



# Hexazinone

## Pesticide Fact Sheet: Forestry Use

### Product Information

- Hexazinone is the common name for the active ingredient in the forestry herbicide products **Velpar** or **Pronone**.
- Hexazinone is used mostly on forests, Christmas trees and some food and forage crops. It can be applied as a pre-emergent or post-emergent herbicide to actively-growing weeds in site preparation and in release areas.
- Foresters use both water-dispersible granule and water-soluble liquid formulations at application rates of 1-3 pounds of active ingredient per acre.
- For comparative purposes, the EPA categorizes pesticides by their short-term toxicity on a scale of I (most toxic) to IV (least toxic). Undiluted hexazinone formulations are Toxicity Category I because of their potential to cause eye damage.

### 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 conducted with technical hexazinone, it is classified as a severe eye irritant. It is moderately toxic to mammals via other routes of exposure on a short-term (acute) basis. In field tests with formulated hexazinone, it is practically non-toxic to mammals.
- Animals fed hexazinone in laboratory studies excreted almost all of the pesticide in 3–6 days. It is unlikely to accumulate in the body.
- Female laboratory animals fed moderate to high doses of hexazinone for two generations had offspring with reduced body weights. However, there was no effect on the mothers' milk production, and researchers observed no other reproductive effects. It is unlikely that normal forestry use of hexazinone would cause birth defects in humans.
- Hexazinone is unlikely to cause genetic damage.

- The EPA has classified hexazinone as a Class D carcinogen (not classifiable as to human carcinogenicity). Laboratory studies suggest that it causes cancer in mice at high doses only. Hexazinone did not cause cancer in rats.

### Wildlife Effects

- Based on laboratory and field studies, technical hexazinone is moderately to slightly toxic to birds and slightly toxic to honey bees.

- Hexazinone is slightly toxic to fish and aquatic insects.
- Hexazinone is not expected to bioaccumulate in wildlife.

### Environmental Fate

- Since hexazinone is quite water soluble, most formulations go into water readily. In natural waters, microbial degradation and photodegradation occur.
- Hexazinone can be absorbed through foliage as well as roots. It may persist in treated woods for greater than 16 months. Stem sections tested after 16 months contained low levels of hexazinone that were unlikely to result in adverse health effects if ingested. Some beneficial plant species, such as larch, are susceptible to hexazinone and can be damaged as a result of normal forestry use.
- Hexazinone breakdown in soils is dependent on soil pH, microbial action, organic matter, and moisture. Half-life estimates in soil range from 1–6 months, with a typical half-life of 90 days. Hexazinone breakdown products are less toxic than those of the parent compound; however, one of the major metabolites is weakly phytotoxic.
- Hexazinone is classified as highly mobile and can travel with water through soil to enter

groundwater. It should not be applied to sandy or sandy loam soils in areas with shallow groundwater. Hexazinone can also move with runoff and enter surface water. Applicators should evaluate forestry uses for their potential to cause ground and surface water contamination.

## Risk Assessment

- The EPA has evaluated use practices, environmental fate, potential exposure routes, and toxicity of hexazinone and has set a Reference Dose (RfD) of 0.05 mg/kg/day. A 70-kg (154-lb) person would have an RfD of 3.5 mg/day. The RfD is the amount of daily pesticide exposure judged to pose no appreciable risk over a 70-year lifetime. The RfD for hexazinone is based on the result of the most sensitive animal studies (dog) and includes built-in safety measures.
- EPA has determined that the expected exposure associated with hexazinone in forestry use 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

- EXTOKNET: Extension Toxicology Network: Information Profile: Hexazinone, <http://ace.orst.edu/info/extoxnet/pips/hexazin.htm> (accessed April 2000).
- Hexazinone Pesticide Fact Sheet, prepared for the U.S. Department of Agriculture, Forest Service by Information Ventures, Inc. <http://infoventures.com/e-hlth/pesticide/hexazino.html> (accessed April 2000).

- Jenkins, J.J. and P.A. Thomson. 1999. OSU Extension Pesticide Properties Database. Department of Environmental and Molecular
- Toxicology. Oregon State University, Corvallis, OR.
- McCarty, L.B., L.C. Miller, and T. Whitwell. 1998-1999. Weed Control: Postemergence Herbicides. Clemson University. [http://www.sodsolutions.com/turfmgmt/weeds\\_post\\_emerg.html](http://www.sodsolutions.com/turfmgmt/weeds_post_emerg.html) (accessed April 2000).
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- Sidhu, S.S. and J.C. Feng. 1990. Environmental Impacts of Vegetation Management by Mechanical and Chemical (Hexazinone) Methods Including Residue Chemistry. Forestry Canada and the Alberta Forest Service, Project #1412-97, Edmonton, Alberta.
- Tomlin, C.D.S., Ed. 1997. The Pesticide Manual, Eleventh Edition. British Crop Protection Council. United Kingdom.
- VELPAR Technical Information, DuPont Agricultural Products.

## Additional Information: Oregon

- Oregon State University Agricultural Chemistry Research and Extension  
**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 Division)  
**1-888-586-9427** (toll free)

## Nationwide

- National Pesticide Information Center  
**1-800-858-PEST (7378)**  
<http://npic.orst.edu/>
- Extension Toxicology Network (EXTOKNET)  
<http://ace.orst.edu/info/extoxnet/>
- 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)