Toxicological Properties

Acute Oral Toxicity
LD_{50} >5000 mg/kg

CYCLOHEXENDIONES

Important Members (Table 10)

Table 10. Important members of the cyclohexendione family

Common Name	Trade Name(s)	Manufacturer	Water Solubility (ppm)	Vapor Pressure (mm Hg @ 25-35° C)
Sethoxydim*	Vantage Poast	BASF	48	1×10^{-7}
*Sethoxydim is sometimes classified in the Aryl-oxy Phenoxy herbicide family due to similar weed activity.				

Uses

Sethoxydim provides selective postemergence annual and perennial grass control in broadleaf crops, rice, and centipedegrass turf. Broadleaf weeds and sedges are not controlled by **sethoxydim**.

Behavior in Plants

Absorption

It is rapidly foliar-absorbed. Use of an oil concentration at 1 percent (v/v) is required for adequate grass control.

Translocation

Translocates both acropetally and basipetally in the symplast. Accumulates in the meristematic regions of grasses.

Selectivity

Sethoxydim controls annual grasses; plants in the seedling and early tillering stages are most susceptible.

Mechanism of action

The mechanism of action is not fully known but it is believed to be similar to the aryl-oxy-phenoxies, interfering with lipid metabolism. More specifically, **sethoxydim** may inhibit acetyl-coA carboxylase, which catalyzes an early step in fatty acid biosynthesis. This inhibition leads to cell-membrane dysfunction and eventual cell and plant death. Treated foliage will redden, become chlorotic, and die in an inward direction from the leaf tip. Nodes blacken and die and leaves will easily break or pull from the nodal region. **Sethoxydim** is relatively slow acting and symptoms occur over a 3 week period.

Degradation

Sethoxydim is rapidly transformed into many metabolites in soils and plants through oxidation, structural rearrangement, hydroxylation, and conjugation.

Behavior in Soils

Adsorption and leaching

Adsorption is dependent on the soil organic matter content.

Persistence

Soil microbes break down **sethoxydim**. Soil persistence is short with a half-life of the parent compound being 4 to 5 days in loamy sand and 11 days in a loam media. Little preemergence activity can be expected.