

Dichlobenil - Hydroxylated in plants into phytotoxic hydroxy-benzonitriles that can react in a fashion similar to **bromoxynil**. Dichlobenil also acts as a mitotic poison inhibiting cell division in meristematic regions-stopping seed germination. Treated stems, roots and leaf petioles may swell and collapse. Dichlobenil kills rooted aquatic weeds by absorbing the chemical through treated hydrosol rather than water absorption.

Degradation

Bromoxynil may be hydrolyzed to benzoic acids in plants.

Dichlobenil is degraded or altered in plants to toxic and nontoxic metabolites.

Behavior in Soils

Adsorption and leaching

Bromoxynil is not strongly adsorbed in soils. Greater adsorption occurs under acidic conditions.

Dichlobenil - Tightly adsorbed by soil colloids (especially organic matter) but can move in the soil in the vapor phase. Vapor phase is encouraged in high temperatures, high soil moisture and low relative humidity. Very little leaching occurs in most soil

types, especially organic soils. Good activity in organic soils.

Persistence

Bromoxynil. Short-lived with a longevity of 1 to 2 months.

Dichlobenil. Much more residual than bromoxynil and can have a longevity of 2 to 12 months, depending upon climate. Soil microorganisms are responsible for its gradual breakdown.

Distinguishing characteristics

- **Bromoxynil** is a postemergence herbicide for seedling broadleaf weeds.
- **Dichlobenil** is a preemergence herbicide for grass and broadleaf weeds.
- **Bromoxynil** is an inhibitor of respiration and photosynthesis through uncoupling of phosphorylation reactions.
- **Dichlobenil** is a mitotic poison and its breakdown products may be uncouplers.
- **Bromoxynil** exhibits rapid contact activity.

Toxicological Properties

<u>Acute Oral toxicity</u>	<u>bromoxynil dichlobenil</u>	
Rats LD ₅₀ (mg/kg)	440	3160

ORGANIC ARSENICALS

Important Members (Table 16)

Table 16. Important members of the organic arsenical family.

Common Name	Trade Name(s)	Manufacturer	Water Solubility (ppm)	Vapor Pressure (mm Hg @ 20-30° C)
Cacodylic acid	Rad-E-Cate Phytar 560	Vineland	667,000	nonvolatile
MSMA	Arsenate Buono 6 Daconate 6	ISK Biotech etc.	256,000	nonvolatile
DSMA	Crab-E-Rad DSMA Liquid	Vineland ISK Biotech	256,000	nonvolatile
MAA	-----	-----	256,000	nonvolatile
AMA	Super Dal-E-Rad	Vineland	256,000	nonvolatile
CMA	Super-Crab-E-Rad-Calar	Vineland	256,000	nonvolatile