

MONSANTO

MATERIAL SAFETY DATA

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: ROUNDUP® ULTRA Herbicide

MSDS NUMBER: S00012770

DATE: 5/26/1999

CHEMICAL FAMILY: Glyphosate

EPA Reg. No.: 524-475

CHEMICAL NAME: Mixture

MONSANTO COMPANY, 800 N. LINDBERGH BLVD., ST. LOUIS, MO 63167

FOR CHEMICAL EMERGENCY, SPILL LEAK, FIRE, EXPOSURE, OR ACCIDENT

Call CHEMTREC - Day or Night - 1-800-424-9300 Toll free in the continental U.S., Hawaii, Puerto Rico, Canada, Alaska, or Virgin Islands. For calls originating elsewhere: 703-527-3887 (collect calls accepted)

For additional non-emergency information, call: 1-800-332-3111

2. COMPOSITION/INFORMATION ON INGREDIENTS

<u>COMPONENT</u>	<u>CAS NO.</u>	<u>% BY WEIGHT</u>
Active Ingredient:		
Glyphosate, N-(phosphonomethyl) glycine, in the form of its isopropylamine salt	38641-94-0	41.0
Inert Ingredients:	+	59.0

+ The specific chemical identity is being withheld because it is trade secret information of Monsanto Company.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

APPEARANCE AND ODOR: Clear, viscous amber-colored liquid

Keep out of reach of children.

CAUTION!

CAUSES EYE IRRITATION

Avoid contact with eyes or clothing.

POTENTIAL HEALTH EFFECTS

LIKELY ROUTES OF EXPOSURE: Skin contact and inhalation

Large Liquid Spills on the floor or other impervious surface should be contained or diked and then absorbed with attapulgite, bentonite or other absorbent clays. Collect the contaminated absorbent, place in a metal drum and dispose of in accordance with the instructions provided under Disposal, Section 13 of this MSDS. Thoroughly scrub floor or other impervious surface with a strong industrial detergent and rinse with water. Large spills that soak into the ground should be dug up, placed in metal drums and disposed of in accordance with instructions provided under DISPOSAL, Section 13 of this MSDS. Contact appropriate state agency when considering a land spreading disposal option.

Leaking containers should be separated from non-leakers and either the container or its contents transferred to a drum or other non-leaking container and disposed of in accordance with instructions provided under DISPOSAL, Section 13 of this MSDS. Any recovered spilled liquid should be similarly collected for disposal. Refer to Section 13 for disposal information and Sections 14 and 15 for reportable quantity information.

7. HANDLING AND STORAGE

HANDLING: Avoid contact with eyes or clothing.

Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.

Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters.

STORAGE: Do not contaminate water, foodstuffs, feed or seed by storage or disposal.

Emptied container retains vapor and product residue. Observe all labeled safeguards until container is cleaned, reconditioned, or destroyed. **DO NOT REUSE THIS CONTAINER.**

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EYE PROTECTION: Workers handling the packaged concentrate should wear chemical safety goggles to prevent eye contact during mixing/transfer operations or other activities where there is potential for eye contact with the concentrated product. The wearing of goggles is not required during use of this product in accordance with label instruction.

SKIN PROTECTION: Wear appropriate protective clothing to prevent skin contact. Applicators and other handlers must wear long-sleeved shirt, long pants, shoes plus socks. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

RESPIRATORY PROTECTION: *For Handling the Concentrated Product:* Avoid breathing vapor or mist. This product concentrate is not likely to pose an airborne exposure concern during manufacture or packaging. In the event of abnormal exposure conditions, use NIOSH/MSHA approved equipment. In work situations where an air purifying respirator is appropriate to be used, use of a full face respirator equipped with purifying elements for protection against organic vapor and dust/mist approved for pesticides is recommended. Use cartridges with NIOSH/MSHA approval number TC-23C or canister with NIOSH/MSHA approval number TC-14G. Full facepiece replaces the need for chemical goggles. Observe respirator use limitations specified by the manufacturers

Respiratory protection programs must comply with 29 CFR 1910.134.

For Use of Product in accordance with label instructions: Respirators are not required for use of ROUNDUP® ULTRA Herbicide in accordance with label instructions.

VENTILATION: No special precautions are recommended. Consult NFPA Standard 91 for design of exhaust systems.

AIRBORNE EXPOSURE LIMITS:

<u>PRODUCT/COMPONENT</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>
ROUNDUP® ULTRA Herbicide	Not established	Not established

OSHA and ACGIH have not established specific exposure limits for this material. However, OSHA and ACGIH have established limits for particulates not otherwise regulated (PNOR) and particulates not otherwise classified (PNOC) respectively, which are the least stringent exposure limits applicable to dusts.

<u>OSHA PEL</u>	<u>ACGIH TLV</u>
15 mg/m ³ (total dust) 8-hr TWA	10 mg/m ³ (inhalable) 8-hr TWA
5 mg/m ³ (respirable) 8-hr TWA	3 mg/m ³ (respirable) 8-hr TWA

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: clear, viscous amber-colored solution
Odor: practically odorless to slight amine-like odor
pH: 4.99 (1% solution)
Specific Gravity: 1.17 (Water = 1)

NOTE: These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specifications for the product.

10. STABILITY AND REACTIVITY

STABILITY: Product is stable under normal conditions of storage and handling. Store in a cool, well ventilated place away from foodstuffs, reducing agents and acids.

MATERIALS TO AVOID: Spray solutions of this product should be mixed, stored or applied using only stainless steel, aluminum, fiberglass, plastic or plastic-lined containers.

