



# Triclopyr

## Pesticide Fact Sheet: Forestry Use

### Product Information

- Triclopyr is the active ingredient in several forestry products. Products include **Garlon (3A and 4)**, **Pathfinder II**.
- Triclopyr is a systemic herbicide used for woody plant control in forestry and right-of-way vegetation management.
- Triclopyr-based product formulations may be produced as either amine salts or oil-soluble esters. Formulation differences have important effects on toxicity, environmental activity, and mobility. Some formulations may include an oil-based carrier solvent.
- Typical application rates range from 0.3 to 2.0 pounds of active ingredient per acre. Applications may be made by air, ground spray, basal spray, injection, or applications to cut surfaces.
- For comparative purposes, the Environmental Protection Agency (EPA) categorizes pesticides by their short-term toxicity on a scale of I (most toxic) to IV (least toxic). Most undiluted triclopyr products are Toxicity Category I (for eye injury), II, or III depending on the formulation.

### Public Health

- Researchers use animal studies to define the potential for a pesticide to cause harmful effects to human

health. It is important to know that these tests are carried out using doses high enough to cause toxicity (poisoning). Effects seen at toxic doses in animals are unlikely to occur after short-term, low-level exposure in humans. The level of exposure must be considered to estimate the risk of harmful effects.

- Based on laboratory studies, triclopyr is classified as slightly toxic to mammals on a short-term (acute) basis.
- Mammals absorb small amounts of triclopyr and then rapidly eliminate it through the kidneys.
- Triclopyr does not cause birth defects or nerve damage.
- Laboratory tests with pregnant rats showed mild toxicity to the fetus only at very high doses.
- The majority of tests show triclopyr did not cause genetic damage.
- The EPA has classified triclopyr as a Class D carcinogen (not classifiable as a human carcinogen). Available data suggests that triclopyr does not cause cancer.

### Wildlife Effects

- Based on laboratory and field studies, triclopyr is classified as slightly to practically non-toxic to birds on a short-term (acute) basis. Investigations of triclopyr-treated areas show no direct toxic effects on birds.

- Triclopyr oil-soluble ester formulations are highly toxic to cold-water fish such as trout and salmon under laboratory test conditions. Amine formulations are practically non-toxic to fish.

- Triclopyr is not expected to accumulate in the fat of wildlife.

### Environmental Fate

- In water, triclopyr degrades in sunlight. In one field study, triclopyr applied to lakes disappeared in 4 to 8 days.
- Triclopyr has a 2- to 3-month half-life in dry tree leaves.
- Triclopyr amine salt formulations are more water soluble than the oil-soluble ester formulations and have less of a tendency to bind to organic materials in soils. As a result, amine salts are more mobile in soils than the oil-soluble ester-formulated products.
- The half-life of triclopyr in soils appears to be unrelated to formulation type. It ranges from 79 to 361 days in colder climates. A typical soil half-life under mild conditions is 30 to 46 days. The end products of triclopyr breakdown are carbon dioxide, water, and naturally occurring organic acids.
- Based on their chemical and physical properties, salt formulations of triclopyr are classified as highly

mobile and can travel with water through soil and enter groundwater. Triclopyr can also move with runoff and enter surface water. Right-of-way uses should be evaluated for potential ground and surface water contamination.

- Ester formulations of triclopyr have low mobility in soil. The risk of groundwater contamination from normal triclopyr ester use is relatively low.

## Risk Assessment

- The EPA has evaluated use practices, environmental fate, potential exposure routes, and toxicity of triclopyr. They have also evaluated the toxicity of triclopyr and set a Reference Dose (RfD) of 0.05 mg/kg/day. This RfD corresponds to an intake of 3.5 mg/day for a 154 lb. (70 kg) person. Such an intake reflects the amount of daily pesticide exposure judged to pose no appreciable risk over a 70-year lifetime. The RfD for triclopyr is based on the results of the most sensitive animal studies (dog) and includes factors designed to provide large margins of safety.

- EPA has determined that the expected exposure associated with triclopyr in right-of-way uses will not result in adverse health effects. However, you should take reasonable precautions to avoid exposure. Do not walk through freshly sprayed vegetation. Do not eat berries, mushrooms, or other edibles, or drink the water from newly treated areas. If you are concerned about exposure, consult the resources listed in **Additional Information**.

## References

- EXTOWNET: Extension Toxicology Network. Pesticide Information Profile: Triclopyr. Resource Center. Cornell University. Ithaca, NY.

- Kreutzweiser, D.P., D.G. Thompson, S.S. Capell, D.R. Thomas, and B. Staznik. 1995. Field Evaluation of Triclopyr Ester Toxicity to Fish. *Arch. Environ. Contam. Toxicol.* 28, 18-26.

- Meister, R.T., editor. 1996. Farm Chemicals Handbook '96. Meister Publishing Company. Willoughby, OH.

- U.S. Forest Service. 1984. Pesticide Background Statements. Vol. 1. Herbicides. Agriculture Handbook Number 633. U.S. Department of Agriculture. Washington, D.C.

- U.S. Environmental Protection Agency. 1995. Pesticide Environmental Fate One-Line Summary: Triclopyr. Environmental Fate and Effects Division. Washington, D.C.

- U.S. Environmental Protection Agency. 1997. Triclopyr: Pesticide Tolerances for Emergency Exemptions. Federal Register. September 5, 1997. Volume. 62, Number 172, pp. 46888-46894.

Vogue, P.A., E.A. Kerle, and J.J. Jenkins. 1994. OSU Extension Pesticide Properties Database. Department of Agricultural Chemistry. Oregon State University. Corvallis, OR.

## Additional Information: Oregon

- Oregon State University Extension Environmental Chemistry and Toxicology Program  
**1-541-737-5993** Extension Specialist
- Oregon Poison Control  
**1-800-222-1222** (National)  
**1-503-494-8968** (Portland)  
**1-800-452-7165** (Outside Portland)
- Oregon Department of Agriculture  
**1-503-986-4550**  
**1-503-986-4635** (Pesticide Division)
- Oregon Health Division Pesticide Analytical Response Center  
**1-503-731-4025** (8 a.m.-5 p.m., M-F)  
**1-503-731-4030** (evenings, weekends)

## Washington

- Poison Control Center  
**1-800-222-1222** (National)  
**1-206-526-2121** (Seattle)  
**1-800-732-6985** (Outside Seattle)
- Washington Department of Agriculture, Pesticide Management Division  
**1-877-301-4555** (toll free)  
**1-360-902-2040** (Olympia)  
**1-509-576-3064** (Yakima)
- Washington State University Food and Environmental Quality Laboratory  
100 Sprout Road  
Richland, WA 99352-1643  
**1-509-372-7462** (phone)  
**1-509-372-7460** (fax)
- Washington Department of Health  
**1-800-525-0127**  
**1-360-236-3360** (Pesticide Program)  
**1-888-586-9427** (toll free)

## Nationwide

- National Pesticide Information Center  
**1-800-858-PEST (7378)**  
<http://npic.orst.edu/>
- Extension Toxicology Network (EXTOWNET)  
<http://ace.orst.edu/info/extownet/>
- DuPont Agricultural Products  
P.O. Box 80038 Wilmington, DE  
19880-0038  
**1-800-441-7515**  
**1-800-441-3637** (emergency phone)  
**1-302-992-2276** (fax)