



Glyphosate

Pesticide Fact Sheet: Forestry Use

Product Information

- Glyphosate is the common name for the active ingredient in many products including **Accord Concentrate**, **Accord SP** and **Roundup Pro**. These are post-emergence herbicides commonly used in forestry and right-of-way vegetation management. **Roundup Pro** and **Accord SP** are designed for use strictly on terrestrial applications. **Accord Concentrate** can be used on plants in and around water.
- These products are formulated as salts and sold in liquid form. **Accord SP** and **Roundup Pro** include a surfactant designed to increase the uptake of glyphosate by plants; **Accord Concentrate** does not contain this surfactant.
- Forestry users typically apply glyphosate by air or ground at .5 to 3 pounds active ingredient per acre. It is a non-selective herbicide that can be applied during the growing season after weeds and woody plants start growing. Glyphosate can be used as a cut stump or injection application containing 50 to 100% active ingredient.
- 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 glyphosate formulations containing surfactant

are Toxicity Category II or III, those without surfactant 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, glyphosate is classified as practically non-toxic to mammals.
- The primary breakdown product of glyphosate is aminomethylphosphonic acid (AMPA). AMPA is also practically non-toxic to mammals.
- Laboratory tests on rats show that more than 90% of an administered dose is eliminated from the body within 72 hours.
- There is no evidence that glyphosate or AMPA cause birth defects, nerve damage, cancer, or DNA damage.
- The EPA has classified glyphosate as a Class E carcinogen

(no evidence of carcinogenicity for humans).

Wildlife Effects

- Based on laboratory and field studies, **Roundup** and **Accord** are classified as practically non-toxic to birds and honeybees.
- While glyphosate ranges from slightly to practically non-toxic to fish, surfactants used in **Roundup Pro** may be toxic to fish and aquatic macroinvertebrates. As a result, **Roundup Pro** is not approved for use in or near water. **Accord Concentrate** is approved for use in and around water because it is formulated without surfactants. However, certain uses may specify the addition of surfactants.
- Glyphosate is not expected to bioaccumulate in wildlife.

Environmental Fate

- Glyphosate is stable in water and stable to breakdown by sunlight. It is degraded by aquatic microorganisms and has a half-life of 14 to 21 days in pond water. It will accumulate in sediments where it is bound.
- The half-life of glyphosate in soil ranges from 2 to 174 days with a typical half-life of 47 days. AMPA has a typical half-life of 118 days (71 to 165 days) in soil. For right-of-way vegetation management, glyphosate is usually applied at higher rates and is

expected to be much more persistent.

- Despite being highly water soluble, glyphosate and its primary metabolite, AMPA, adsorb readily to organic materials in soils. Therefore, they are unlikely to move through soils and contaminate ground or surface water.

Risk Assessment

- The EPA has evaluated use practices, environmental fate, potential exposure routes, and toxicity of glyphosate and has set a Reference Dose (RfD) for glyphosate of 2.0 mg/kg/day. A 70 kg (154 lb) person would have an RfD of 140 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 glyphosate is based on the results of the most sensitive animal studies (rabbit) and includes built-in safety measures.

- EPA has determined that the expected exposure associated with glyphosate 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

- Meister, R.T., editor. 1996. Farm Chemicals Handbook '96. Meister Publishing Company. Willoughby, OH.
- Newton, M., L.H. Horner, J.E. Cowell, D.E. White, and E.C. Cole. 1994. Dissipation of Glyphosate and Aminomethylphosphonic Acid in

North American Forests. *J. Agric. Food Chem.*, 42(8), 1795-1802.

- U.S. Department of Health and Human Services. 1992. NTP Technical Report on Toxicity Studies of Glyphosate. National Toxicology Program. Toxicity Report Series. Number 16. Research Triangle Park, NC.

- U.S. Environmental Protection Agency. 1988. Health Advisory. Glyphosate. Office of Drinking Water. Washington, D.C.

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- U.S. Environmental Protection Agency. 1995. Integrated Risk Information System (IRIS). Environmental Criteria and Assessment Office. Cincinnati, OH.

- U.S. Forest Service. 1984. Pesticide Background Statements. Vol. 1. Herbicides. Agriculture Handbook Number 633. U.S. Department of Agriculture. 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)