DO NOT MIX, STORE OR APPLY THIS PRODUCT OR SPRAY SOLUTIONS OF THIS PRODUCT IN GALVANIZED OR UNLINED STEEL (EXCEPT STAINLESS STEEL) CONTAINERS OR SPRAY TANKS. This product or spray solutions of this product react with such containers and tanks to produce hydrogen gas which may form a highly combustible gas mixture. This gas mixture could flash or explode, causing serious personal injury, if ignited by open flame, spark, welder's torch, lighted cigarette or other ignition source.

HAZARDOUS DECOMPOSITION PRODUCTS: None

HAZARDOUS POLYMERIZATION: Does not occur. This product can react with caustic (basic) materials to liberate heat. This is not a polymerization but rather a chemical neutralization in an acid base reaction.

11. TOXICOLOGICAL INFORMATION

Data from laboratory studies conducted by Monsanto with ROUNDUP® ULTRA Herbicide are summarized below:
Single exposure (acute) studies indicate:

Oral -	FIFRA Category IV
Dermal -	FIFRA Category IV
Inhalation -	FIFRA Category IV; Not DOT poisonous
Eye Irritation -	FIFRA Category III

Skin Irritation - FIFRA Category IV
No skin allergy was observed in guinea pigs following repeated skin exposure.

COMPOUNDS:

Data from laboratory studies conducted by Monsanto and from the scientific literature on components of ROUNDUP® ULTRA Herbicide:

Isopropylamine Salt of Glyphosate: Data from studies with a formulation comprised of 62% isopropylamine salt of glyphosate (MON 0139) indicate the following:

In repeat dosing studies (6-month), dogs fed MON 0139 exhibited slight body weight changes. Following repeated skin exposure (3-week) to MON 0139, skin irritation was the primary effect in rabbits.

Additional toxicity information is available on glyphosate, the active herbicidal ingredient of MON 0139. Following repeated exposures (90-days) to glyphosate in their feed, decreased weight gains were noted at the highest test level in mice, while no treatment-related effects occurred in rats. Following repeated skin exposure (3 weeks) to glyphosate, slight skin irritation was the primary effect observed in rabbits. No skin allergy was observed in guinea pigs following repeated skin exposure. There was no evidence of effects on the nervous system, including delayed effects in chickens (repeat oral doses) or cholinesterase inhibition in rats (single oral doses). Reduced body weight gain and effects on liver tissues were observed with long-term (2-year) feeding of glyphosate to mice at high-dose levels. Reduced body weight gain and eye changes were observed at the high-dose level in one long-term (2 year) feeding study with rats, while no treatment-related effects occurred in a second study. No adverse effects were observed in feeding studies with dogs. Glyphosate did not produce tumors in any of these studies. **Based on the results from the chronic studies, EPA has classified glyphosate in category E (evidence of non-carcinogenicity for humans).** No birth defects were noted in rats and rabbits given glyphosate orally during pregnancy, even at amounts which produced adverse effects on the mothers. Glyphosate was fed continuously to rats at very high dose levels for 2 successive generations. Toxicity was reported in offspring from the high dose, a level which also produced adverse effects on the mothers. In a 3 generation study conducted at lower dose levels, no effects were seen on the ability of male or female rats to reproduce. Glyphosate has produced no genetic changes in a variety of standard tests using animals and animal or bacterial cells.

12. ECOLOGICAL INFORMATION

This product has been tested for toxicity to aquatic invertebrates, fish and birds. The results indicate that this product is slightly to moderately toxic to *D. magna*, moderately toxic to warmwater and coldwater fish, and practically non-toxic to bobwhite quail and the mallard duck. No data is available regarding algal toxicity for this product.

13. DISPOSAL CONSIDERATIONS

Wastes resulting from the use of this product that cannot be used or chemically reprocessed should be disposed of in a landfill approved for pesticide disposal or in accordance with applicable Federal, state or local procedures. Emptied container retains vapor and product residue. Observe all labeled safeguards until container is cleaned, reconditioned or destroyed. This product should not be dumped, spilled, rinsed or washed into sewers or public waterways.

14. TRANSPORT INFORMATION

Follow the precautions indicated in the Handling and Storage Section, Section 7 of this MSDS.

DOT Proper Shipping Name: Not Applicable

DOT Hazard Class/I.D. No.:	Not Applicable
DOT Label:	Not Applicable
U.S. Surface Freight Classification:	Weed killing compound, N.O.I.B.N.

15. REGULATORY INFORMATION

SARA Hazard Notification:

Hazard Categories Under Criteria of SARA Title III Rules (40 CFR Part 370): Immediate
Section 313 Toxic Chemical(s): Not Applicable
Hazardous Chemical Under OSHA Hazard Communication Standard (29 CFR §1910.1200): Surfactant
Reportable Quantity (RQ) under U.S. CERCLA: Not Applicable
TSCA Inventory: All components are on the US EPA's TSCA Inventory List

16. OTHER INFORMATION

REASON FOR REVISION: Corrected non-emergency phone number. Supersedes MSDS dated 2/8/99.
ROUNDUP is a registered trademark of Monsanto Company

This Material Safety Data Sheet (MSDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-APPROVED PRODUCT LABELING (attached to and accompanying the product container). This MSDS provides important health, safety, and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course.

Use, storage and disposal of pesticide products are regulated by the EPA under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) through the product labeling, and all necessary and appropriate precautionary, use, storage, and disposal information is set forth on that labeling. It is a violation of federal law to use a pesticide product in any manner not prescribed on the EPA-approved label.

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