

MONSANTO

MATERIAL SAFETY DATA

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Fire Power™ Herbicide

MSDS NUMBER: M00020376

DATE: July 9, 2001

EPA Reg. No.: 524-520

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

FOR MEDICAL EMERGENCY CALL (collect calls accepted): 314-694-4000
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: 800-332-3111

2. COMPOSITION/INFORMATION ON INGREDIENTS

| <u>COMPONENT</u> | <u>CAS NO.</u> | <u>% by weight</u> |
|--|----------------|--------------------|
| ACTIVE INGREDIENTS: | | |
| Glyphosate, N-(phosphonomethyl) glycine, * in the form of its isopropylamine salt | 38641-94-0 | 40.0 |
| oxyfluorfen * | 42874-03-3 | 2.5 |
| OTHER INGREDIENTS: | + | 57.5 |
| Total | | 100.0 |

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

* Hazardous chemical(s) under the criteria of the OSHA Hazard Communication Standard (29 CFR 1910.1200).

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

APPEARANCE AND ODOR: off-white liquid, smoky odor

CAUTION!

CAUSES MODERATE EYE IRRITATION

POTENTIAL HEALTH EFFECTS

Likely Routes of Exposure: inhalation and skin contact

EYE CONTACT: This product may cause eye irritation.

SKIN CONTACT: No more than slightly toxic or slightly irritating based on toxicity studies.

INHALATION: No more than slightly toxic if inhaled based on toxicity studies.

INGESTION: No more than slightly toxic based on toxicity studies. Significant adverse health effects are not expected to develop if only small amounts (less than a mouthful) are swallowed.

Refer to Section 11 for toxicological information.

4. FIRST AID MEASURES

IF IN EYES, immediately flush with plenty of water for at least 15 minutes. Call a physician or contact a poison control center.

IF ON SKIN, immediately wash with plenty of water while removing contaminated clothing. If irritation persists, call a physician or contact a poison control centre. Wash clothing before reuse.

IF SWALLOWED, this product will cause gastrointestinal tract irritation. Immediately dilute by swallowing water or milk. Call a physician or contact a poison control centre. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

IF INHALED: Remove individual to fresh air. Seek medical attention if breathing difficulty develops.

NOTE: For additional human emergency first aid or treatment guidance, call collect, anytime, day or night (314) 694-4000.

5. FIRE FIGHTING MEASURES

FLASH POINT: None

METHOD: Tag Closed Cup

HAZARDOUS PRODUCTS OF COMBUSTION: HCl, HF, Phosphorous oxides

EXTINGUISHING MEDIA: In case of fire, use water spray (fog), foam, dry chemical, or CO₂.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

FIRE FIGHTING EQUIPMENT: Fire fighters and others exposed to products of combustion should wear self-contained breathing apparatus. Equipment should be thoroughly decontaminated after use.

6. ACCIDENTAL RELEASE MEASURES

Observe all protection and safety precautions when cleaning up spills - See Exposure Controls/Personal Protection, Section 8.

Small Spills: For a spill less than one gallon on floor or other impervious surface, soak up with towels or other absorbent material and discard in the trash. Clean the spill area with soap and water and rinse the area thoroughly.

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 and disposed of.

7. HANDLING AND STORAGE

HANDLING:

Do not get in eyes or on clothing.

Avoid breathing vapors or spray mist.

Remove contaminated clothing and wash clothing before reuse.

Wash thoroughly with soap and water after handling.

Do not contaminate water when disposing of equipment wash waters.

Treatment of aquatic weeds can result in oxygen depletion or loss due to decomposition of dead plants.

This oxygen loss can cause fish suffocation.

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

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EYE PROTECTION: Wear chemical safety goggles to prevent eye contact during mixing/transfer operations or other activities when there is potential for eye contact.

SKIN PROTECTION: Wear appropriate protective clothing and chemical resistant gloves to prevent skin contact. Applicators and other handlers must wear: long-sleeved shirt and long pants; shoes plus socks, and protective eyewear. 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: Avoid breathing mist. This product is not likely to pose an airborne exposure concern when handled and used in accordance with label instructions. In the event of abnormal exposure conditions, use NIOSH 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. 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 Application of Product Diluted in accordance with label instructions: Respirators are not required for applications of use - dilution's of Fire Power™ Herbicide.

VENTILATION: Provide natural or mechanical ventilation to minimize exposure. If practical, use local mechanical ventilation at sources of air contamination such as open process equipment.

AIRBORNE EXPOSURE LIMITS:

| <u>Product/Component</u> | <u>OSHA PEL</u> | <u>ACGIH TLV</u> | <u>Manufacturer's OEL</u> |
|--------------------------|------------------|------------------|---------------------------|
| Fire Power™ Herbicide | None established | None established | None established |
| glyphosate IPA | None established | None established | None established |
| oxyfluorfen | None established | None established | 0.2 mg/m3 |
| surfactant | None established | None established | None established |

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: off-white liquid
Odor: smoky odor
Specific Gravity: 1.19 g/ml

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: Stable

HAZARDOUS DECOMPOSITION PRODUCTS: None known

HAZARDOUS POLYMERIZATION: Does not occur.

