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

National Primary Drinking Water Regulations

Dalapon

CHEMICAL/ PHYSICAL PROPERTIES

CAS NUMBER: 75-99-0

COLOR/ FORM/ODOR:
Colorless liquid with an acrid odor; sold as sodium or magnesium salt

M.P.: 20° C B.P.: 190° C

VAPOR PRESSURE: N/A

OCTANOL/WATER PARTITION (KOW):
Log Kow = 0.778

DENSITY/SPEC. GRAV.: 1.4 at 15° C

SOLUBILITY: 800 g/L of water at 25° C; Very soluble in water

SOIL SORPTION COEFFICIENT:
Koc N/A; very high mobility in soil

ODOR/TASTE THRESHOLDS: N/A

BIOCONCENTRATION FACTOR:
BCF =1 to 3; not expected to bioconcentrate in aquatic organisms.

HENRY'S LAW COEFFICIENT:
6.3×10^{-8} atm-cu m/mole

TRADE NAMES/SYNONYMS: 2,2-dichloroproprionic acid; 2,2-DPA; Revenge; Alatex; Basfapon; Basinex; Crisapon; Dawpon-RAE; Ded-Weed; Dowpon; Gramevin; Kenapon; Liropon; Propon; Radapon; Unipon; S-1315; S-95

DRINKING WATER STANDARDS

MCLG: 0.2 mg/L

MCL: 0.2 mg/L

HAL(child): 1- to 10-day: 3 mg/L
longer-term: 0.3 mg/L

HEALTH EFFECTS SUMMARY

Acute: EPA has found dalapon to potentially cause the following health effects from acute exposures at levels above the MCL: no effects, but readily absorbed into and widely distributed throughout the body.

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, up to a ten-day exposure to 3 mg/L or up to a 7-year exposure to 0.3 mg/L.

Chronic: Dalapon has the potential to cause the following health effects from long-term exposures at levels above the MCL: increased kidney-to-body weight

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

USAGE PATTERNS

Dalapon is a herbicide used to control grasses in a wide variety of crops, including fruit trees, beans, coffee, corn, cotton and peas. It is also registered for use in a number of non-crop applications such as lawns, drainage ditches, along railroad tracks, and in industrial areas. Dalapon is marketed as the sodium salt or as a mixture of the sodium and magnesium salts.

Domestic production of dalapon in 1982 ranged between 7 and 9 million lbs. active ingredient. In 1984, its use in California was reported as follows: Non-food use, 92.9% (89.9% use on rights of way); main food crop treated was sugarbeet (6.7% of total).

RELEASE PATTERNS

Dalapon is released directly to the environment in its use as a herbicide for the control of annual and perennial grasses.

Since dalapon 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, microbial degradation and leaching appear to be the important environmental fate processes. Dalapon leaches readily in soil; however, under conditions favorable for microbial growth, microbial degradation will probably proceed at a faster rate than leaching. In the absence of microbial action, dalapon degradation in soil is slow. The resultant average persistence of dalapon at recommended rates of application has been reported to be two to four weeks in most agricultural soils during the growing season, although a persistence of six months has been observed in soils of various forests and tree nurseries.

If released to water, microbial degradation, hydrolysis, and photolysis are potentially important in the removal of

dalapon. The hydrolysis half-life of dalapon and its salts in water is on the order of several months at temperatures less than 25 deg C, with the hydrolysis forming pyruvic acid. Under conditions favorable for microbial growth, dalapon decomposition via microorganisms will probably be complete within one month which will diminish the importance of chemical hydrolysis. Direct photolysis in water may be possible, although photolytic rates have not been investigated under environmental conditions. Aquatic volatilization and adsorption to sediments are not expected to be significant.

If released to the atmosphere, dalapon will react in the vapor-phase with photochemically produced hydroxyl radicals at an estimated half-life rate of 72.3 days. Atmospheric removal via washout may be possible since dalapon is extremely water soluble.

Bioconcentration is not expected to be significant. The BCF measured for dalapon (sodium salt) during a 3-day exposure in an aquarium was 3 for fish and less than one for snails. BCF's of less than one have been measured for poultry, rodents, dogs, and cows.

Occupational exposure to dalapon may occur through dermal and inhalation routes associated with the formulation and application of dalapon herbicide.

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 > 0.001 mg/L

Analysis:

Reference Source	Method Numbers
EPA 600/4-88-039	515.1; 552.1

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