

- Specific for broadleaf weed control in monocot (grass) crops;
- Mechanism of action appears to involve nucleic acid metabolism;
- Dry conditions slow herbicide translocation throughout weed plants;
- Combinations of **2,4-D**, **MCP**, and **dicamba** (a benzoic acid herbicide) appear to be synergistic. They therefore, require less of each than if they are applied alone;
- Most formulations are noncorrosive to spray equipment although some concentrates may be deleterious to painted surfaces. Spray equipment should be washed thoroughly with water and detergent solution after use. It is recommended to have separate designated spray equipment specifically for phenoxy herbicides;
- Most amine formulations have no shelf life limitations and are insensitive to light and temperature.

### Toxicological Properties

<u>Acute toxicity</u>	<u>LD<sub>50</sub>(mg/kg)</u>
2,4-D	375
2,4-DB	1960
2,4-DP	800
MCPA	800
MCP	650

Some formulations of **2,4-D** are relatively toxic to fish and should not be introduced into aquatic environments unless the label specifically indicates they are safe.

## PHTHALIC ACIDS

### Important Members (Table 20)

**Table 20.** Important members of the phthalic acid family.

Common Name	Trade Name(s)	Manufacturer	Water Solubility (ppm)	Vapor Pressure (mm Hg @ 25-35° C)
DCPA	Dacthal	ISK Biotech	0.5	$< 1 \times 10^{-2}$
Endothall	Aquathol Hydrothol Endothal	Elf-Atochem	100,000	nonvolatile

### Uses

These are generally preemergence herbicides used for a wide range of annual broadleaf weeds and grasses. **DCPA** is used in vegetables, ornamentals and turf. **Endothall** has pre and post-emergence activity in turf, aquatics, and sugar beets. It also is used as a nonselective material at higher rates.

### Behavior in Plants

#### *Absorption and translocation*

**DCPA** - Absorbed by emerging coleoptiles, the roots of grass seedlings and the hypocotyls of broadleaf weeds. It is not absorbed by the foliage and is not translocated. Some movement is assumed in the apoplastic system following root or shoot uptake.

**Endothall** - Absorbed readily by roots and translocated to a limited extent to foliar plant parts via the xylem (apoplast) and it is not phloem mobile. Ammonium thiocyanate enhances its foliar activity.

#### *Selectivity*

**DCPA** - Used as a preemergence herbicide for annual grasses and some broadleaf weeds in a number of floral, ornamental, vegetable and agronomic crops as well as turf. **DCPA** is insoluble in water and is formulated as a wettable powder.

**Endothall** - Used as a pre and post-emergence herbicide in turf and aquatics as well as a harvest aid. **Endothall** also is used as a non-selective herbicide. Several formulations are used. Different salt formulations are considerably more water soluble than the parent acid. The disodium salt form is used