1. CHEMICAL IDENTIFICATION

Product: Metasystox-R
EPA Signal Word: Warning
EPA Registration No.: 10163-220
Active Ingredient: Oxydemeton-methyl (25%)
CAS No.: 301-12-2
Chemical Name: S-[2-(Ethylsulfinyl)ethyl] O,O-dimethyl phosphorothioate
Chemical Class: Organophosphorus pesticide

2. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>INGREDIENT NAME</th>
<th>OSHA – PEL</th>
<th>ACGIH – TLV</th>
<th>OTHER</th>
<th>NTP/IARC/OSHA CARCINOGEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxydemeton-methyl (25%)</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
<td>No</td>
</tr>
<tr>
<td>Methyl Isobutyl Ketone (40-50%)</td>
<td>50 ppm</td>
<td>50 ppm</td>
<td>Not established</td>
<td>No</td>
</tr>
<tr>
<td>Xylenes (1-5%)</td>
<td>100 ppm</td>
<td>100 ppm</td>
<td>Not established</td>
<td>No</td>
</tr>
<tr>
<td>Ethylbenzene (%0.1-1)</td>
<td>100 ppm</td>
<td>100 ppm</td>
<td>Not established</td>
<td>No</td>
</tr>
<tr>
<td>Trimethylbenzenes (%10-15)</td>
<td>50 ppm</td>
<td>50 ppm</td>
<td>Not established</td>
<td>No</td>
</tr>
</tbody>
</table>

3. HAZARDS IDENTIFICATION

Physical Properties

Appearance: Clear, colorless to amber liquid
Odor: Sulfurous odor
3. HAZARDS IDENTIFICATION (continued)

Symptoms of Acute Exposure
Inhalation, dermal absorption or ingestion of this material may result in systemic intoxication due to inhibition of the enzyme cholinesterase. The sequence of development of systemic effects varies with the route of entry, and the onset of symptoms may be delayed up to 12 hours. First symptoms of poisoning may be nausea, increased salivation and lachrymation, blurred vision and constricted pupils. Other symptoms of systemic poisoning include vomiting, diarrhea, abdominal cramping, dizziness and sweating. After inhalation, respiratory symptoms including tightness of chest, wheezing, and laryngeal spasms may be pronounced at first. If the poisoning is severe, then symptoms of weakness, muscle twitching, confusion, ataxia, slurred speech, convulsions, low blood pressure, cardiac irregularities, loss of reflexes and coma may occur. In extreme cases, death may occur due to a combination of factors such as respiratory arrest, paralysis of respiratory muscles or intense bronchoconstriction. Complete symptomatic recovery from sublethal poisoning usually occurs within one week once the source of exposure is completely removed. The aromatic hydrocarbon solvents in this product can be irritating to the eyes, nose and throat. In high concentration, they may cause central nervous system depression and narcosis characterized by nausea, lightheadedness and dizziness from overexposure by inhalation.

Symptoms of Acute Exposure
Cholinesterase inhibition sometimes persists for 2-6 weeks; thus, repeated exposure to small amounts of MetaSystox-R may result in an unexpected cholinesterase depression causing symptoms such as malaise, weakness, and anorexia that resemble other illnesses such as influenza. Exposure to a concentration that would not have produced symptoms in a person that was not previously exposed may produce severe symptoms of cholinesterase inhibition in a previously exposed person. Repeated skin contact may result in defatting of the skin by the solvents in the product which, can lead to redness and irritation of the skin. Chronic overexposure to these solvent components may cause mucous membrane irritation, nausea, headache, loss of appetite, weakness and alcohol intolerance. A rat reproduction study revealed adverse effects on the testes and overall reproductive performance when high dosages were administered. The relevance of these findings for humans is unknown.

Medical Conditions Likely to be Aggravated by Exposure
No specific medical conditions are known which may be aggravated by exposure to the active ingredient in this product; however, any disease, medication, or prior exposure which reduces normal cholinesterase activity may increase susceptibility to the toxic effects of the active ingredient. In addition, certain pre-existing skin, liver, and kidney disorders may be aggravated by exposure to this product due to solvent components.

Primary Routes of Exposure
Dermal absorption and inhalation are the primary routes of entry. This product can be absorbed through the skin.

Hazardous Decomposition Products
CO, P₂O₅, SO₂

Unusual Fire, Explosion, and Reactivity Hazards
Not applicable

4. FIRST AID MEASURES

If poisoning is suspected, immediately contact a physician, the nearest hospital, or the nearest Poison Control Center. Tell the person contacted the complete product name, and the type and amount of exposure. Describe any symptoms and follow the advice given.

