1. IDENTIFICATION OF COMPANY & PRODUCT

Product Name: Monocrotophos 36% SL
Chemical Name: Dimethyl (E)-1-methyl-2-(methylcarbamoyl) vinyl phosphate (IUPAC)
Brand Name: MONOCROP
Users: Insecticide
Molecular Formula: C22H19Cl2NO3
Manufacturer: CROP LIFE SCIENCE LTD.
Address: Plot No. 5165, 5166, 5151, G.I.D.C., Ankleshwar-393002
Gujarat, India
Tele Fax Number: 91 2646 238479

2. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Cas #</th>
<th>Percent Or Content(W/W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monocrotophos a.i.</td>
<td>6923-22-4</td>
<td>36.00 % w/w</td>
</tr>
<tr>
<td>Solvent</td>
<td>-----</td>
<td>Q.S</td>
</tr>
</tbody>
</table>

3. HEALTH HAZARDS IDENTIFICATION

Risk Phrases: Harmful by installation and if swallowed. Irritating to eyes

Skin Harmful: Danger of serious damage to health by prolonged exposure if swallowed.

Environmental Hazard: Very toxic to aquatic organisms, may cause long-term adverse effects in the Aquatic environment.

Primary route of Exposure: Vapors Inhalation. Skin and eyes contact. Inhalation. Symptoms relating to use
- Skin contact: Redness, pain.
- Eye contact: Blurred vision. May cause eye irritation.
- Ingestion: Abdominal pain, nausea.
4. FIRST AID MEASURES

In case poisoning symptoms appear, call physician immediately. Meanwhile, remove the patient immediately to Open air. Remove the clothing and wash contaminated body parts. Induce vomiting by putting fingers inside throat Or give one tablet spoon salt with lukewarm water. Continue this process till the vomit is cleared. Gastric lavage With 5 % sodium bicarbonate may be given. Use artificial respiration, if needed be, with oxygen under pressure.

5. FIRE FIGHTING MEASURES

Prevention: Keep away from sources of ignition. No smoking.

Extinguishing media
- Suitable: Small fire. Dry chemical.
- Not to be used: Do not use a heavy water stream

Surrounding fires: Use water spray or fog for cooling exposed containers.

Special exposure Hazards: When exposed to heat, may decompose liberating Hazardous gases, Carbon monoxide, Carbon dioxide, Halogens, Nitrogen oxides.

Protection against Fire: Do not enter fire area without proper protective Equipment, including respiratory protection.

Special procedures: Exercise caution when fighting any chemical fire. Avoid (reject) fire – fighting water to enter Environment.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: No smoking. Keep public away from danger area. Spill should be handed by rained cleaning personnel properly equipped with respiratory and eye protection.

Environment Precautions: Prevent entry to sewers and public waters. Notify Authorities if liquid enters sewers or public waters.

After spillage and / Or leakage: Clean up any spills as soon as possible, using an Absorbent material to collect it. Use suitable disposal Containers.
7. HANDLING AND STORAGE

General: Keep away from sources from sources of ignition. No smoking. Do not breathe vapors

Precautions in handing and storage: Both local exhaust and good general room ventilation must be provided not to control exposure but also to prevent formation of Flammable mixtures.

Technical protective measure:
- Use grubbed electrical / mechanical equipment.
- Store in dry, cool, well – ventilated area. Protection from freezing.
- Ensure prompt removal from eyes, skin and clothing. Wash Hands and other exposed areas with mild soap and water before Eat, drink or smoke and when leaving work.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Personal protection:
- Respiratory protection: When exposure through inhalation may occur from use, Approved respiratory protection equipment is recommended.
- Hand protection: Wear suitable gloves resistant to chemical penetration
- Skin protection: If skin contact or contamination of clothing is likely, Protective Clothing should be wear.
- Eye protection: Chemical goggles or face shield with safety glasses.
- Ingestion: When using, do not eat, drink or smoke.
- Industrial hygiene: Provide local exhaust or general room ventilation to minimize Dust and/ or vapor concentrations. Emergency eye wash Fountains and safety showers should be available in the Immediate vicinity of any potential exposure.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state: Liquid.
Color: Reddish brown
Odor: Characteristic.
10. STABILITY AND REACTIVITY

Chemical stability: Stable under normal conditions of use. No dangerous action known under normal conditions.
Hazardous polymerization: None
Conditions to avoid: Extreme heat and fire
Incompatible materials: None known

