Technical Factsheet on: DINOSEB

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: 0.007 mg/L
MCL: 0.007 mg/L
HAL(child): 1 to 10 day: 0.3 mg/L; Longer-term: 0.01 mg/L

Health Effects Summary

Acute: EPA has found dinoseb to potentially cause the following health effects from acute exposures at levels above the MCL: sweating, headache, mood changes.

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 0.3 mg/L or up to a 7-year exposure to 0.01 mg/L.

Chronic: Dinoseb has the potential to cause the following health effects from long-term exposures at levels above the MCL: decreased body and thyroid weight, degeneration of testes; thickening of intestinal lining.

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

Usage Patterns

Dinoseb is a contact herbicide used as the ammonium or amine salt for post-emergence weed control in cereals, undersown cereals, seedling lucerne and peas.

Oil solutions of dinoseb are used for pre-emergence control of annual weeds in beans, peas and potatoes, for pre-harvest dessication of hops, leguminous seed crops, potatoes and for control of runners and suckers in strawberries and raspberries. Dinoseb is also used as a corn yield enhancer and an insecticide and miticide.

1982 production of dinoseb was reported as 6.2 million lbs., with consumption estimates as follows: as an herbicide for soybeans, 32%; vegetable, 23%; deciduous fruits and nuts, 11%; peanuts, 8%; citrus, 3%; grain crops, 2%; other field crops, 6%; industrial/commercial uses, 15%.

Release Patterns

Release of dinoseb has resulted primarily from its use as an herbicide on a variety of weeds.

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

Environmental Fate

Dinoseb is expected to biodegrade in slowly and bind weakly to soil. Therefore, leaching in soil is possible and dinoseb has been detected in groundwater. However, it may bind more strongly to clay soils, especially at acidic pH. Photolytic degrdration of dinoseb from soil surface may be important. Volatilization is not expected to be significant. The laboratory-measured evaporation half-life for dinoseb from a soil surface was 26 days. In the absence of volatilization, the half-life of dinoseb in the vadose zone sandy loam soil was estimated to be about 100 days.

Dinoseb may photodegrade in surface water with a half-life of 14-18 days. The estimated Henry's Law constant of 5.04X10-4 atm cu m/mol suggests that volatilization of dinoseb from water will be slow. It is unlikely to undergo significant biodegradation in most natural waters. Volatilization from water is expected to be slow.

The half-life for the reaction of vapor phase dinoseb with photochemically generated hydroxyl radicals in the atmosphere was estimated to be 14.1 days. Wet deposition may remove some of the compound from air.

Bioconcentration is expected to be insignificant. A bioconcentration factor (BCF) of 68 for dinoseb was estimated from its water solubility (50 mg/L).

Exposure to dinoseb in humans is expected to occur primarily in workers using the herbicide.

Chemical/ Physical Properties

CAS Number: 88-85-7

Color/ Form/Odor: Yellow/orange crystals; pungent odor

M.P.: 38-42 C B.P.: N/A

Vapor Pressure: 1 mm Hg at 151.1 C

Octanol/Water Partition (Kow): N/A

Density/Spec. Grav.: 1.26 at 45 C

Solubility: 0.052 g/L of water at 25 C; tends to form salts which are highly soluble in water

Soil sorption coefficient: Koc =124 (measured); high mobility in soil

Odor/Taste Thresholds: N/A

Bioconcentration Factor: BCF = 68 (est.); not expected to bioconcentrate in aquatic organisms.

Henry's Law Coefficient: 5.04x10-4 atm-cu m/mole (est.)

Trade Names/Synonyms: 2,4-dinitro-6-(1-methyl-propyl) phenol; Dinitrobutylphenol; Aatox; Chemox; Gebutox; Knox-weed; Basanite; BNP 20; Butaphene; Dibutox; Dinitrall; Dinitro; Desicoil; Dow Selective Weed Killer; Hivertox; Ladob; Laseb; Nitropone C; Dytop; Premerge; Hel-fire; Caldon; Kiloseb; Sinox General; Subitex.

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 > 0.0002 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