Ingestion: Vomiting should be induced. Administer water freely and induce vomiting by giving one dose (½ oz. or 15 ml.) of syrup of ipecac. If vomiting does not occur within 10-20 minutes, administer second dose. If syrup of ipecac is not available, induce vomiting by sticking finger down throat. Repeat until vomit fluid is clear. Never give anything by mouth to an unconscious person. Professional medical assistance should be secured immediately. If poisoning occurs, obtain prompt medical aid.

Eye Contact: Immediately flush eyes with plenty of water. Get medical attention if irritation persists.
4. FIRST AID MEASURES (continued)

Note to Physician

May cause cholinesterase depression. Atropine sulfate is antidotal. 2-PAM is also antidotal and may be administered in conjunction with atropine. Administer atropine sulfate in large therapeutic doses. Repeat as necessary to the point of tolerance. Compound inhibits cholinesterase, resulting in stimulation of the central nervous system, the parasympathetic nervous system and the somatic motor nerves. Do not give morphine. Watch for pulmonary edema, which may develop in serious cases of poisoning even after 24-48 hours. At first sign of pulmonary edema, the patient should be placed in an oxygen tent and treated symptomatically.

!! IN ALL CASES OF SUSPECTED POISONING, GET MEDICAL ATTENTION IMMEDIATELY!!

For emergency MEDICAL response and hazard communication ONLY, call:
Hazard Information Services at (800) 228-5635 ext. 283.

5. FIRE FIGHTING MEASURES

Flashpoint (test method): 69°F (TCC), 78°F (TOC)
Flammable Limits (% in air): upper explosive limit (UEL): Not established
lower explosive limit (LEL): 1.2%
Autoignition Temperature: Not available

Appropriate Extinguishing Media
Use water spray, CO₂, foam, and dry chemical.

Fire Fighting Guidance
Keep out of smoke. Cool exposed containers with water spray. Fight fire from upwind position. Use self-contained breathing equipment. Contain runoff by diking to prevent entry into sewers or waterways. Equipment or materials involved in pesticide fires may become contaminated.

6. ACCIDENTAL RELEASE MEASURES

In Case of Spills or Leaks
Handle an open container in a manner as to prevent spillage. If container is leaking invert to prevent leakage. If the container is leaking or material spilled for any reason or cause, carefully dam up spilled material to prevent tun-off. Refer to Precautionary Statements on label for hazards associated with the handling of this material. Do not walk through spilled material. Absorb spilled material with absorbing type of compounds and dispose of as directed for pesticides above. In spill or leak incidents, keep unauthorized people away. Avoid skin contact. Scrub contaminated area with detergent and bleach solution. Repeat. Rinse with water. Do not allow material to enter streams, sewers, or other waterways.

7. HANDLING AND STORAGE

CAUTION: May be harmful if swallowed, inhaled or absorbed through the skin. Avoid breathing spray mist. Avoid contact with skin, eyes, or clothing. Do not contaminate water, food or feed by storage or disposal. Store in the original container and keep closed. Store containers in a cool, dry place.

Precautions in Storing
DO NOT contaminate water, food or feed by storage or disposal. Do not store next to herbicides. For LiquiPac™ product, do not expose container or contents to moisture, sunlight, or extremes of heat or cold. Store water-soluble bags in unopened outer protective package in the shipping container.

Storage
Store in a cool, dry place and in such a manner as to prevent cross contamination with other pesticides, fertilizers, food and feed. Store away from heat and open flame. Store in original container and out of the reach of children, preferably in a locked storage area.
8. EXPOSURE CONTROLS/PERSO NAL PROTECTION

<table>
<thead>
<tr>
<th>Engineering Control</th>
<th>Maintain exposure levels below the applicable exposure limits through the use of general and local exhaust ventilation.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye/Face Skin Protection</td>
<td>Avoid eye contact. Protective eyewear is required. Applicators and other handlers must wear coveralls worn over long-sleeved shirt and long pants, chemical-resistant gloves such as barrier laminate or butyl rubber or nitrile rubber or Viton, chemical-resistant footwear plus socks, chemical-resistant headgear for overhead exposure, and a chemical-resistant apron when cleaning equipment, mixing, or loading.</td>
</tr>
<tr>
<td>Respiratory Protection</td>
<td>For exposure in enclosed areas, applicators and other handlers must wear a respirator with either an organic vapor-removing cartridge with a prefilter approved for pesticides, or a canister approved for pesticides. For exposure outdoors, applicators and other handlers must wear a dust/mist-filtering respirator.</td>
</tr>
<tr>
<td>Additional Protection Information</td>
<td>Plasma and/or red blood cell cholinesterase activity can be used to detect excessive absorption of Metasystox-R (oxydemeton-methyl). It is preferable to establish a pre-exposure baseline value for best comparisons. Metabolites may also be detected in the blood or urine. If significant cholinesterase depression occurs, no further exposure should be allowed until cholinesterase values return to normal. Clean water should be available for washing in case of eye or skin contamination. Educate employees in the safe use of the product. Follow all label instructions and precautionary statements. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining Personal Protective Equipment (PPE). If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.</td>
</tr>
<tr>
<td>Applicators/Handlers</td>
<td>Applicators and other handlers must wear coveralls worn over long-sleeved shirt and long pants, chemical-resistant gloves such as barrier laminate or butyl rubber or nitrile rubber or Viton, chemical-resistant footwear plus socks, chemical-resistant headgear for overhead exposure, and a chemical-resistant apron when cleaning equipment, mixing, or loading.</td>
</tr>
<tr>
<td>User Safety Recommendations</td>
<td>Users should 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 PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.</td>
</tr>
</tbody>
</table>