11. TOXICOLOGICAL INFORMATION

Acute Toxicity: Monocrotophos is a direct acting cholinesterase inhibitor capable of penetration through the skin. The dose which kills half of the test animals, the LD50, is 17-18 mg/kg for male rats and 20 mg/kg for female rats. The LD50 for dermal exposure is 126 mg/kg for male rats, 112 mg/kg for female rats, and 354 mg/kg for rabbits. The concentration in air at which half of the test animals die, the LC50, is 0.8 mg/l air.
Monocrotophos is not irritating to skin and eyes. Symptoms of Monocrotophos poisoning are similar to those of other organophosphate compounds. Its cholinesterase inhibiting activity causes nervous system effects. Cases of human poisoning are characterized by muscular weakness, blurred vision, profuse perspiration, confusion, vomiting, pain, and small pupils. There is a risk of death due to respiratory failure.
Chronic Toxicity: No Information Available.
Reproductive Effects: Rats who received doses of 2 mg/kg/day Monocrotophos produced fetuses with lower than average length and weight. This dose is much higher than expected from normal application of this pesticide.
Teratogenic Effects: No Teratogenic effects were found at 2 mg Monocrotophos/kg/day in rats, the highest dose tested.
Mutagenic Effects: Studies show that Monocrotophos may be weakly mutagenic.
Carcinogenic Effects: Monocrotophos is not carcinogenic in rats at 0.45 mg/kg/day, the highest dose tested. No significant carcinogenic lesions were observed when rats were exposed to Monocrotophos aerosol at concentrations from 97-308 mg/m3 for one hour.
Organ Toxicity: Monocrotophos affects the central nervous system by inhibiting cholinesterase, an enzyme essential for normal nerve impulse transmission.
12. ECOLOGICAL INFORMATION

Effects on Birds: Monocrotophos is highly toxic to birds. The LD50 is 0.76 mg/kg for California quail, 0.94 mg/kg for bobwhite quail, 1.58 mg/kg for Canada goose, 3.3 mg/kg for European starling and 4.76 mg/kg for mallard ducks.

Effects on Aquatic Organisms: Monocrotophos is moderately toxic to fish. The LC50 (48hrs) is 7 mg/l for rainbow trout and 23 mg/l for bluegill sunfish. Monocrotophos causes reproductive damage to crustaceans exposed for long periods of time.

Effects on Other Animals (Nontarget species): Monocrotophos is highly toxic to bees. It may also kill nontarget birds which eat insects poisoned with Monocrotophos.

13. DISPOSAL CONSIDERATIONS

Do not wash away into sewer. Sweep spilled substance into sealable containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place. Personal protection: complete protective clothing including self-contained breathing apparatus.

14. TRANSPORT INFORMATION

General information: Ensure that vehicle’s driver is aware of the potential hazards of the local and knows what to do in the event of an accident or an emergency.

Land transport
- Shipping name: UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. 9, III
- UN No.: 3082
- H.Ln: 90
- ADR/RD: Group: III
- Class: 9

Sea transport
- Shipping name: UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. 9, III
- IMO – IMDG: 9
- IMO Packing group: III
- IMDG – Marine pollution: Marine pollutant.
Air transport
- Shipping name : UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. 9, III
- IATA : 9
- IATA Packing group : III
- Packing instruction : 914/NO LIMIT – 914 NO LIMIT.

15. REGULATORY INFORMATION

Symbol (s) : Harmful.

R Phrase (s) : R20/22 – Harmful by inhalation and if swallowed.
R36/38 – Irritating to eyes and skin.
R48/22 – Harmful: danger of serious damage to health by prolonged Exposure if swallowed.
R50/53 – Very toxic to aquatic organisms, may cause long term adverse effects in the aquatic environment.

S Phrase (s) : S/02 - Keep out of the reach of children.
S13 – Keep away from food, drink and animal feeding stuffs.
S20/21 – When using, do not eat, drink or smoke.
S23 – Do not breathe spray.
S24/25 – Avoid contact with skin and eyes.
S26 – In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S29/35 – Do not empty into drains, dispose of this materials and its container in a safe way.
S36/37/39 – Wear suitable protective clothing, Glovers and eye/ face Protection.
S46 – If swallowed seek medical advice immediately and show this container or label.
S51 – Use only in well- ventilated areas.
S59 – Refer to manufacturers/ supplier for information on recovery/recycling.
16. OTHER INFORMATION

The information in this MSDS was obtained from sources, which we believe are reliable. However, the information is provided without any warranty, express or implied, regarding its correctness. The conditions or methods of handling, storage, use or disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expenses arising out of or in any way connected with the handling, storage, use or disposal of the product. This MSDS was prepared and is too used only for this product. If the product is used as a component in another product, this MSDS information may not be applicable.