



Metsulfuron-methyl

Pesticide Fact Sheet: Forestry Use

Product Information

- Metsulfuron-methyl is the common name for the active ingredient in **Escort**, a pre- and post-emergence herbicide commonly used in forestry and right-of-way vegetation management.
- **Escort** (60% metsulfuron-methyl and 40% inert ingredients) is formulated as a dispersible granule that is mixed with water and applied as a foliar spray. The final mix typically includes 0.25 to 0.50% of added surfactant by volume.
- Northwest forestry vegetation managers usually apply 0.3 to 1.2 ounces active ingredient per acre in a water solution.
- Users typically apply metsulfuron-methyl in the spring (when the leaves are fully out) until fall (when colors start to change) to control blackberries and other broadleaf plants.
- 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 metsulfuron-methyl 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, metsulfuron-methyl is classified as practically non-toxic to mammals on a short term (acute) basis.
- Metsulfuron-methyl is broken down quickly and eliminated from the body. Laboratory rats dosed with metsulfuron-methyl eliminated 91% of the pesticide in 96 hours.
- There is no evidence that metsulfuron-methyl causes birth defects, reproductive problems, nerve damage, or cancer.

Wildlife Effects

- Based on laboratory and field studies, metsulfuron-methyl is classified as practically non-toxic to fish, birds, and bees on a short term (acute) basis.
- Metsulfuron-methyl is not expected to bioaccumulate in mammals.

Environmental Fate

- Metsulfuron-methyl is stable to breakdown by water (hydrolysis) at neutral and alkaline pHs. It has an

estimated 3-week half-life in water at acidic pH.

- Warm, moist conditions promote metsulfuron-methyl activity. Cold, dry weather will reduce or delay activity.
- The half-life of metsulfuron-methyl in soil ranges from 14 to 180 days, with a typical half-life of 30 days. The breakdown of metsulfuron-methyl in soils is largely dependent on soil temperature, soil moisture content, and soil pH. Metsulfuron-methyl degrades faster under acidic conditions and in soils with high moisture content and high temperature. Metsulfuron-methyl is more mobile in alkaline soils than in acidic soils.
- Metsulfuron-methyl is stable in the presence of sunlight.
- Metsulfuron-methyl is biologically active at low concentrations, and small amounts of drift can cause damage to adjacent plants or trees. Note that drift damage to plants is not a good indicator of human health risks because the chemical's mode of action is specific to plants.
- Metsulfuron-methyl 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. Right-of-way 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 atrazine and has set a Reference Dose (RfD) for metsulfuron-methyl of 0.25 mg/kg/day. A 70 kg (154 lb) person would have an RfD of 17.5 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 metsulfuron-methyl is based on the results of the most sensitive animal studies (rat) and includes built-in safety measures.

▪ EPA has determined that the expected exposure associated with metsulfuron-methyl in right-of-way 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

- Meister, R.T., editor. 1996. Farm Chemicals Handbook '96. Meister Publishing Company. Willoughby, OH.
- Morgan, Donald P., editor. 1989. Recognition and Management of Pesticide Poisonings. Fourth Edition. Health Effects Division. Office of Pesticide Programs. U.S. Environmental Protection Agency. Washington, D.C.

▪ Smith, A.E. 1986. Persistence of the Herbicides [14C] Chlorsulfuron and [14C] Metsulfuron-methyl in Prairie Soils Under Laboratory Conditions. *Bull. Environ. Contam. Toxicol.* 37, 698-704.

▪ Thompson, D.G. and L.M. MacDonald. 1992. Trace-Level Quantitation of Sulfonurea Herbicides in Natural Water. *Journal of AOAC International.* 75(6), 1084-1090.

▪ Thompson, D.G., L.M. MacDonald, and B. Staznik. 1992. Persistence of Hexazinone and Metsulfuron-methyl in a Mixed-Wood/Boreal Forest Lake. *J. Agric. Food Chem.* 40, 1444-1449.

▪ U.S. Environmental Protection Agency. 1989. Pesticide Environmental Fate One-Line Summary: Metsulfuron-methyl. Environmental Fate and Effects Division. Washington, D.C.

▪ U.S. Environmental Protection Agency. 1986. Pesticide Fact Sheet Number 71: Metsulfuron-methyl. Office of Pesticide Programs. 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.

▪ Wauchope, R.D., T.M. Butler, A.G. Hornsby, P.W.M. Augustijn-Beckers, and J.P. Burt. 1992. The SCS/ARS/CES Pesticide Properties Database for Environmental Decision-Making. *In* Reviews of Environmental Contamination and Toxicology. Springer-Verlag Publishers. New York.

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 (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)