SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION

Product Name: RELY® HERBICIDE
Chemical Name: active ingredient glufosinate ammonium: butanoic acid, 2-amino-4-(hydroxymethylphosphinyl)-, monoammonium salt
Synonym: MSDS Number 176
Chemical Family: Glufosinate-ammonium
Chemical Formulation: 77182-82-2
EPA Registration No.: 264-652
Canadian Registrat. No.: Bayer CropScience
2 T.W. Alexander Drive
Research Triangle PK, NC 27709
USA

For Product Use Information: (866)-992-2937 Monday through Friday(CRLF) 8:00AM-4:30PM(CRLF) For Medical Emergency contact DART: (800) 334-7577 24 Hours/Day(CRLF)
For Transportation Emergency CHEMTREC: (800) 424-9300 24 Hours/Day

Product Use Description: Rely Herbicide is for nonselective weed control of emerged weeds in apples, grapes and tree nuts.

SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Component Name</th>
<th>CAS No.</th>
<th>Concentration % by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glufosinate-ammonium</td>
<td>77182-82-2</td>
<td>11.3300</td>
</tr>
<tr>
<td>Inert ingredients,including:</td>
<td></td>
<td>88.6700</td>
</tr>
<tr>
<td>Alkyl hydroxy-poly(oxyethylene)sulfate-salts</td>
<td>9004-82-4</td>
<td></td>
</tr>
</tbody>
</table>
SECTION 3. HAZARDS IDENTIFICATION

NOTE: Please refer to Section 11 for detailed toxicological information.

Emergency Overview
Cause substantial but temporary eye injury. Harmful if swallowed.

Physical State
liquid

Odor
weakly pungent

Appearance
blue to bluish-green

Immediate Effects
Eye
Cause substantial but temporary eye injury.

Skin
Harmful if absorbed through the skin.

Ingestion
Harmful if swallowed.

Inhalation
Harmful if inhaled.

Signs and Symptoms
Gastrointestinal disturbance, tremors, convulsions, respiratory depression, cardiac arrhythmia, decreased blood pressure, drowsiness and/or loss of consciousness. These symptoms may be delayed by up to 48 hours after exposure.

SECTION 4. FIRST AID MEASURES

Eye
Flush eyes with plenty of water. Get medical attention if irritation persists.

Skin
Remove contaminated clothing. Wash skin immediately with plenty of soap and water. Get medical attention.

Ingestion
Rinse mouth thoroughly with plenty of water. Do not induce vomiting. Get medical attention immediately.

Note to Physician
Symptoms may be delayed by up to 48 hours following ingestion. Thus, a patient ingesting undiluted product treated as outlined below. Treatment should be symptomatic and supportive.

In addition, the following procedures are generally recommended: If ingested, endotracheal intubation and gastric lavage should be performed as soon as possible, followed by charcoal and sodium sulfate administration. Respiratory, Cardiac and Central Nervous Systems should be monitored with particular regard to ECG, electrolyte balance (especially for potassium) and signs of increased intracranial pressure. In the event of a large exposure, dialysis and/or hemoperfusion should be conducted as soon as possible to eliminate the compound from the body. In the event of convulsions, administer phenobarbital or diazepam. There is no specific antidote. Glufosinate-ammonium does not
inhibit cholinesterase; thus atropine and 2-PAM are contraindicated. Recovery is normally spontaneous, usually within 48 hours

SECTION 5. FIRE FIGHTING MEASURES

<table>
<thead>
<tr>
<th>Flash Point</th>
<th>95 °C / 203 °F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method:</td>
<td>Closed Cup</td>
</tr>
</tbody>
</table>

Suitable Extinguishing Media

- Small Fires: dry chemical, carbon dioxide (CO2)
- Large Fires: foam, water, Move containers from fire area if without risk, Cool containers with water from maximum distance.

Fire Fighting Instructions

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH approved (or equivalent) and full protective gear. Keep upwind. Isolate hazard area. Avoid inhalation of smoke and fumes. Use water or foam to reduce fumes. Do not touch spilled material. If possible, move containers from area. Extinguish only if flow can be stopped. Use flooding amounts of water as a fog. Cool containers with flooding amounts of water from as far a distance as possible. Avoid breathing vapors.

