

US EPA ARCHIVE DOCUMENT

Technical Factsheet on: PICLORAM

[List of Contaminants](#)

As part of the Drinking Water and Health pages, this fact sheet is part of a larger publication:
National Primary Drinking Water Regulations

Drinking Water Standards

MCLG: 0.5 mg/L

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HAL(child): 1- to 10- day: 20 mg/L; Longer-term: 0.7 mg/L

Health Effects Summary

Acute: EPA has found picloram to potentially cause the following health effects from acute exposures at levels above the MCL: damage to central nervous system, weakness, diarrhea, weight loss.

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, a one- to ten-day exposure to 20 mg/L or up to a 7-year exposure to 0.7 mg/L.

Chronic: Picloram has the potential to cause the following health effects from long-term exposures at levels above the MCL: liver damage.

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

Usage Patterns

Picloram is a systemic herbicide used in salt form for controlling annual weeds on crops, and in combination with 2,4-D or 2,4,5-T against perennials on non-croplands for brush control. Picloram is used to control bitterweed, knapweed, leafy spurge, locoweed, larkspur, mesquite, prickly pear, and snakeweed on rangeland in the western states.

EPA estimates that 300,000 lbs. of picloram were produced in the US in 1982.

Release Patterns

Picloram is released to the environment primarily from its application as a herbicide, and also during its production and handling. Since picloram is not a listed chemical in the Toxics Release Inventory, data on releases during its manufacture and handling are not available.

Environmental Fate

Picloram is the most persistent of the chlorobenzoic acid herbicides.

If picloram is released to soil it will not be expected to adsorb to the soil and may leach to groundwater, a conclusion supported by the detection of picloram in some groundwater samples. However, picloram is an aromatic amine, and some aromatic amines have been shown to bind to humic materials which may be present in some moist soils; this binding may decrease leaching processes. It will not be expected to hydrolyze or evaporate from soils or surfaces. It may be subject to significant biodegradation in soils and ground water, with reported half-lives in soils ranging from 55-100 days or more.

If released to water it will not be expected to adsorb to sediments, to evaporate, or to appreciably hydrolyze. It will be subject to significant near surface photolysis with reported half-lives ranging from 2.3-41.3 days. Based on biodegradation in soils and groundwater, it may be subject to degradation in surface waters. As an aromatic amine, its rate of degradation in water and soil may be increased due to oxidation by free radicals, adsorption to humic materials followed by oxidation, and catalytic oxidation by cations, although no experimental data specific to picloram were found.

If released to the atmosphere it will be subject to significant deposition and washout due to its low vapor pressure (will adsorb to particulate matter) and significant water solubility. It may also be subject to significant direct photolysis. The estimated vapor phase half-life in the atmosphere is 12.21 days as a result of reaction with photochemically produced hydroxyl radicals. Picloram is not expected to bioconcentrate in aquatic organisms based on a reported BCF of 31 in fish and estimated BCFs of 1 to 20.

General human exposure will occur mainly through its manufacture and use as a herbicide.

Chemical/ Physical Properties

CAS Number: 1918-02-1

Color/ Form/Odor: Colorless crystals or powder with a chlorine-like odor; forms water soluble salts

M.P.: 218-219 C B.P.: _ C

Vapor Pressure: 6.2×10^{-7} mm Hg, 25 C

Octanol/Water Partition (Kow): N/A

Density/Spec. Grav.: N/A

Solubility: 430 mg/L of water at 25 C; Soluble in water

Soil sorption coefficient: Koc average= 13; moderate mobility in soil

Odor/Taste Thresholds: N/A

Bioconcentration Factor: BCF=31 in fish; not expected to bioconcentrate in aquatic organisms.

Henry's Law Coefficient: N/A; negligible volatilization

Trade Names/Synonyms: 4-amino-3,5,6-trichloropicolinic acid; "Agent White"; Tordon

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 > 0.0001 mg/L

Analysis:

Reference Source Method Numbers

EPA 600/4-88-039 515.1; 515.2; 555

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