1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: IPCO® ROUNDUP TRANSORB® HERBICIDE

MSDS Number: M00020181  Date: 8/7/2000

Chemical Family: glyphosate

PCP No. 25455

Monsanto Canada, 67 Scurfield Boulevard, Winnipeg, MB, R3Y 1G4

FOR CHEMICAL EMERGENCY, SPILL LEAK, FIRE, EXPOSURE, OR ACCIDENT, Call MONSANTO COLLECT - Day or Night - 314-694-4000 or 800/332-3111 or CANUTEC: 613/996-6666

For additional non-emergency information, call 204-985-1000 or 800/667-4944

2. COMPOSITION/INFORMATION ON INGREDIENTS

Component  CAS No.  % by Weight

ACTIVES: Glyphosate; N-(phosphonomethyl)glycine as the isopropylamine salt  38641-94-0  41.0%

INERT INGREDIENT(S): +  59.0%

Contains 360 grams per litre of the active ingredient, glyphosate

+ -- 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 green-colored solution.

READ THE LABEL AND ATTACHED BROCHURE BEFORE USING THIS PRODUCT

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
EYE CONTACT: IPCO® ROUNDUP TRANSORB® Herbicide may cause pain, redness and tearing based on toxicity studies.

SKIN CONTACT: IPCO® ROUNDUP TRANSORB® Herbicide is no more than slightly toxic and no more than slightly irritating based on toxicity studies.

INGESTION: IPCO® ROUNDUP TRANSORB® Herbicide is no more than slightly toxic based on toxicity studies. No significant adverse health effects are expected to develop if only small amounts (less than a mouthful) are swallowed. Ingestion of similar formulations has been reported to produce gastrointestinal discomfort with irritation of the mouth, nausea, vomiting and diarrhea. Oral ingestion of large quantities of one similar product has been reported to result in hypotension and lung edema.

INHALATION: IPCO® ROUNDUP TRANSORB® Herbicide is no more than slightly toxic if inhaled based on toxicity studies.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: None known.

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. If easy to do, remove any contact lenses. Get medical attention.

IF ON SKIN, immediate first aid is not likely to be required. However, this material can be removed with soap and water. Wash heavily contaminated clothing before reuse.

IF SWALLOWED, immediate first aid is not likely to be required. A physician or Poison Control centre can be contacted for advice. Wash heavily contaminated clothing before reuse.

IF INHALED: immediate first aid is not likely to be required. However, if symptoms occur, remove to fresh air.

5. FIRE FIGHTING MEASURES

FLASH POINT: None

Method: Tag Closed Cup

EXTINGUISHING MEDIA: Water spray, foam, dry chemical, CO2 or any Class B extinguishing agent.

SPECIAL FIRE FIGHTING PROCEDURES: Fire fighters and others who may be exposed to vapours or products of combustion should wear a self-contained breathing apparatus and full protective clothing. Equipment should be thoroughly cleaned after use.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None.

6. ACCIDENTAL RELEASE MEASURES

SPILL OR LEAKAGE PROCEDURES: Observe all protective and safety precautions including use of rubber boots or rubber overshoes when cleaning up spills - See SECTION. EXPOSURE CONTROLS/PERSONAL PROTECTION

Liquid spills on floor or other impervious surfaces should be contained or diked, and should be absorbed with attapulgite, bentonite or other absorbent clays (kitty litter, etc.) Collect contaminated absorbent, place in plastic lined metal drum and
dispose of in accordance with instructions provided under DISPOSAL. Thoroughly scrub floor or other impervious surfaces with a strong industrial type detergent solution and rinse with water.

Liquid spills that soak into the ground should be dug-up, placed in plastic lined metal drums and disposed of in accordance with instructions provided under DISPOSAL.

Leaking containers should be separated from non-leakers and either the container or its contents transferred to a plastic lined drum or other non-leaking container and disposed of in accordance with instructions provided under DISPOSAL. Any recovered spilled liquid should be similarly collected and disposed of.

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

Refer to Section 13 for disposal information.

7. HANDLING AND STORAGE

Avoid contact with eyes, skin and clothing. Wash thoroughly with soap and water after handling. Do not apply directly to water, to areas where surface water is present. Do not contaminate water when disposing of equipment wash waters.

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

Storage: Product is considered stable under normal conditions of storage and handling but no definitive data is available. Do not contaminate water, foodstuffs, feed or seed by storage or disposal.

INCOMPATIBILITY: This product and spray solutions of this product should be mixed, stored and applied only in stainless steel, aluminium, fibreglass, plastic and plastic lined containers. DO NOT MIX, STORE OR APPLY THIS PRODUCT OR SPRAY SOLUTIONS OF THIS PRODUCT IN GALVANISED 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.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

EYE PROTECTION: Wear chemical splash goggles during mixing/pouring operations or other activities in which eye contact with undiluted IPCO® ROUNDUP TRANSORB® Herbicide is likely to occur.

