SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION

Product name: LARVIN® BRAND 3.2 THIODICARB INSECTICIDE/OVICIDE AQUEOUS FLOWABLE
MSDS Number: 102000004258
EPA Registration No.: 264-379

Bayer CropScience
2 T.W. Alexander Drive
Research Triangle PK, NC 27709
USA

For MEDICAL, TRANSPORTATION or other EMERGENCY call: 1-800-334-7577 (24 hours/day)
For Product Information call: 1-866-99BAYER (1-866-992-2937)

SECTION 2. HAZARDS IDENTIFICATION

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

Emergency Overview: Warning! May be fatal if swallowed. Harmful if inhaled or absorbed through skin. Moderate eye irritation. Avoid contact with skin, eyes and clothing. Avoid inhalation of vapour or mist. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

Physical State: liquid suspension
Odor: sulphurous
Appearance: off-white to beige
Exposure routes: Skin Absorption, Inhalation, Eye contact, Ingestion
Immediate Effects:
Eye: Moderate eye irritation. Avoid contact with eyes.
Skin: Harmful if absorbed through skin. May cause sensitization by skin contact. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Avoid contact with skin and clothing.
Ingestion: This product causes reversible cholinesterase inhibition. May be fatal if swallowed. Do not take internally.
Inhalation: Harmful if inhaled. Avoid inhalation of vapour or mist.
Chronic or Delayed Long-Term
This product contains ingredients that are considered to be probable or suspected human carcinogens (see Section 11 - Chronic). This product or its components may have target organ effects. This product or its components may have long term (chronic) health effects.

Medical Conditions Aggravated by Exposure
This product is a cholinesterase inhibitor carbamate. Allow no further exposure to any cholinesterase inhibitor until full recovery is assured. Prolonged exposure and inhalation may aggravate pre-existing conditions of the respiratory system.

Potential Environmental Effect
Toxic to fish and aquatic invertebrates. Toxic to mammals. Toxic to bees.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Hazardous Component Name</th>
<th>CAS-No.</th>
<th>Average % by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thiodicarb</td>
<td>59669-26-0</td>
<td>34.00</td>
</tr>
<tr>
<td>Dodecylbenzene sulphonate, isopropylamine salt</td>
<td>26264-05-1</td>
<td>2.20</td>
</tr>
<tr>
<td>Synthetic amorphous silica</td>
<td>112926-00-8</td>
<td>1.00</td>
</tr>
<tr>
<td>Sulphonated aromatic polymer, sodium salt</td>
<td>57-55-6</td>
<td>1.60</td>
</tr>
<tr>
<td>1,2-Propanediol</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SECTION 4. FIRST AID MEASURES

General
When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.

Eye
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a physician or poison control center immediately.

Skin
Take off contaminated clothing and shoes immediately. Wash off immediately with plenty of water for at least 15 minutes. Call a physician or poison control center immediately.

Ingestion
Call a physician or poison control center immediately. Rinse out mouth and give water in small sips to drink. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Never give anything by mouth to an unconscious person. Do not leave victim unattended.

Inhalation
Move to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a physician or poison control center immediately.

Notes to physician

Signs and Symptoms
Temporary blurred vision due to contraction of the pupils (miosis) following contact with the eyes.
bradycardia
low blood pressure
Salivation
bronchial hypersecretion
Vomiting
Diarrhoea
sweating
Muscular fasciculation
Spasm
breathing difficulties
respiratory paralysis
Somnolence
Coma
respiratory failure
hypothermia
Convulsions
Nausea

Hazards
This product is a cholinesterase inhibitor carbamate.

Treatment
Monitor: respiratory, cardiac and central nervous system. Monitor: blood picture. Monitor: red blood cell and plasma cholinesterase. ECG - monitoring (Electrocardiogram). Oxygen or artificial respiration if needed. Keep respiratory tract clear. In case of ingestion gastric lavage should be considered in cases of significant ingestions only within the first 2 hours. However, the application of activated charcoal and sodium sulphate is always advisable. The following antidote is generally accepted: atropine. Before antidote is administered, either clear symptoms of poisoning have to be present or the cholinesterase activity is inhibited to below 30% of normal. In case of convulsions, a benzodiazepine (e.g. diazepam) should be given according to standard regimens. Contraindications: oximes (pralidoxime, obidoxime).

