MATERIAL SAFETY DATA SHEET

Universal Crop Protection Alliance LLC
1300 Corporate Center Curve
Eagan, MN  55121

In Case of Emergency, Call:
24 Hour Emergency Number
CHEMTREC: 800-424-9300

Medical Emergency Contact:
1-800-228-5635 Ext. 138

1. CHEMICAL IDENTIFICATION

Product Name:  Malathion 5 EC
EPA Signal Word: Caution
EPA Reg. Number: 1386-124-72693
Active Ingredient (%): 57.0
CAS No.: 121-75-5
Chemical Name: O,O-Dimethyl-S-(1,2-di(ethoxycarbonyl)-ethyl) Phosphorodithioate
Chemical Class: Organophosphorous Insecticide

2. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Material</th>
<th>OSHA PEL</th>
<th>ACGIH TLV</th>
<th>Other</th>
<th>NTP/IARC/OSHA Carcinogen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aromatic Hydrocarbon</td>
<td></td>
<td>50 ppm</td>
<td></td>
<td>No</td>
</tr>
<tr>
<td>CAS # 64742-95-6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malathion</td>
<td>10 mg/m3</td>
<td>10 mg/m3</td>
<td>Skin</td>
<td>No</td>
</tr>
<tr>
<td>CAS # 121-75-5</td>
<td></td>
<td></td>
<td>Skin</td>
<td></td>
</tr>
</tbody>
</table>

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Regulated material. Clear straw amber to brown liquid. Mild mercaptan sulfur to aromatic solvent odor. The material can cause moderate irritation to the eyes and skin. This product is an organophosphate insecticide that causes cholinesterase inhibiting. Combustible material. Ingestion or vomiting may cause aspiration into the respiratory system causing mild to severe pulmonary injury.

Potential Health Effects: May cause irritation to the eyes, skin and upper respiratory system. Ingestion or vomiting of material may cause severe injury. Cholinesterase Inhibitor.

Eye: May cause eye irritation including redness, tearing, and blurred vision.

Skin: Prolonged or repeated skin contact may cause skin irritation. A single prolonged exposure may result in the material being absorbed in harmful amounts. LD50 for skin exposure in rats for Malathion is above 2000 mg/kg.

Ingestion: Malathion is an organophosphorous insecticide and a cholinesterase inhibitor. Can cause gastrointestinal irritation, nausea, vomiting, and diarrhea. Aspiration into the lungs can cause chemical pneumonitis, a condition caused by petroleum and petroleum-like solvents. This condition may be fatal.
**Inhalation:** May cause irritation to the upper respiratory tract and depression of the central nervous system. Signs and symptoms include increased body heat, central nervous system effects such as headache, fatigue, weakness, dizziness in-coordination, drowsiness, and unconsciousness.

**Systemic (other Target Organs) Effects:** Excessive exposure may produce organophosphate type cholinesterase inhibition affecting the central and peripheral nervous system and producing cardiac and respiratory depression. Signs and symptoms of excessive exposure to the hazardous component may be headache, dizziness, in-coordination, muscle twitching, tremors, nausea, abdominal cramps, diarrhea, sweating, pinpoint pupils, blurred vision, salivation, tearing, tightness in the chest, excessive urination or convulsion.

**Physical Properties**

- **Appearance:** Clear straw amber to brown liquid.
- **Odor:** Mild mercaptan sulfur to aromatic solvent odor

### 4. FIRST AID MEASURES

**Ingestion:** Call a physician, emergency transport or poison control center immediately. Do not induce vomiting unless recommended by a physician. Malathion recommends immediate vomiting but the aromatic hydrocarbon may cause aspiration into the respiratory system. Aspiration may cause severe pulmonary injury.

**Eye Contact:** Flush with water immediately and continuously for 15 minutes. Seek medical attention or consult a physician if irritation persists.

**Skin Contact:** Immediately wash the skin with plenty of soap and water. Remove contaminated clothing and wash before reuse. If contact has been extensive, prolonged or irritation persists consult a physician.

**Inhalation:** Remove to fresh air. Consult a physician if irritation develops, breathing is difficult or cholinesterase symptoms occur.

