

Imazamox Chemical Fact Sheet

Formulations

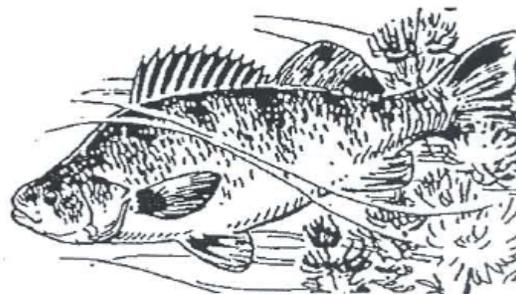
Imazamox is the common name of the active ingredient ammonium salt of imazamox (2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1*H*-imidazol-2-yl]-5-(methoxymethyl)-3-pyridinecarboxylic acid. It was registered with EPA in 2008, and is currently marketed for aquatic use as Clearcast™. It is a liquid formulation that is applied to submerged vegetation by broadcast spray or underwater hose application and to emergent or floating leaf vegetation by broadcast spray or foliar application. There is also a granular version (Clearcast 2.7G™).

Aquatic Use and Considerations

Imazamox is a systemic herbicide that moves throughout the plant tissue and prevents plants from producing a necessary enzyme, acetolactate synthase (ALS), which is not found in animals. Susceptible plants will stop growing soon after treatment, but plant death and decomposition will occur over several weeks.

In Wisconsin, imazamox is used for treating emergent vegetation such as common reed (*Phragmites australis*) and flowering rush (*Butomus umbellatus*). Imazamox may also be used to treat the invasive curly-leaf pondweed (*Potamogeton crispus*). Imazamox is a relatively new herbicide that has not been extensively field tested, so there is some uncertainty regarding the sensitivity of non-target species. Desirable native species that may be affected could include other pondweeds (*P. nodosus*, *P. zosteriformis*, *P. foliosus*, *P. illinoensis*, *P. pusillus*, *P. gramineus*, *P. diversifolius*, *P. perfoliatus*, *P. amplifolius*), water shield (*Brasenia schreberi*) and some bladderworts (*Utricularia* spp.). Higher rates of imazamox will control Eurasian watermilfoil (*Myriophyllum spicatum*), but would also have a greater impact on native plants.

If used as a post-emergence herbicide, imazamox should be applied to plants that are



actively growing. It can also be used during a drawdown to prevent plant regrowth and on the emergent vegetation.

Repeated use of herbicides with the same mode of action can lead to herbicide-resistant plants. Herbicide resistance has now been found in at least one aquatic nuisance plant species. In particular, ALS inhibitor-resistant weeds have appeared at a higher rate than other herbicide types in terrestrial uses. In order to prevent herbicide resistance, avoid using the same type of herbicides year after year, and when possible, use non-herbicide methods of control instead.

Post-Treatment Water Use Restrictions

Treated water may be used immediately following application for fishing, swimming, cooking, bathing, and watering livestock. If water is to be used as potable water or for irrigation, the tolerance is 50 parts per billion (ppb), and a 24-hour irrigation restriction may apply depending on the water body.

Herbicide Degradation, Persistence and Trace Contaminants

Dissipation studies in lakes indicate a half-life ranging from 4 to 49 days with an average of 17 days. Herbicide breakdown doesn't occur in deep, poorly-oxygenated water where there is no light. In this part of a lake, imazamox will tend to bind to sediment rather than breaking down, with a half-life of approximately 2 years.



Once in soil, leaching to groundwater is believed to be very limited.

The breakdown products of imazamox are nicotinic acid and di- and tricarboxylic acids. None of the breakdown products are herbicidal nor suggest concerns for aquatic organisms or human health.

Impacts on Fish and Other Aquatic Organisms

Laboratory tests using rainbow trout, bluegill, and water fleas (*Daphnia magna*) indicate that imazamox is not toxic to these species at label application rates. Imazamox is rated practically non-toxic to fish and aquatic invertebrates. Imazamox does not bioaccumulate in fish.

Additional studies on birds indicate toxicity only at dosages that exceed approved application rates. However, honeybees are affected at application rates so drift during application should be minimized.

Human Health

Most concerns about adverse effects on human health involve applicator exposure. Concentrated imazamox can cause eye and skin irritation and is harmful if inhaled. Applicators should minimize exposure by wearing long-sleeved shirt and pants, rubber gloves, and shoes and socks.

In chronic tests, imazamox was not shown to cause tumors, birth defects or reproductive toxicity in test animals. Most studies show no

evidence of mutagenicity. Imazamox is not metabolized and was excreted by mammals tested. Based on its low acute toxicity to mammals, and its rapid disappearance from the water column due to light and microbial degradation and binding to soil, imazamox is not considered to pose a risk to recreational water users.

For Additional Information

Environmental Protection Agency
Office of Pesticide Programs
www.epa.gov/pesticides

Wisconsin Department of Agriculture, Trade,
and Consumer Protection
<http://datcp.wi.gov/Plants/Pesticides/>

Wisconsin Department of Natural Resources
608-266-2621
<http://dnr.wi.gov/lakes/plants/>

Wisconsin Department of Health Services
<http://www.dhs.wisconsin.gov/>

National Pesticide Information Center
1-800-858-7378
<http://npic.orst.edu/>