FLAMMABILITY CLASSIFICATION/RATING:

- NFPA/OSHA Class: IIIB
- NFPA Rating (Fire): 1

SECTION 6. ACCIDENTAL RELEASE MEASURES

General and Disposal

Use proper protective equipment to minimize personal exposure (see Section 8). Take all necessary action to prevent and to remedy the effects of the spill. Ensure that the disposal is in compliance with Federal or local disposal regulations. See Section 13 for any applicable Reportable Quantity (RQ) and other federal regulatory information.

Land Spill or Leaks

Small Spill: Absorb with an inert absorbent material such as granular clay, saw dust or pet litter. Sweep up carefully while avoiding the formation of a dust cloud. Place in an approved chemical waste container for disposal. Rinse spill area with small amount of soapy water. Contain and absorb the rinsate with inert absorbents and place into the same disposal container. Area can be washed with water to remove the last trace residue. Do not allow water to contaminate water supplies or sewers.

Large Spill: Eliminate all ignition sources. Stop leak if you can do so without coming into contact with spilled material. Dike far ahead of liquid spill for later disposal. All equipment used to clean up spill should be grounded. Prevent entry into waterways, sewers, basements or confined areas. Inform appropriate authorities immediately if contamination occurs. Contact Bayer for further assistance if necessary.
SECTION 7. HANDLING AND STORAGE

Handling Procedures
Avoid contact with skin, eyes and clothing. Avoid breathing vapors and spray mist. Do not use near heat or open flame.

Storing Procedures
Do not contaminate water, food, or feed by storage or disposal. Do not use or store near heat or open flame. Store in original container. Store product in a secure storage area.

Work/Hygienic Procedures
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.

Remove Personal Protective Equipment (PPE) immediately after handling this product. Wash the outside of gloves before removing. Then wash thoroughly and put on clean clothing.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls
Control airborne concentrations below the exposure guidelines. Local exhaust ventilation may be necessary.

Eye/Face Protection
safety glasses splash goggles or face-shield

Body Protection
Chemical-resistant gloves (Neoprene, Nitrile, PVC) other protective clothing to avoid skin contact

Respiratory Protection
Ensure adequate ventilation. If not adequate, use a chemical cartridge-type respirator approved by the National Institute of Occupational Health and Safety.

General Protection
Eye wash facility and safety shower should be available.

AGRICULTURAL USES:
The following personal protective equipment (PPE) must be worn when using product or upon early entry into treated areas during the Restricted Entry Interval (REI):
- Long sleeved shirt and long pants; coveralls (required for REI only)
- Chemical-resistant gloves
- Shoes and socks
- Protective eyewear
- Chemical-resistant apron during mixing and loading

See "User Safety Recommendations" on the product label for additional details concerning the use of PPE under the EPA Worker Protection Standards (40 CFR Part 170).
### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Appearance</strong></td>
<td>blue to bluish-green</td>
</tr>
<tr>
<td><strong>Physical State</strong></td>
<td>liquid</td>
</tr>
<tr>
<td><strong>Odor</strong></td>
<td>weakly pungent</td>
</tr>
<tr>
<td><strong>pH</strong></td>
<td>6.5 +/- 1</td>
</tr>
<tr>
<td><strong>Vapor Pressure</strong></td>
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<tr>
<td><strong>Vapor Density (air = 1)</strong></td>
<td>Not available</td>
</tr>
<tr>
<td><strong>Specific Gravity</strong></td>
<td>1.06 g/cm³ (± 0.05)</td>
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<tr>
<td></td>
<td>at 20 °C</td>
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<tr>
<td><strong>Bulk Density</strong></td>
<td>8.82 lb/gal</td>
</tr>
<tr>
<td></td>
<td>at 20 °C</td>
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<tr>
<td><strong>Boiling Point</strong></td>
<td>Not available</td>
</tr>
<tr>
<td><strong>Melting/Freezing Point</strong></td>
<td>Not available</td>
</tr>
<tr>
<td><strong>Solubility (in water)</strong></td>
<td>pH 5</td>
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<tr>
<td></td>
<td>1,370 g/l</td>
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<tr>
<td></td>
<td>at 22 °C</td>
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<tr>
<td></td>
<td>soluble</td>
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<tr>
<td><strong>Solubility (in Solvent/Oil)</strong></td>
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<td><strong>Minimum Ignition Energy</strong></td>
<td>Not available</td>
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<tr>
<td>(mj)</td>
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<tr>
<td><strong>Minimum Explosion Conc. (MEC)</strong></td>
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<tr>
<td><strong>Octanol/Water Partition</strong></td>
<td>pH 7</td>
</tr>
<tr>
<td><strong>Coefficient</strong></td>
<td>logPow: &lt; 0.1</td>
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</table>
SECTION 10. STABILITY AND REACTIVITY

Chemical Stability
Stable at ambient temperatures

Conditions to Avoid
None known

Incompatibility
None known

Hazardous Products of Decomposition
None known.