**Notes to Physician:**

Aspiration may occur during vomiting causing severe lung damage. Malathion is an organophosphate insecticide. If exposed, plasma and red blood cells cholinesterase tests may indicate significance of exposure. Administer Atropine Sulphate in large doses. Two to Four mg intravenously or intramuscularly as soon as syanosis is overcome. Repeat at 5 to 10 minute intervals until signs of atropinization appear. 2-PAM chloride is a pharmacological antidote and may be administered as an adjunct to, but not a substitute for atrophone, which is a symptomatic and often lifesaving antidote. Do not give morphine or tranquilizers. The decision of whether to induce vomiting or not should be made by an attending physician. If lavarge is performed, endotracheal and/or esophageal control is suggested. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. Continued absorption of Malathion may occur and relapse may occur after initial improvement. Very close supervision of the patient is indicated for at least 48 hours.

**Medical Conditions Likely to be Aggravated by Exposure:**

Skin contact may aggravate an existing dermatitis condition. May cause liver, kidney, and blood effects at high exposure levels.

### 5. FIRE FIGHTING MEASURES

**Fire and Explosion**

- **Flash Point (Test Method):** 117 F TOC
- **Flammable Limits (% in Air):** N/D
- **Auto-ignition Temperature:** N/D
- **Flammability:** N/D
**Hazardous Combustion Products:** Noxious fumes may be evolved including but not limited to various hydrocarbons, hydrogen sulfide, methyl mercaptan, dimethyl sulfide, oxides of carbon, sulfur, and phosphorus.

**Extinguishing Media:** Fog, foam, CO2, and dry chemical. Do not allow runoff to enter sewers or natural waterways.

**Fire Fighting Instructions:** Prevent human exposure to fire, fumes, smoke and products of combustion.

**Protective Equipment for Fire Fighters:** Emergency personal should wear full face, self contained breathing apparatus and impervious protective clothing.

### 6. ACCIDENTAL RELEASE MEASURES

**In Case of Spill or Leak**
Keep away from ignition sources. Contain spill. Dike large spills. Absorb spill with sand, floor-clay or dirt. Shovel or sweep up using nonspark equipment. Pump material using explosion proof pump. Use personal protective equipment. Prevent liquid from entering sewers, waterways, or low areas.

### 7. HANDLING AND STORAGE

**Precautions to be Taken in Handling and Storage:** See label. Keep out of reach of children. Do not get in the eyes, on skin, or on clothing. Avoid breathing mist or vapors. Good housekeeping is necessary for safe handling of product. No smoking, open flames or sources of ignition in handling and storage area. Wash thoroughly with soap and water after handling. Do not contaminate water, food or feed by storage or disposal. Store in original container above 40°F but less than 110 F. Do not store near heat or open flame.

### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

These precautions are suggested for conditions with a high potential for exposure. If handling procedures are such that there is only a low potential for exposure, less protection may be needed. Emergency conditions may require additional precautions.

- **Engineering Controls:** Use only with adequate ventilation.
- **Eye Contact:** Use chemical goggles. Use a full-face respirator if vapor causes eye discomfort.
- **Skin Contact:** Use protective clothing impervious to this material. Use of items such as gloves, boots, apron, or full-body suit will depend on the operation.
- **Inhalation:** Use only a NIOSH/MESA approved respirator.
- **Ventilation:** Use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations. Control airborne concentration below the exposure guidelines.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

- **Appearance:** Clear straw amber to brown liquid.
- **Odor:** Mild mercaptan sulfur to aromatic solvent odor
- **Boiling Point:** > 143 F
- **Specific Gravity/Density:** 1.06
- **pH:** N/A
- **Solubility in H2O:** Emulsifiable
- **Vapor Pressure:** N/A
- **Vapor Density:** N/A
10. STABILITY AND REACTIVITY

Reactivity
Stability: Stable
Hazardous Polymerization: Will not occur
Conditions to Avoid: Open fire or flame. Do not store above 110 F. Avoid elevated temperatures. Malathion undergoes rapid exothermic decomposition at approximately 100 C which can lead to higher temperature and violent decomposition.