9. PHYSICAL AND CHEMICAL PROPERTIES

| Appearance: | Clear, colorless to amber liquid |
| Odor: | Sulfurous odor |
| Melting Point: | 0°F |
| Boiling Point: | Not applicable |
| Specific Gravity/Density: | 0.95-0.96 @20°C / 7.93-8.00 lbs./gal |
| Solubility in H₂O | Miscible |
| Vapor Pressure | Oxydemeton-methyl 2.8x10⁻⁵ mm Hg @ 20°C |
10. STABILITY AND REACTIVITY

Stability: Stable under normal storage conditions for at least 36 months.
Hazardous Polymerization: Will not occur
Decomposition Products: None known
Hazardous Mixtures: Avoid oxidizing agents
Conditions To Avoid: Sustained temperature above 104°F (40°C). Avoid exposure to strong oxidizing agents. Subject to hydrolysis. Unstable in alkaline media.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity/Irritation Studies

**Ingestion:**
- Acute Oral LD$_{50}$ (rat-female): >138 mg/kg body weight
- Acute Oral LD$_{50}$ (rat-male): >125 mg/kg body weight

**Dermal:**
- Acute Dermal LD$_{50}$ (rabbit-male): >359 mg/kg body weight
- Acute Dermal LD$_{50}$ (rabbit-female): >253 mg/kg body weight

**Inhalation:**
- Acute Inhalation LC$_{50}$ (rat-male): >0.73 mg/L air – 1 hour
- Acute Inhalation LC$_{50}$ (rat-female): >0.60 mg/L air – 1 hour

**Eye Contact:** Mild irritant
**Skin Contact:** Slightly irritating
**Skin Sensitizer:** Not expected to be a skin sensitizer

Mutagenic Potential
Not available

Reproductive Hazard Potential
Not available

Chronic/Subchronic Toxicity Studies
Not available

Carcinogenic Potential
None

Other Toxicity Information
Not available

12. ECOLOGICAL INFORMATION

**Summary of Effects**

**Oxydemeton-methyl**
This pesticide is toxic to fish and wildlife. For terrestrial uses, 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 by cleaning of equipment or disposal of wastes. Drift and runoff from treated areas may be hazardous to aquatic organisms in adjacent aquatic sites. This product is toxic to bees exposed to direct treatment. Do not apply this product while bees are actively visiting the treatment area.

Other Environmental Information Use Precautions
Not available
13. DISPOSAL CONSIDERATION

Pesticide Disposal
Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container Disposal
For plastic containers: Triple rinse (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. For LiquiPac™ product, completely empty container into application equipment. Then dispose of empty container in a sanitary landfill or by incineration or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

Hazardous Information
None

14. TRANSPORT INFORMATION

DOT Classification
Organophosphorus Pesticide, Liquid, Flammable, Toxic, 3, UN 2784, PG II, NAERG# 131

International Maritime Organization
Organophosphorus Pesticide, Liquid, Flammable, Toxic, 3, UN 2784, PG II, EmS 3-03, MFAG 505, FP 20° C, NAERG# 131

International Civil Aviation Organization
Organophosphorus Pesticide, Liquid, Flammable, Toxic, 3, UN 2784, PG II, NAERG# 131

15. REGULATORY INFORMATION

SARA Title III Classification
Section 302/304: Not applicable
Section 311/312: Immediate (acute) health hazard
Delayed (chronic) health hazard
Fire hazard
Section 313 chemical(s): Oxydementon-Methyl, Methyl Isobutyl Ketone, Xylenes, Ethylbenzene

Proposition 65
Not applicable

CERCLA Reportable Quantity (RQ)
250 gal Product (100 lbs. Xylene)

16. OTHER INFORMATION

<table>
<thead>
<tr>
<th>NFPA</th>
<th>Hazard Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health:</td>
<td>3</td>
</tr>
<tr>
<td>Flammability:</td>
<td>4</td>
</tr>
<tr>
<td>Reactivity:</td>
<td>0</td>
</tr>
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Prepared By:  
Gowan Company  
(520) 783-8844

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Printing Date:  
January 14, 2000

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LiquiPac™ is a trademark of Gowan Company