Hazardous Polymerization (Conditions to avoid)
Will not occur

SECTION 11. TOXICOLOGICAL INFORMATION

Acute Oral Toxicity
Rely Herbicide
Rat: LD50: 3,570 mg/kg
Slightly toxic.

Acute Dermal Toxicity
Rely Herbicide
Rat: LD50: > 2,000 mg/kg
No more than slightly toxic

Acute Inhalation Toxicity
Rely Herbicide
Rat: LC50: 4.42 mg/l 4 h
Practically non-toxic.

Skin Irritation
Rely Herbicide
Rat: Slightly irritating
Primary Irritation Index = 0.7/8.0

Eye Irritation
Rely Herbicide
Rabbit: Moderately irritating
Max. Avg. Score = 22.3/110

Sensitization
Rely Herbicide
Guinea pig: Non-sensitizing

NOTE: The severity classifications listed above are those of Bayer, and, particularly for eye irritation, may not always coincide with EPA-mandated Precautionary Statements.

THE FOLLOWING DATA WERE DEVELOPED WITH: glufosinate-ammonium, the active ingredient
Chronic Toxicity

No clear evidence of target organ toxicity was noted in studies with rats, mice or dogs. An adaptive increase in kidney weight was noted in several species but no functional or histopathological changes were observed. No-Observable-Effect-Levels (NOEL's) for the 1-year dog, 2.5-year rat and 2-year mouse studies were approximately 5 mg/kg/day, 2.1 mg/kg/day and 14 mg/kg/day, respectively. Glufosinate-ammonium was not carcinogenic in either rats or mice.

Assessment Carcinogenicity

ACGIH
None
NTP
None
IARC
None
OSHA
None

Reproductive & Developmental Toxicity

No evidence of teratogenicity was noted in either rats or rabbits. Evidence of developmental toxicity was noted in rats but only at dose levels that were also toxic to the mother. No developmental toxicity was noted in rabbits. The maternal and developmental NOEL's were considered to be 10 and 50 mg/kg/day, respectively, in rats; and 6.3 and 20 mg/kg/day (highest dose tested), respectively, in rabbits. The parental and reproductive NOEL's in a 2-generation rat reproduction study were considered to be 400 ppm (approximately 4 mg/kg/day) and 120 ppm (approximately 12 mg/kg/day), respectively, based on decreased kidney weights at 120 ppm and decreased litter size at 360 ppm.

Neurotoxicity

Glufosinate-ammonium does not inhibit acetylcholinesterase activities. No evidence of delayed neurotoxicity was noted in hens. Neurobehavioral effects (e.g., hypersensitivity, tremors, convulsions) related to stimulation of the central nervous system (CNS) were observed in some studies but only at lethal or near lethal dose levels.

Mutagenicity

No evidence of mutagenicity or other genetic effects was noted in a battery of in vitro or in vivo studies.

SECTION 12. ECOLOGICAL INFORMATION

Acute and Prolonged Toxicity to Fish

<table>
<thead>
<tr>
<th>Rely Herbicide</th>
<th>Bluegill sunfish LC50: 79 mg/l</th>
<th>Exposure Time: 96 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rely Herbicide</td>
<td>Rainbow trout LC50: 42 mg/l</td>
<td>Exposure Time: 96 h</td>
</tr>
</tbody>
</table>
Rely Herbicide
Carp
LC50: 80 mg/l
Exposure Time: 96 h

Glufosinate-ammonium, the active ingredient
Freshwater Fish & Invertebrates
LC50: 560 - 1,000 mg/l

Acute Toxicity to Aquatic Invertebrates
Rely Herbicide
Daphnia
EC50: > 100 mg/l
Exposure Limit: 48 h

Glufosinate-ammonium, the active ingredient
Marine and Estuarine Organisms
LC50: 7.2 - 125 mg/l

Chronic Toxicity to Aquatic Invertebrates
Glufosinate-ammonium, the active ingredient
Freshwater Invertebrates
NOEC: 32 mg/l