Do not use oximes such as 2-PAM unless organophosphate intoxication is suspected. 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. Contraindications: derivatives of morphine.

SECTION 5. FIRE FIGHTING MEASURES

Flash point
Not relevant; aqueous solution

Fire and Explosion Hazards
In the event of fire the following may be released:
Carbon monoxide (CO)
nitrogen oxides (NOx)
Sulphur oxides
### SECTION 6. ACCIDENTAL RELEASE MEASURES

<table>
<thead>
<tr>
<th>Personal precautions</th>
<th>Keep unauthorized people away. Isolate hazard area. Avoid contact with spilled product or contaminated surfaces.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methods for cleaning up</td>
<td>Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Collect and transfer the product into a properly labelled and tightly closed container. Clean contaminated floors and objects thoroughly, observing environmental regulations.</td>
</tr>
<tr>
<td>Additional advice</td>
<td>Use personal protective equipment. Do not allow to enter soil, waterways or waste water canal.</td>
</tr>
</tbody>
</table>

### SECTION 7. HANDLING AND STORAGE

<table>
<thead>
<tr>
<th>Handling procedures</th>
<th>Use only in area provided with appropriate exhaust ventilation.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storing Procedures</td>
<td>Store in a cool, dry place and in such a manner as to prevent cross contamination with other crop protection products, fertilizers, food, and feed. Store in original container and out of the reach of children, preferably in a locked storage area. The 30-day storage temperature average must not exceed the recommended maximum. Keep away from food, drink and animal feedingstuffs.</td>
</tr>
<tr>
<td>Work/Hygienic Procedures</td>
<td>Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, using the toilet or applying cosmetics.</td>
</tr>
</tbody>
</table>

Remove Personal Protective Equipment (PPE) immediately after handling this product. Before removing gloves clean them with soap and water. Remove soiled clothing immediately and clean thoroughly before using again. Wash thoroughly and put on clean clothing.
SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General Protection
Cholinesterase activity of the worker should be supervised.

Follow all label instructions. Train employees in safe use of the product.

Follow manufacturer’s instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and warm/tepid water. Keep and wash PPE separately from other laundry.

Eye/Face Protection
Tightly fitting safety goggles

Hand protection
Chemical resistant nitrile rubber gloves

Body Protection
Wear long-sleeved shirt and long pants and shoes plus socks.

Respiratory protection
When respirators are required, select NIOSH approved equipment based on actual or potential airborne concentrations and in accordance with the appropriate regulatory standards and/or industry recommendations.

Exposure Limits

<table>
<thead>
<tr>
<th>Chemical</th>
<th>CAS No.</th>
<th>Type</th>
<th>Standard</th>
<th>Limit</th>
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</thead>
<tbody>
<tr>
<td>Thiodicarb</td>
<td>59669-26-0</td>
<td>OES BCS*</td>
<td>TWA</td>
<td>4 mg/m³</td>
</tr>
<tr>
<td>1,2-Propanediol</td>
<td>57-55-6</td>
<td>WEEL</td>
<td>TWA</td>
<td>10 mg/m³</td>
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<tr>
<td></td>
<td></td>
<td>TX ESL</td>
<td>ST ESL</td>
<td>20 ug/m³</td>
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<tr>
<td></td>
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<td>TX ESL</td>
<td>ST ESL</td>
<td>500 ppm</td>
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<tr>
<td></td>
<td></td>
<td>TX ESL</td>
<td>AN ESL</td>
<td>2 ug/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TX ESL</td>
<td>AN ESL</td>
<td>50 ppm</td>
</tr>
<tr>
<td>Synthetic amorphous silica</td>
<td>112926-00-8</td>
<td>OSHA Z1A</td>
<td>TWA</td>
<td>6 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TX ESL</td>
<td>ST ESL</td>
<td>40 ug/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TX ESL</td>
<td>AN ESL</td>
<td>4 ug/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>TWA</td>
<td>6 mg/m³</td>
</tr>
</tbody>
</table>

*OES BCS: Internal Bayer CropScience "Occupational Exposure Standard"

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance
off-white to beige

Physical State
liquid suspension

Odor
sulphurous
Material Safety Data Sheet
LARVIN® BRAND 3.2 THIODICARB INSECTICIDE/OVICIDE
AQUEOUS FLOWABLE

pH
4 - 6.5 Determined in the undiluted form.