Incompatible Materials
Strong alkalines, amines and strong oxidizing compounds. Malathion can corrode iron, steel, tin plate, lead, and copper. Malathion is rapidly hydrolyzed at pH > 7.0 or <5.0.

Hazardous Decomposition Products
Under fire conditions HCl, ethyl sulfide, diethyl sulfide, methyl mercaptan, and of carbon, sulfur, and phosphorus. CO, CO2 and various hydrocarbons can be released due to the solvents present.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity/Irritation Studies for Malathion:
- Ingestion: Oral LD50 (Rat): 5500 mg/kg body weight
- Dermal: Dermal LD50 (Rat): 1000 mg/kg body weight
- Inhalation: Inhalation LC50 (Rat): 5.2 mg/1/4-h

Reproductive Hazard Potential:
No embryotoxic effects observed in rats and rabbits at material non-toxic doses for malathion.

Teratology (Birth Defects):
No teratogenic effects observed in rats and rabbits at material non-toxic doses for malathion.

Carcinogenic Potential:
None observed

Mutagenicity:
No mutagenic effects observed in vivo and in vitro.

12. ECOLOGICAL INFORMATION

Summary of Effects:
Malathion is biodegradable. It undergoes rapid degradation in the environment and – without problems- in sewage treatment plants. Malathion is toxic to fish, aquatic invertebrates, and aquatic life stages of amphibians. Malathion is also highly toxic to bees.

Malathion:
- Fish 96-h LC50, Rainbow trout (Salmo gairdneri): 0.200mg/l
- Invertebrates 48-h LC50, Daphids (Daphnia magna): 1.0 ul/l
- Birds LD50, Japanese quail (bobwhite quail): 400 mg/kg
- Bees 24-h LD50, bees, topical: 0.27 ug/bee
- 24-h LD50, bees, oral: 0.38 ug/bee

Environmental Fate:
Not available

13. DISPOSAL CONSIDERATION

Disposal Method: Do not contaminate food, feed or water by storage or disposal. Improper disposal of excess pesticide, spray mixture, or rinseate is a violation of federal law. Use according to label instructions, otherwise contact your state or federal environmental control agency for disposal guidance.
14. TRANSPORT INFORMATION

**DOT Classification:** RQ = 100 pounds
RQ, Environmentally hazardous substances, liquid, n.o.s., 9, UN3082 PG III (Malathion)

**B/L Freight Classification:** Insecticide, Fungicides, Insect or Animal Repellant, NOI o/t Poison

15. REGULATORY INFORMATION

**NOTICE:** The information herein is presented in good faith and believed to be accurate as of the issue or revision date shown below. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to another, it is users responsibility to ensure that its activities comply with federal, state and local laws and regulations.

**SARA Title III Classification**
Reportable Quantity Pounds: 2

Sara Title III Hazard Classes: Acute Health Hazard
Chronic Health Hazard
Fire Hazard

Section 313 Chemical(s): This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA):

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS Number</th>
<th>RQ</th>
<th>% in Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aromatic Hydrocarbon</td>
<td>64742-95-6</td>
<td></td>
<td>35.5%</td>
</tr>
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</table>

Aromatic Hydrocarbon contains the following reportable ingredients:

- 1,2,4-Trimethylbenzene     95-63-6    4-20%
- Xylene                    1330-20-7    1-5%
- Cumene                    98-82-8    1-5%
- Ethylbenzene              100-41-4    1-2%

OSHA Hazard Communication Standard: This product is a “Harzardous Substance” as defined by the OSHA Hazard Communications Standard, 29 CFR 1910.1200

16. OTHER INFORMATION

**NFPA Hazard Ratings**

<table>
<thead>
<tr>
<th>Health</th>
<th>Flammability</th>
<th>Reactivity</th>
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<tbody>
<tr>
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<tr>
<td>Least</td>
<td>Slight</td>
<td>Moderate</td>
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<td>Severe</td>
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Issued Date: 9-09-99
Supersedes: 9-10-92

**Reference MSDS:**
Cheminova, Fyfanon, MSDS dated February, 1995

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