SKIN PROTECTION: In cases in which prolonged or repeated skin contact with IPCO® ROUNDUP TRANSORB® Herbicide may occur, long-sleeved shirt, long pants, and chemical protective (e.g. rubber) gloves are recommended. Wash hands and contaminated skin after handling. Clothing soaked with IPCO® ROUNDUP TRANSORB® Herbicide solution should be promptly removed and laundered before reuse.

RESPIRATORY PROTECTION: Respiratory protection should not be required for normal use and handling of IPCO® ROUNDUP TRANSORB® Herbicide. During periods of abnormal exposure to heavy spray or mist, use of U.S. NIOSH approved equipment for pesticide vapour/mist is recommended. The respirator use limitations specified by NIOSH or the manufacturer must be observed. Refer also to CSA Standard Z 94.4-M1982, Selection, Care and Use of Respirators.

VENTILATION: No special precautions are recommended.

AIRBORNE EXPOSURE LIMITS: (reflects U.S. Airborne Exposure Limits)
9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Clear, viscous green-coloured solution.
ODOUR: Practically odourless to slight amine-like odour.
SPECIFIC GRAVITY: 1.17 (Water = 1)
PH: 4.99 (1% solution)

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: Acids and bases.

HAZARDOUS DECOMPOSITION PRODUCTS: None.

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

11. TOXICOLOGICAL INFORMATION

The following information presents both human experience and the results of scientific experiments used by qualified experts to assess the effects of IPCO® ROUNDUP TRANSORB® Herbicide on the health of exposed individuals and to support the precautionary statements and occupational control procedures recommended in this document. To avoid misunderstanding, the data provided in this section should be interpreted by individuals trained in evaluation of this type of information.

TOXICOLOGICAL DATA: Data from laboratory studies conducted by Monsanto with IPCO® ROUNDUP TRANSORB® Herbicide are summarised below:

Single exposure (acute) studies indicate:

Oral - Rat LD50 - >5,000 mg/kg
Dermal - Rat LD50 - >5,000 mg/kg
Inhalation - Rat LC50 (4-hr. exp.) - 4.2 mg/L; Not TDG regulated
Eye Irritation - Rabbit; moderately irritating.; all animals free of irritation by day 7
Skin Irritation - Rabbit (4-hr. exp.); slightly irritating; PII - 0.63/8.0, all animals free of irritation by day 7;

No skin allergy was observed in guinea pigs following repeated skin exposure.

COMPONENTS:
Data from laboratory studies conducted by Monsanto and from the scientific literature on components of IPCO® ROUNDUP TRANSORB® 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 tumours 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

Aquatic and avian toxicity studies have been conducted with this product. The results are summarised below:

Aquatic Invertebrates: 48-hr EC50 Daphnia magna: 11 mg/L; Slightly Toxic
Warmwater Fish: 96-hr LC50 Bluegill sunfish: 7.5 mg/L; Moderately Toxic
Coldwater Fish: 96-hr LC50 Rainbow trout: 5.5 mg/L; Moderately Toxic
Avian Species: 8-day LC50 Quail and Mallard: >5,620 mg/kg feed; Practically Nontoxic

The results of degradation and bioconcentration studies with a similar formulation indicate that the active ingredient is rapidly adsorbed to soil, readily biodegrades in soil and water, and does not bioaccumulate.

13. DISPOSAL CONSIDERATIONS

DISPOSAL INFORMATION: Materials resulting from the use of this product should be used according to label instructions if possible. Wastes that cannot be used or chemically reprocessed should be disposed of in a landfill approved for pesticide disposal or buried on site in a safe place so that it will not contaminate water supplies. All disposal should be in accordance with applicable Federal, Provincial or local procedures.

Emptied container retains vapour and product residue. Observe all labelled safeguards until container is cleaned, reconditioned or destroyed. DO NOT CUT OR WELD ON OR NEAR THIS CONTAINER.

Plastic Containers:

Do not reuse container. Triple rinse container then puncture and dispose of in a sanitary landfill, or by other procedures approved by provincial and local authorities. Plastic may be burned or incinerated if permissible under provincial and local rules. If burned, stay out of smoke.

For Shuttle™ containers, return emptied container(s) with seals intact to Monsanto or the supplier.
For information on the disposal of unused, unwanted product and the clean-up of spills, contact the Provincial Regulatory Agency or the manufacturer.

14. TRANSPORT INFORMATION

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

15. REGULATORY INFORMATION

PCPA registered.

16. OTHER INFORMATION

Reason for revision: Revised sections 6 and 8. Supersedes MSDS Dated: 2/2/1999

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