



# Imazapyr

## Pesticide Fact Sheet: Forestry Use

### Product Information

Imazapyr is the common name for the active ingredient in the herbicide products **Arsenal** and **Chopper**.

Imazapyr is a systemic plant growth inhibitor. This chemical is biologically active in plants at low concentrations. Imazapyr is rapidly taken up by the plant, where it inhibits an enzyme essential to plant growth. This enzyme is not present in other organisms.

Arsenal is a formulated salt of imazapyr (53.1% active ingredient and 46.9% inert ingredients). It is used primarily to control woody plants in forestry. Chopper, also formulated as a salt (27.6% active ingredient, 72.4% inert ingredients), is another formulation of imazapyr.

Arsenal and Chopper are typically applied at rates of 0.06 to 1.25 pounds of active ingredient per acre. The products can be applied to foliage, freshly cut stumps, injected into trees, or applied to cuts made around the base of a tree.

Imazapyr may be applied all year, depending on the use. It is

often applied aerially in the fall for site preparation and conifer release.

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 imazapyr formulations are Toxicity Category IV.

### 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, imazapyr is classified as practically non-toxic to mammals on a short term (acute) basis.

Rats treated with an oral administration of imazapyr eliminated 87% of the material within 24 hours.

There is no evidence that imazapyr causes cancer, DNA

damage, nerve damage, or birth defects.

The EPA has classified imazapyr as a Class E carcinogen (no evidence of carcinogenicity for humans).

### Wildlife Effects

Laboratory and field studies indicate that imazapyr is practically non-toxic to fish, birds, and bees on a short-term (acute) basis.

Imazapyr is toxic to plants at very low concentrations. Applicators should take precautions to minimize drift to non-target areas.

Imazapyr does not appear to bioaccumulate in animals.

### Environmental Fate

Imazapyr may be persistent in soils. Half-lives range from 14 days to 17 months.

In forestry dissipation studies, reported values for the half-life of imazapyr range from 14 to 44 days in forest litter, 19 to 34 days in forest soils, and 12 to 40 days on plants.

Imazapyr is water soluble and does not readily bind to organic

material in soils. Therefore, it is classified as highly mobile and can travel through soil with water and enter groundwater. It can also move with runoff and enter surface water. Its low application rates minimize potential impacts on surface or groundwater. Forestry uses should be evaluated for potential surface and groundwater contamination.

## Risk Assessment

- The EPA has evaluated use practices, environmental fate, potential exposure routes, and toxicity of imazapyr and has set a Reference Dose (RfD) for imazapyr of 2.50 mg/kg/day. A 70 kg (154 lb) person would have an RfD of 175 mg/day. The RfD is the amount of daily pesticide exposure judged to pose no appreciable risk over a 70-year lifetime. Imazapyr's RfD is based on the results of the most sensitive animal studies (dog) and includes built-in safety measures.
- EPA has determined that the expected exposure associated with imazapyr 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

- American Cyanamid Company. 1988. Imazapyr Environmental Fate and Physical Properties Data Summary. American Cyanamid Company. Princeton, NJ.
- Bureau of Land Management. 1991. Vegetation Treatment on BLM Lands in Thirteen Western States, Final Environmental Impact Statement With Appendices. U.S. Department of the Interior. Washington, D.C.
- Meister, R.T., editor. 1996. Farm Chemicals Handbook '96. Meister Publishing Company. Willoughby, OH.
- U.S. Environmental Protection Agency. 1995. Pesticide Environmental Fate One-Line Summary: Imazapyr. Environmental Fate and Effects Division. Washington, D.C.
- 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)

## Washington

- Poison Control Center  
1-800-222-1222 (National)  
1-206-526-2121 (Seattle)  
1-800-732-6985 (Outside Seattle)
- Washington Dept. 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 (EXTOXNET)  
<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)