Density
1.14 g/cm³ at 20 °C

Boiling Point
100 °C / 212 °F

Melting / Freezing Point
-4 °C / 25 °F

Water solubility
dispersible

Decomposition temperature
175 - 190 °C
Exothermic decomposition.

Viscosity
700 - 1,000 mPa.s

SECTION 10. STABILITY AND REACTIVITY

Conditions to avoid
Heat, flames and sparks.

Incompatibility
Alkali metals
Heavy metals
Heavy metal salts
Iron
Aluminium
Copper
Rust
Acids

Hazardous reactions
No hazardous reactions when stored and handled according to prescribed instructions.

Chemical Stability
Stable under normal conditions.

SECTION 11. TOXICOLOGICAL INFORMATION

Only acute toxicity studies have been performed on this product as formulated. The non-acute information pertains to the technical-grade active ingredient, thiodicarb.

Acute oral toxicity
male rat: LD50: 357 mg/kg
female rat: LD50: 330 - 558 mg/kg
male/female combined rat: LD50: 386 mg/kg

Acute dermal toxicity
rabbit: LD50: > 2,000 mg/kg
Acute inhalation toxicity

male rat: LC50: 2.34 mg/l
Exposure time: 4 h
Determined in the form of liquid aerosol.

female rat: LC50: 1.76 mg/l
Exposure time: 4 h
Determined in the form of liquid aerosol.

Skin irritation
rabbit: slight irritation

Eye irritation
rabbit: Mild eye irritation.

Sensitisation
guinea pig: Sensitising
OECD Test Guideline 406, Buehler test

Chronic toxicity
Thiodicarb caused cholinesterase inhibition and/or organ effects (liver, spleen, testes) in chronic studies in mice, rats and dogs.

Assessment Carcinogenicity
Thiodicarb has been classified by EPA as a Group B2 (probable human carcinogen) based on its oncogenic potential at high dose levels in mice (liver tumors) and rats (benign testicular tumors). At low doses the product would not be expected to cause these tumors in humans.

ACGIH
None.

NTP
None.

IARC
None.

OSHA
None.

Reproductive toxicity
REPRODUCTION: Thiodicarb is not a primary reproductive toxicant based on a two-generation study in rats. Reproductive effects (e.g., decreased viability) were considered secondary to maternal toxicity.

DEVELOPMENTAL TOXICITY: Thiodicarb is not teratogenic based on developmental toxicity studies in rats, mice and rabbits. Developmental effects (e.g., delayed ossifications) were observed in rats and were considered secondary to maternal toxicity.

Assessment neurotoxicity
Thiodicarb caused transient neurobehavioral effects related to cholinergic toxicity in acute and/or subchronic neurotoxicity screening studies in rats. There were no neuropathological changes observed in either study. Thiodicarb did not cause neurotoxic effects in a delayed neurotoxicity study with atropine-pretreated hens.

Mutagenicity
Thiodicarb was not mutagenic or genotoxic based on the overall weight of evidence in a battery of in vitro and in vivo tests.
## SECTION 12. ECOLOGICAL INFORMATION

### Toxicity to fish
- **Oncorhynchus mykiss (rainbow trout)**
  - LC50: 8.8 mg/l
  - Exposure time: 96 h
- **Lepomis macrochirus (Bluegill sunfish)**
  - LC50: 1.4 mg/l
  - Exposure time: 96 h

### Toxicity to aquatic plants
- **Algae**
  - EC50: 120 mg/l
  - Exposure time: 96 h

### Acute Toxicity to Aquatic Invertebrates
- **Daphnia**
  - EC50: 27 µg/l
  - Exposure time: 48 h
- **Water flea (Daphnia magna)**
  - EC50: 95 µg/l
  - Exposure time: 48 h

### Bioaccumulation
- **Lepomis macrochirus (Bluegill sunfish)** BCF: 6.3
- No significant accumulation in organisms.

### 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 contaminate surface or ground water by cleaning equipment or disposal of wastes, including equipment wash water. Do not apply when weather conditions favor runoff or drift. Drift and runoff from treated areas may be hazardous to aquatic organisms in adjacent sites. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area. Apply this product as specified on the label.
### SECTION 13. DISPOSAL CONSIDERATIONS

**General Disposal Guidance**

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.

