mg/L

MCL for 2,4-D = 0.07 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 = 0.3 mg/L

Longer-term HA for a child =

Insufficient data to calculate

Longer-term HA for an adult =

Insufficient data to calculate

Lifetime HA = 0.07 mg/L

ANALYTICAL METHODS

- Gas Chromatography with an Electron Capture Detector
EPA Method 515.1

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