March 4, 2019

WI DNR Pesticide Use Advisory Team

This Pesticide Assessment was conducted at the request of the Wisconsin Department of Natural Resources (WI DNR). The Department Pesticide Use Team requested that Dr. Mark Renz (University of Wisconsin Professor and Extension Weed Specialist) review and summarize aspects of active ingredients commonly used for unwanted plant control in forests and natural areas and provide his **professional opinion** on the risks and value of this active ingredient compared to other commonly used practices. For more detailed information about this active ingredient, please consult the US Environmental Pesticide Agency or National Pesticide Information Center. Pesticide labels are the law and must be followed.

Per your request, I am providing information to consider when determining if imazamox should be listed as a general pesticide for use on Wisconsin Department of Natural Resources lands. My comments are related to the specific assessment considerations that you wanted me to consider. Nearly all of my toxicological information is taken directly from the US EPA or state analyses of the use of this product. I have listed links to these resources at the end of this letter.

Imazamox is used for pre and post emergent control of broadleaf and grass weeds in agricultural, industrial, and natural settings. It has been registered for use since 1967 and is still widely used in soybean, alfalfa and other agronomic crops but its use in natural areas was limited until it was approved for aquatic use in 2009. It is currently used for control of several problematic species including phragmites and cattails and a range of other submerged, floating and terrestrial/marginal weed species.

Assessment Considerations

1. What are the human health risks (applicator and the public)? The US Environmental Protection Agency believes imazamox is relatively non-toxic product. While concern exists that it can cause harm by dermal exposure these risks have been found to be acceptable for the proposed use patterns if appropriate personal protective equipment is used. No long-term chronic effects have been found to be of concern.

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2. What are the potential negative environmental impacts and risks? While this product can be moderately persistent in the environment it degrades aerobically by microbes in the soil and photodegrades rapidly in water (half-life 6.8 hours), thus EPA has limited concern about persistence or movement into groundwater. While concern about non-target plant injury exists, it appears safe to a range of wildlife species tested. They state "test results indicate that imazamox is practically non-toxic to avian species, fin fish, aquatic invertebrates and honeybees following acute exposure." The largest concern is the risk of drift onto non-target plants. This will require planning by applicators and following labeled instructions to prevent movement through spray drift or through treated water. Labels provide detailed information and instructions on how to prevent these negative impacts from occurring and I am confident that, ***if followed***, will minimize if not eliminate and impacts to the environment.

3. How effective is the proposed pesticide for the proposed target(s)? Imazamox is effective at controlling cattails phragmites and a range of other submerged, floating and terrestrial/marginal species. While effective, the main limitation of this product is cost as it is often not selected due to the increased cost when compared to other options (e.g. imazapyr).

4. What is the specificity of the proposed pesticide to the proposed target(s)? Imazamox has activity on both broadleaf and grass species, although the selectivity can be manipulated by the rate and method/timing of application. At the rates for use on cattails and phragmites, it should be considered non-selective and ***have the potential*** to cause injury to any species that absorbs this pesticide.

5. Is there a need for a maximum application site frequency and/or area other than specified on the product label? Not that I am aware of, but if used correctly one application per year to a population should be needed. It has developed resistance from widespread use in agricultural systems. This could happen in non-crop areas if use is excessive (annually). The label (Clearcast restricts applications to no more than 1 lbs of ae/A and cannot exceed 2 applications). Concern about water transportation off-site exists; if you believe it will be used on some sites that have this risk, restrictions could be put in place to prevent their use (see #7).

6. Is there another pesticide and/or Integrated Pest Management (IPM) technique that should be considered in-lieu of the proposed pesticide? Few products exist that can be used in areas with water

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present. The other common herbicides used in place of this product include glyphosate and imazapyr. In some cases manipulation of the water level can provide some suppression and should be considered, but few sites have this capability.

7. Other Considerations: Applicators should be cautious when using this product when water is present. Although it does not persist long in aquatic situations, if the treated water moved off-site this could cause significant non-target injury. I would be sure that any water has no chance of movement for several days before treating an area with standing water. The label for the products does have significant language that addresses this issue. It is readily absorbed to the soil surface, so may provide residual control for a time, but it is unlikely to display activity through the entire season as it actively breaks down and is bound tightly to the soils.

- https://www3.epa.gov/pesticides/chem_search/reg_actions/registration/fs_PC-129171_22-May-97.pdf
- http://pmep.cce.cornell.edu/profiles/herb-growthreg/fatty-alcohol-monuron/imazamox/clrcast_mcl_0209.pdf
- https://www.mass.gov/files/documents/2016/08/nm/clearcast_0.pdf

Feel free to contact me if you have any specific questions with regards to this information.

Sincerely,

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