



January 19, 2020

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 triclopyr should continue to 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. All of my toxicological information is taken directly from the US EPA or the National Pesticide Information Center. I have listed links to these resources at the end of this letter.

Triclopyr is a selective herbicide providing control of broadleaf weeds/brush in rights of way areas, natural areas, pastures/rangelands, and residential and commercial lawns/ turf and forestry sites in Wisconsin. It has been registered for use since 1979 in non-crop areas, and its use patterns has expanded to turf, forestry and even rice (not WI). It's main use in natural areas in Wisconsin is for woody plant control. While a range of other herbicides are available, the effectiveness, cost, safety to perennial grasses, lack of translocation to desirable woody species that may be root grafted to plants treated (e.g. oak trees) and environment safety make this product the herbicide of choice. It can be applied as a foliar treatment at low concentrations (0.5-1% v:v), or applied to stems (cut surface/stump, basal bark) at higher concentrations (10-50% v:v). Many different products are available and several related active ingredients which include Triclopyr Triethylamine salt (TEA), Triclopyr butoxyethyl ester (BEE) and Triclopyr choline.



These products will likely continue to be the cornerstone of woody plant control in Wisconsin for the next decade.

Assessment Considerations

1. What are the human health risks (applicator and the public)? The USEPA has estimated that triclopyr is slightly toxic if ingested or it contacts the skin but practically non-toxic if inhaled. Studies suggest limited risk to the public. Some formulations of triclopyr (TEA) can be corrosive to the eye, therefore appropriate guidelines have been placed on labels of these products. US EPA has also determined that this product is not a human carcinogen. Proper use of the required personal protective equipment (PPE) will be important to minimize any potential impact, especially while mixing. Reading the label to ensure the user is aware of the specific restrictions with the specific formulation will be important.
2. What are the potential negative environmental impacts and risks?
 - **Environmental fate:** This product persists in the environment to varying degrees based on formulation and the environment. In soil, this molecule degrades by microbes with half-lives between 1 to 90 days depending on soil type. Longer persistence in soil is observed under anaerobic conditions. While triclopyr ultimately degrades into CO₂, one metabolite (TCP) can persist for 30 to 90 days. Triclopyr breaks down readily in water by photodegradation with half-lives between 1-10 days. Triclopyr and degradates are soluble and do not bind tight to soil, so there is potential to leach (detected at depths greater than 45 cm in field studies). Due to this the EPA has placed groundwater advisory statements on labels to caution users to avoid applications in areas where risk is increased (coarse soils with high water-tables).
 - **Risk to organisms:** Formulations vary with their toxicity to birds, mammals, insects, fish and invertebrates. All triclopyr formulations are slightly toxic to practically nontoxic to birds, mammals and insects. BEE has moderate toxicity to fish and invertebrates and is highly toxic to marine fish. Although this risk is severe with some species, the use pattern, registered uses of products, and ability to rapidly degrade in aquatic systems limit exposure to a level



deemed acceptable by the EPA. Using buffer strips and limiting spray drift could further limit this impact.

In summary this product does have potential risks to applicators and the environment. The highest risk is the potential eye exposure with some formulations. Use of formulations that do not have this hazard would alleviate this issue. While groundwater contamination is another concern, the use pattern limits this potential as this herbicide is rarely repeatedly used for weed control to an area (applications once per year at most), especially in natural areas. To further reduce this risk most treatments are applied to individual plants; thus rarely are products broadcasted across the landscape, further reducing risk. This in combination with language EPA has placed on the label on all products minimize this risk to an acceptable level by EPA to warrants its use. Given the history of use with no detections in ground water in Wisconsin I am confident that, ***if the label is followed***, limited to no impacts to the environment will occur.

3. How effective is the proposed pesticide for the proposed target(s)? Triclopyr based herbicides are the cornerstone of woody plant control. While other products are available that can provide equivalent control, rarely do they surpass that of triclopyr. Other products often have other negative attributes (leaching, less selectivity, injury to desirable trees through root grafting) making them less desirable for use.
4. What is the specificity of the proposed pesticide to the proposed target(s)? Triclopyr is a selective herbicide that can be applied to foliage or directed to the stem. Its main use in natural areas is to control woody vegetation and promote the release/establishment of desirable perennial plants. Of primary use would be its use in forested situations for invasive plant control and grasslands for shrub suppression. It is safe to established grasses, and has limited residual activity to plants so revegetation/planting can often occur in the same season as application.
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? Several other products exist that will provide similar results, but they often have a higher cost, environmental concerns, and/or greater non-target impacts. Details would be site and species specific. Other techniques for woody plant control include removal, grazing, burning, and repeated mowing. These techniques have positive and negative attributes which would need to be considered compared to herbicide use but most often these non-chemical treatments either result in a large amount of disturbance (removal) or need to be repeated multiple times to obtain similar levels of success as the use of triclopyr (grazing).

7. Other Considerations: WI DNR has used this product for decades on a range of habitats with success. Given the need to keep woody plants suppressed on DNR lands this is a critical tool needed by land managers.

<https://nepis.epa.gov/Exe/ZyPDF.cgi/20000PDW.PDF?Dockkey=20000PDW.PDF>
<http://npic.orst.edu/factsheets/archive/triclotech.pdf>

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

Sincerely,

Mark Renz PhD
Extension Weed Scientist
Agronomy Dept., University of Wisconsin-Madison
email: mrenz@wisc.edu
Office: 608 263-7437