United States Environmental Protection Agency | Office of Water 4601 | EPA 811-F-95-003n-T October 1995

National Primary Drinking Water Regulations

Endothall

CHEMICAL/ PHYSICAL PROPERTIES

CAS NUMBER: 145-73-3

COLOR/ FORM/ODOR: Odorless, white crystals

M.P.: 144° C (decomposes)

VAPOR PRESSURE: very low at room temp.

OCTANOL/WATER PARTITION (KOW): N/A

DENSITY/SPEC. GRAV.: 1.431 at 15° C

SOLUBILITY: 100 g/L of water at 20° C; Very soluble in water

SOIL SORPTION COEFFICIENT: Koc <2; *high mobility in soil*

ODOR/TASTE THRESHOLDS: N/A

HENRY'S LAW COEFFICIENT: N/A

BIOCONCENTRATION FACTOR: BCF <1 in fish; not expected to bioconcentrate in aquatic organisms.

TRADE NAMES/SYNONYMS: Hexahydro-3,6-endo-epoxy-1,2-benzenedicarboxylic acid; Accelerate; Aquathol; Des-i-cate; Endothall Turf Herbicide; Endothall Weed Killer; Herbicide 273; Hydrothol; Herbon Pennout; Hydout.

DRINKING WATER STANDARDS

MCLG: 0.1 mg/L

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HAL(child): 1- to 10-day: 0.8 mg/L

Longer-term: 0.2 mg/L

HEALTH EFFECTS SUMMARY

Acute: EPA has found endothall to potentially cause the following health effects from acute exposures at levels above the MCL: depressed breathing and heart rate.

Drinking water levels which are considered "safe" for short-term exposures: For a 10-kg (22 lb.) child consuming 1 liter of water per day, upto a ten-day exposure to 0.8, or up to a 7-year exposure to 0.2 mg/L.

Chronic: Endothall has the potential to cause the following health effects from long-term exposures at levels above the MCL: increased organ weights and organ-to-body weight ratios of stomach and intestine.

Cancer: There is inadequate evidence to state whether or not endothall has the potential to cause cancer from a lifetime exposure in drinking water.

USAGE PATTERNS

Endothall is used as a defoliant for a wide range of crops and as a herbicide for both terrestrial and aquatic weeds. It is used as a desiccant on lucerne and on potato, for the defoliation of cotton, to control aquatic weeds and as an aquatic algicide growth regulator. It has been used for: sugar beets, turf, hops sucker suppression; alfalfa, clover desiccants; potato vine killers.

EPA estimated total domestic usage in 1982 to have been approximately 1.5 million lbs. In California in 1984, 87,000 lbs. of the mono(N,N-diethylalkylamine) salt were used; 4,000 lbs. of the dimethylamine salt were used; minor amounts of the dimethylalkylamine and dipotassium salts were used. Its estimated applications in California were as follows: Cotton production, 95.6%; Sugarbeets, 3.9%; Remainder in landscape maintenance or "public health pest control."

RELEASE PATTERNS

Release of endothall to the environment is expected to occur primarily during its use as a pre-emergence, post-emergence, turf and aquatic herbicide and harvest aid. Other sources of release include loss during manufacturing, formulation, packaging or disposal of this herbicide.

Since endothall is not a listed chemical in the Toxics Release Inventory, data on releases during its manufacture and handling are not available.

ENVIRONMENTAL FATE

If released to soil, endothall is expected to rapidly biodegrade under aerobic conditions. The half-life of endothall in soil is reported to be 4 to 9 days. Endothall should be highly mobile in soil; however, rapid degradation would limit the extent of leaching. Its persistence in soil may be prolonged by adsorption to organic matter or by factors inhibiting microbial activity. Chemical hydrolysis and volatilization are not expected to be significant.

If released to water, endothall should rapidly biodegrade under aerobic conditions (half-life approximately 1

week or less) and biodegrade more slowly under anaerobic conditions. Glutamic acid is a major biotransformation product of endothall under aerobic conditions. Endothall is not expected to oxidize, chemically hydrolyze, photolyze, volatilize or adsorb to suspended solids or sediments in water. The soil adsorption coefficient (Koc) of endothall in sediment/water systems has been measured to be < 2.

If released to the atmosphere, endothall is expected to exist predominantly on particles and should either settle out or wash out in precipitation. It is not expected to chemically react or photolyze in the atmosphere.

The whole body bioconcentration factor (BCF) of endothall in bluegill (Lepomis macrochirus) has been measured to be < 1. Based on a its water solubility, a BCF of < 1 has also been calculated. With these BCF values, endothall is not expected to bioaccumulate in aquatic organisms.

The most probable routes of human exposure to endothall are inhalation and dermal contact of workers involved in the manufacture, handling or application of endothall. The general public could potentially be exposed through use for lawn weed control.

Other Regulatory Information

Monitoring:

For Ground/Surface Water Sources:

Initial Frequency- 4 quarterly samples every 3 years

Repeat Frequency- If no detections during initial round:
2 quarterly per year if serving >3300 persons;
1 sample per 3 years for smaller systems

Triggers - Return to Initial Freq. if detect at > 0.009 mg/L

Analysis:

Reference Source	Method Numbers
EPA 600/4-88-039	548.1

Treatment:

Best Available Technologies

Granular Activated Charcoal

For Additional Information:

- EPA can provide further regulatory and other general information:
  - EPA Safe Drinking Water Hotline - 800/426-4791

- Other sources of toxicological and environmental fate data include:
  - Toxic Substance Control Act Information Line - 202/554-1404
  - Toxics Release Inventory, National Library of Medicine - 301/496-6531
  - Agency for Toxic Substances and Disease Registry - 404/639-6000
  - National Pesticide Hotline - 800/858-7378