# 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-(methoxymethl)-3-pyridinecarboxylic acid. It was registered with U.S. EPA in 2008 and is currently under registration review. An interim registration review decision was released in 2019. Imazamox is available in liquid and granular formulations. It is labeled for control of emergent, floating-leaf and submerged vegetation using direct foliar, surface or subsurface application. Commercial formulations approved for aquatic use in Wisconsin include Clearcast®, Top Deck™ and Imox™.*

## Aquatic Use and Considerations

Imazamox is a systemic herbicide (i.e., it moves throughout the plant tissue). It is a WSSA Group 2 herbicide, meaning that the mechanism of action is by inhibiting acetolactate synthase (ALS), an enzyme necessary for plant growth. Affected plants will stop growing soon after treatment, and plant decomposition will occur over several weeks.

It is important to note that repeated use of herbicides in the same WSSA group (i.e., with the same mechanism of action) can lead to herbicide-resistant plants, even in aquatic environments. In order to reduce the risk of developing resistant genotypes, avoid using the same type of herbicides year after year, and utilize effective integrated pest management strategies as part of any long-term control program.

Liquid formulations are typically applied to submerged vegetation by broadcast spray or underwater hose application and to emergent or floating leaf vegetation by broadcast spray or foliar application. If used as a post-emergence herbicide, imazamox should be applied to plants that are actively growing. It can also be used during a water level drawdown to prevent plant regrowth and on the emergent vegetation.

In Wisconsin, imazamox is labeled for control of invasive emergent species such as non-native Phragmites (*Phragmites australis* subsp. *australis*), purple loosestrife (*Lythrum salicaria*), flowering rush (*Butomus umbellatus*) and Japanese knotweed (*Fallopia japonica*). Imazamox is also labeled to control invasive submergent species such as curly-leaf pondweed (*Potamogeton crispus*) and Eurasian watermilfoil (*Myriophyllum spicatum*)†. Native species that are labeled as susceptible to imazamox include native pondweeds (*Potamogeton* spp.), coontail (*Ceratophyllum demersum*), sago pondweed (*Stuckenia pectinata*), water stargrass (*Heteranthera dubia*), southern naiad (*Najas guadalupensis*), variable-leaf watermilfoil (*Myriophyllum heterophyllum*), water shield (*Brasenia schreberi*), water lilies (*Nymphaea* spp. & *Nuphar* spp.), pickerelweed (*Pontederia cordata*) and bladderworts (*Utricularia* spp.).†

## Post-Treatment Water Use Restrictions

There are no post-treatment restrictions on fishing, swimming, domestic use, or livestock watering. If imazamox is applied within one-fourth of a mile of a potable water intake, water concentrations must be less than 50 parts per billion before treated water can be used as drinking water. Irrigation restrictions

* Product names are provided solely for your reference and should not be considered exhaustive nor endorsements

† May vary by formulation, application rate, and/or product. Every product label must be carefully reviewed and followed by the user.

may apply depending on irrigation site and type of water body treated.[†]

## Herbicide Degradation, Persistence and Trace Contaminants

The half-life (the time it takes for half of the active ingredient to degrade) of imazamox ranges from 4 to 49 days, with an average half-life of 17 days. Imazamox is degraded by light (photolysis) and microbes. In deep waters where oxygen and light levels are low, imazamox will tend to bind to sediments rather than breaking down and has a half-life of approximately 2 years. Once imazamox binds to sediments, 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 concerns for aquatic organisms or human health.

## Impacts on Fish and Other Aquatic Organisms

Since the mechanism of action involves an enzyme that isn't found in animals, imazamox has low toxicity to animals. Imazamox is rated practically non-toxic to freshwater fish and invertebrates and does not bioaccumulate (the process by which chemicals in the environment or in a food source are taken up by plants or animals) in fish tissues.

Imazamox is also practically non-toxic to birds and mammals.

## 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. Wear proper personal protective equipment and follow label instructions while handling.

Imazamox has not been shown to cause tumors, birth defects, reproductive toxicity, or genetic mutation after long-term exposure. Imazamox is not metabolized by mammals. Based on its low toxicity to mammals and its rapid disappearance from the water column due to degradation and sediment binding, imazamox is not considered to pose a risk to recreational water users.

## For Additional Information

U.S. Environmental Protection Agency (EPA)
Office of Pesticide Programs
epa.gov/pesticides

Wisconsin Department of Agriculture, Trade, and Consumer Protection
datcp.wi.gov/Pages/Programs_Services/ACMOverview.aspx

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

Wisconsin Department of Health Services
dhs.wisconsin.gov

National Pesticide Information Center
1-800-858-7378
npic.orst.edu