Toxicity Other Non Mammal Terr. Species
Acute Oral
Glufosinate-ammonium, the active ingredient
Avian
LD50: > 2,000 mg/kg

Acute Dietary
Glufosinate-ammonium, the active ingredient
Avian
LC50: > 5,000 ppm

Reproduction
Glufosinate-ammonium, the active ingredient
Avian
NOEL: 400 ppm

Contact
Glufosinate-ammonium, the active ingredient
Honeybee
LD50: > 600 ug/bee

Stability in Water
Glufosinate-ammonium, the active ingredient
Hydrolytic Half-life: > 300 days

Photodegradation
Glufosinate-ammonium, the active ingredient
Photolytic Half-Life: > 300 days

Stability in Soil
Glufosinate-ammonium, the active ingredient
Soil Half-Life: 6-23 days in field dissipation studies
Bioaccumulation
Glufosinate-ammonium, the active ingredient
No accumulation

Environmental Precautions
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 clean equipment or dispose of equipment washwaters in a manner that will contaminate water resources or arable land.

Glufosinate-ammonium and its degradates have those properties normally associated with pesticides that have been detected in groundwater. Use of this product in areas with coarse soils and high water tables may result in groundwater contamination.

Ecological Information
Rely Herbicide is no more than slightly toxic to freshwater fish and aquatic invertebrates. Based on studies conducted with other formulations of glufosinate-ammonium, it is expected to be relatively non-toxic to birds, bees, earthworms and beneficial insects, but may be moderately toxic to some marine and/or estuarine organisms.

Environmental Fate
Glufosinate-ammonium is very soluble in water and under laboratory conditions is hydrolytically and photolytically stable. Its mobility under laboratory conditions varies widely, depending upon the soil type. However, the results of numerous terrestrial field dissipation studies indicate that the potential for groundwater contamination is minimal. This appears to be primarily a result of its rapid degradation by microorganisms in the soil and a tendency to bind to certain soil elements resulting in no measurable leaching. Glufosinate-ammonium does not accumulate in fatty tissues of fish or other animals.

SECTION 13. DISPOSAL CONSIDERATIONS

General Disposal Guidance
Do not contaminate water, food, or feed by disposal.

Pesticide Disposal: Wastes resulting from use of this product may be disposed of on site or at an approved waste disposal facility.

Container Disposal
Empty containers should be triple rinsed (or equivalent). Then offer for recycling or reconditioning or puncture and dispose of in a sanitary landfill or incineration, or if allowed by State and Local authorities, by burning. If burned, stay out of smoke.

RCRA Classification
Not Regulated under this Statute
SECTION 14. TRANSPORT INFORMATION

PROPER SHIPPING NAME: None

DOT SHIPPING LABEL: None

NOTE: For transport purposes (49 CFR Part 173.132), the calculated 1-Hour LC50 (Rat) is: 17.68 mg/l.

SECTION 15. REGULATORY INFORMATION

US Federal
- EPA Registration No. 264-652
- TSCA list
  - Alkyl hydroxy-poly(oxyethylene)sulfate-salts 9004-82-4
- TSCA 12b export notification None
- SARA Title III - section 302 - notification and information None
- SARA Title III - section 313 - toxic chemical release reporting None

US States Regulatory
- CA Prop65
  - This product does not contain any substances known to the State of California to cause cancer.
  - This product does not contain any substances known to the State of California to cause reproductive harm.

- US State right-to-know ingredients
  - None

Canadian Regulations
- Canadian Registrat. No.
- Canadian Domestic Substance List
  - Alkyl hydroxy-poly(oxyethylene)sulfate-salts 9004-82-4

Environmental
- CERCLA
  - None
- Clean Water Section 307 Priority Pollutants
  - None
- Safe Drinking Water Act Maximum Contaminant Levels
  - None

International Regulations
EU Classification
None

European Inventory of Existing Commercial Substances (EINECS)
Glufosinate-ammonium 77182-82-2

SECTION 16. OTHER INFORMATION

<table>
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<tr>
<th></th>
<th>Health</th>
<th>Flammability</th>
<th>Reactivity</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMIS</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>F</td>
</tr>
<tr>
<td>NFPA</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td></td>
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</tbody>
</table>

REVISED SECTIONS:
MSDS REVISION INDICATOR: Company name change.

Print Date: 12/18/2002
Supersedes MSDS, which is older than: 12/16/2002

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