In accordance with current regulations and, if necessary, after consultation with the site operator and/or with the responsible authority, the product may be taken to a waste disposal site or incineration plant.

**Container Disposal**

Do not re-use empty containers. Triple rinse containers. 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. Follow advice on product label and/or leaflet. Return large containers to supplier.

**RCRA Information**

Characterization and proper disposal of this material as a special or hazardous waste is dependent upon Federal, State and local laws and are the user's responsibility. RCRA classification may apply.

### SECTION 14. TRANSPORT INFORMATION

<table>
<thead>
<tr>
<th>49CFR</th>
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<tbody>
<tr>
<td>UN-Number</td>
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<tr>
<td>Class</td>
<td>9</td>
</tr>
<tr>
<td>Packaging group</td>
<td>III</td>
</tr>
<tr>
<td>Description of the goods</td>
<td>ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S. (THIODICARB)</td>
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<tr>
<td>RQ</td>
<td>Reportable Quantity is reached with 294 lb of product.</td>
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</table>

<table>
<thead>
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</thead>
<tbody>
<tr>
<td>UN-Number</td>
<td>3082</td>
</tr>
<tr>
<td>Class</td>
<td>9</td>
</tr>
<tr>
<td>Packaging group</td>
<td>III</td>
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<tr>
<td>Marine pollutant</td>
<td>Marine Pollutant</td>
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<td>Description of the goods</td>
<td>ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (THIODICARB SOLUTION)</td>
</tr>
</tbody>
</table>

<table>
<thead>
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<td>3082</td>
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<td>9</td>
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<tr>
<td>Packaging group</td>
<td>III</td>
</tr>
<tr>
<td>Description of the goods</td>
<td>ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.</td>
</tr>
</tbody>
</table>
This transportation information is not intended to convey all specific regulatory information relating to this product. It does not address regulatory variations due to package size or special transportation requirements.

Freight Classification: INSECTICIDES OR FUNGICIDES, N.O.I., POISON, OTHER THAN GASES THAT ARE POISONOUS BY INHALATION

SECTION 15. REGULATORY INFORMATION

EPA Registration No. 264-379

US Federal Regulations
TSCA list
- Dodecylbenzene sulphonate, isopropylamine salt 26264-05-1
- Sulphonated aromatic polymer, sodium salt
- 1,2-Propanediol 57-55-6

US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)
None.

SARA Title III - Section 302 - Notification and Information
None.

SARA Title III - Section 313 - Toxic Chemical Release Reporting
Thiodicarb 59669-26-0 1.0%

US States Regulatory Reporting
CA Prop65
This product contains a chemical known to the State of California to cause cancer.
Thiodicarb 59669-26-0

This product does not contain any substances known to the State of California to cause reproductive harm.

US State Right-To-Know Ingredients
Thiodicarb 59669-26-0 NJ
1,2-Propanediol 57-55-6 MN, RI

Canadian Regulations
Canadian Domestic Substance List
- Dodecylbenzene sulphonate, isopropylamine salt 26264-05-1
- Synthetic amorphous silica 112926-00-8
- Sulphonated aromatic polymer, sodium salt
- 1,2-Propanediol 57-55-6

Environmental
CERCLA
Thiodicarb 59669-26-0 100 lbs

Clean Water Section 307 Priority Pollutants
None.

Safe Drinking Water Act Maximum Contaminant Levels
None.

International Regulations
European Inventory of Existing Commercial Substances (EINECS)
Thiodicarb 59669-26-0

SECTION 16. OTHER INFORMATION

NFPA 704 (National Fire Protection Association):
Health - 2  Flammability - 1  Reactivity - 1  Others - none

Health - 2  Flammability - 1  Physical Hazard - 1  PPE -

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

Reason for Revision: The following sections have been revised: Section 11: Toxicological Information. Section 14: Transport Information. Updated for general editorial purposes.

Revision Date: 02/24/2011

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