INCOMPATIBILITY: Spray solutions of this product should be mixed, stored and applied using only stainless steel, aluminum, fiberglass, plastic and plastic-lined steel 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 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

11. TOXICOLOGICAL INFORMATION

Data from laboratory studies on Fire Power™ Herbicide are summarised below:

Single exposure (acute) studies indicate:

| | |
|------------------------------------|--|
| Oral LD ₅₀ (Rat): | >5000 mg/kg, practically non-toxic, FIFRA Category IV |
| Dermal LD ₅₀ (Rat): | >5000 mg/kg, practically non-toxic, FIFRA Category IV |
| Inhalation LC50 (Rat, 4-hr) | >2.62 mg/l, practically-non toxic, FIFRA Category IV |
| Eye Irritation (Rabbit): | Slightly irritating, FIFRA Category III |
| Skin Irritation (Rabbit, 4-hr): | Slightly irritating (FIFRA PII = 0.8/8.0), FIFRA Category IV |
| Dermal Sensitization (Guinea Pig): | Not a sensitizer |

COMPONENTS:

Data from Monsanto studies and from the available literature on the components of Fire Power™ Herbicide are discussed below:

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 these formulations. 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.

Oxyfluorfen

Oxyfluorfen is practically nontoxic acutely by the oral, dermal, and respiratory routes of exposure, is non-irritating to the skin and moderately irritating to the eye. Oxyfluorfen tested negative as a contact dermal sensitizer. Developmental toxicity was observed in rats and rabbits only at doses that were maternally toxic. Reductions in the body weight of offspring and histopathological alteration of the kidneys of parents were observed in the high dose level of a rat 2-generation reproduction study. In vitro tests of salmonella and mouse lymphoma cells have indicated the potential for genotoxicity and in vivo tests do not show a potential for adverse chromosomal effects. Adverse effects on the liver marked the lowest observed effect level (LOEL) in chronic toxicity studies of dogs, rats and mice. A statistically significant positive dose related trend for liver adenomas and carcinomas was observed in the chronic mouse study and oxyfluorfen is classified as a Group C chemical by the US EPA.

Surfactant

The surfactant components of Fire Power™ Herbicide are reported to cause irritation to the eyes and skin and may contribute to the irritation potential reported for this herbicide. Ingestion may produce gastrointestinal irritation, nausea, vomiting and diarrhoea.

12. ECOLOGICAL INFORMATION

Monsanto has not conducted environmental toxicity studies on this material. However, ecological toxicity data is available for the individual active ingredients of this herbicide.

Glyphosate ecological toxicity data:

| | | | |
|----------------------------|---------------------------------|---------------------------|-----------------------|
| Warmwater Fish: | 96-hr LC50 Bluegill sunfish: | 120 mg/l | Practically Non-Toxic |
| | 96-hr LC50 Fathead minnow: | 97 mg/L | Slightly Toxic |
| Coldwater Fish: | Rainbow trout 96-hr LC50: | 86 mg/l | Slightly Toxic |
| | Aquatic Invertebrates: | Daphnia magna 48-hr EC50: | 780 mg/l |
| Freshwater Algae: | Mysid shrimp 96-hr LC50: | > 1000 mg/L | Practically Non-Toxic |
| | 72-hr EC50 <i>Selenastrum</i> : | 485 mg/L | Practically Non-Toxic |
| Marine Algae: | 96-hr EC50 <i>S. costatum</i> : | 1.2 mg/L | Moderately Toxic |
| | 7-d EC50 <i>S. costatum</i> : | 0.6 mg/L | Highly Toxic |
| Avian Species: | Oral LD50 Bobwhite Quail: | >4,640 mg/kg | Practically Non-Toxic |
| | LC50 Bobwhite Quail: | >4,640 mg/kg diet | Practically Non-Toxic |
| | LC50 Mallard Duck: | >4,640 mg/kg diet | Practically Non-Toxic |
| Terrestrial Invertebrates: | 48-h oral LD50 Honey bee: | >100 ug/bee | Practically Non-Toxic |
| | 48-h topical LD50 Honey bee: | >100 ug/bee | Practically Non-Toxic |

Oxyfluorfen ecological Toxicity data (technical material, 95% oxyfluorfen):

| | | | |
|------------------------|-----------------------------------|-----------------|-----------------------|
| Aquatic Invertebrates: | 48-hr EC50 <i>Daphnia magna</i> : | 1.5 mg/L | Moderately Toxic |
| Warmwater fish: | 96-hr LC50 Bluegill sunfish: | 0.2 mg/L | Highly Toxic |
| Coldwater fish: | 96-hr LC50 Rainbow trout: | 0.41 mg/L | Highly Toxic |
| Avian Species: | 8-d oral LD50 Bobwhite quail: | >5,000 mg/kg | Practically Non-Toxic |
| | 21-d LC50 Bobwhite quail: | >2,150 ppm diet | Practically Non-Toxic |

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 and local procedures.

Emptied container retains vapor and product residue. Observe all labeled safeguards until container is cleaned, reconditioned or destroyed.

Do not reuse container. Return emptied container per the Monsanto container return program. If not returned, triple rinse container, then puncture and dispose of in a sanitary landfill or by incineration or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

14. TRANSPORT INFORMATION

The data provided in this section is for information only. Please apply the appropriate regulations to properly classify your shipment for transportation.

This product is not hazardous under the applicable DOT, ICAO/IATA, or IMDG regulations.

15. REGULATORY INFORMATION

SARA Hazard Notification:

Hazard Categories Under Criteria of SARA Title III Rules (40 CFR Part 370): delayed

Section 313 Toxic Chemical(s): oxyfluorfen (42874-03-3)

Hazardous Chemical(s) Under OSHA Hazard Communication Standard: Not Applicable

Reportable Quantity (RQ) under U.S. CERCLA: Not Applicable

TSCA Inventory: exempt

16. OTHER INFORMATION

REASON FOR REVISION: Update composition

Supersedes MSDS: October 18, 2000

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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