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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. All of my toxicological information is taken directly from the US EPA or other reputable sources of information. I have listed links to these resources at the end of this letter.

Picloram is a selective herbicide providing broadleaf weed control in agricultural and nonagricultural settings, and it is registered for use in terrestrial environments. Terrestrial sites in Wisconsin include pasture and rangeland, non-crop areas, and natural areas. It is applied to foliage of plants that are actively growing or as individual plant treatments to the basal bark or cut surface of woody plants. As most formulations are restricted use pesticides (can only be applied by certified applicators), its use is limited to primarily woody species control in Wisconsin. It has been registered for use since 1964 in the United States and was classified as a restricted use product in 1978 due to phytotoxicity reports and contamination of water supplies. Many alternatives to this product exist in the marketplace and are effective, but its cost and effectiveness on specific species result in minor use for small scale treatment.

Assessment Considerations

1. What are the human health risks (applicator and the public): Toxicity studies indicate that picloram has low to moderate acute toxicity depending on exposure level. Oral and dermal exposure (most common) for picloram and its derivatives are safest and determined to be only slight toxic (categories III and IV). However, inhalation of picloram is highly toxic, and derivatives are moderately toxic. Chronic toxicity is also low for picloram. There is no evidence that picloram is associated with reproductive or developmental toxicity and EPA has classified this product “as showing **no evidence** of carcinogenicity”. However,



subchronic studies have shown that picloram could cause changes in the liver. While risks to human health exist with picloram, EPA thinks the risk is to applicators/handlers only. They estimate that proper use of personal protective equipment (PPE) on the label will minimize this risk to acceptable levels. Given the use pattern in Wisconsin (spot/individual plant treatment), the risk to human health can be minimized if applicators/handlers use the appropriate PPE.

2. What are the potential negative environmental impacts and risks?

Environmental fate: Picloram persists in the environment for moderate to long periods. Soil half-life values can range from 30-513 days depending on the rate applied and environmental conditions. Photodegradation occurs on the soil surface and in water, otherwise breakdown occurs by microorganisms. As it is highly soluble in water it has a high risk of leaching into groundwater, especially if applied at high rates. Picloram is weakly adsorbed to organic matter and clay and potential exists for movement in surface water. Broadcast applications should be avoided in areas with a high-water table and coarse (sandy) soils.

Risk to organisms: Picloram and its derivatives are practically non-toxic to bees, birds, and mammals. While it is moderately toxic to freshwater fish and slightly toxic invertebrates, limiting applications near aquatic environments can limit this potential impact. While picloram can injure non-target plants, application measures (spot/individual plant treatment) can limit this risk. Risk of physical drift to non-target plants exist but can be minimized if following label directions.

3. How effective is the proposed pesticide for the proposed target(s)? Picloram is effective on many broadleaf invasive plants. While other states widely use it for pasture/rangeland weed control, most uses in Wisconsin are on brush/woody plant control and site prep for forestry. This product is effective in controlling woody species and facilitates tree establishment if label directions are used.

4. What is the specificity of the proposed pesticide to the proposed target(s)? Products that contain picloram are used for treating to foliage of invasive broadleaf plants or applied to the



base (basal bark) or cut surface (cut stump) of shrubs/trees. These products provide good to excellent broadleaf control with minimal injury to established grasses.

5. Is there a need for a maximum application site frequency and/or area other than specified on the product label? No.
6. Is there another pesticide and/or Integrated Pest Management (IPM) technique that should be considered in-lieu of the proposed pesticide? Due to the environmental concerns (leaching, surface water flow) other options should be considered prior to application. Several other herbicides can be effective on most species with limited risk (e.g. triclopyr based products for woody plant control, imazapyr based products for site prep). These products are as effective on most species (with a few exceptions) and have reduced risk of leaching/surface water flow compared to picloram. Other techniques for managing invasive plants should be considered prior to application of products containing picloram. These include removal, grazing, burning, and repeated mowing alone or in combination. These techniques have positive and negative attributes which would need to be considered compared to herbicide use. Herbicide use is often selected over non-chemical treatments as these result in a large amount of disturbance (removal) or need to be repeated multiple times at a higher cost to obtain similar levels of success as the use of this herbicide.
7. Other Considerations: Highly desirable plant species (e.g. oaks) are very sensitive to this product. Many large, old oak trees have been injured/killed by using picloram to control shrubs nearby. Steps should be taken to minimize any impact to these and other historical plants on the landscape. Information on the label will provide specific instructions to minimize this impact.



In summary picloram is used to primarily to control invasive woody in natural areas, non-crop areas and in forestry as a site prep application in Wisconsin. Studies suggest that while picloram can be used in terrestrial systems with limited risks to applicators, environmental risks need to also be considered and mitigated before applications. These impacts can be minimized ***if the label is followed***. Use of this product in a limited area (spot/individual plant treatment) will limit the potential impact of this product. If broadcasted, evaluation of the site and physical characteristics (e.g. soil type, depth to groundwater) should occur to avoid non-target injury or other environmental impacts.

References:

R.E.D. FACTS. Picloram. 1995. Environmental Protection Agency. Accessed on 5/6/2022:
https://www3.epa.gov/pesticides/chem_search/reg_actions/reregistration/fs_PC-005101_1-Aug-95.pdf

<http://extoxnet.orst.edu/pips/picloram.htm>

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

Sincerely,

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