For Chemical Emergency, Spill, Leak, Fire, Exposure, or Accident,
Call CHEMTREC Day or Night: 1-800-424-9300.
For Medical Emergencies Only, Call 1-877-325-1840.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: STAR THISTLE KILLER
Synonyms: Clopyralid, Monoethanolamine Salt; Monoethanolamine Salt of 3,6-Dichloro-2-Pyridinecarboxylic Acid
EPA Reg. No.: 228-491-54705

Company Name: Lawn and Garden Products, Inc.
P.O. Box 35000
Fresno, CA 93745-5000
Phone: 559-499-2100

Date of Issue: July 10, 2009 (NU-June 20, 2007)

2. HAZARDS IDENTIFICATION

Emergency Overview:
Appearance and Odor: Dark brown colored liquid with a mild odor.
Warning Statements: Keep out of reach of children. CAUTION. Avoid contact with eyes, skin, or clothing.

Potential Health Effects:
Likely Routes of Exposure: Inhalation, eye and skin contact.
Eye Contact: Minimally irritating based on toxicity studies. Vapors and mist may cause irritation.
Skin Contact: Slightly toxic and moderately irritating based on toxicity studies.
Ingestion: Slightly toxic based on toxicity studies.
Inhalation: Low inhalation toxicity. Overexposure to isopropanol may cause flushing, headache, dizziness, mental depression, nausea, vomiting, irritation of gastrointestinal tract, drowsiness, anesthesia and coma.
Medical Conditions Aggravated by Exposure: Inhalation of product may aggravate existing chronic respiratory problems such as asthma, emphysema or bronchitis. Skin contact may aggravate existing skin disease.

See Section 11: TOXICOLOGICAL INFORMATION for more information.

Potential Environmental Effects:
Clopyralid is practically non-toxic to birds and mammals and is of low toxicity to aquatic animals.

See Section 12: ECOLOGICAL INFORMATION for more information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENT	CAS NO.	% BY WEIGHT
Clopyralid, Monoethanolamine Salt	57754-85-5	40.9
Other Ingredients Including		59.1
Isopropanol	67-63-0	

4. FIRST AID MEASURES

If on Skin: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15 to 20 minutes. Call a poison control center or doctor for treatment advice.
If in Eyes: Hold eye open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.
If Inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.
If Swallowed: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

5. FIRE FIGHTING MEASURES

Flash Point: Not applicable due to aqueous formulation
Autoignition Temperature: Not determined **Flammability Limits:** Not determined

Extinguishing Media: Use alcohol resistant foam, dry chemical, carbon dioxide, water fog.
Special Fire Fighting Procedures: Firefighters should wear NIOSH/MSHA approved self-contained breathing apparatus and full fire-fighting turn out gear. Dike area to prevent runoff and contamination of water sources. Dispose of fire control water later.
Unusual Fire and Explosion Hazards: If water is used to fight fire or cool containers, dike to prevent runoff contamination of municipal sewers and waterways.
Hazardous Decomposition Materials (Under Fire Conditions): May produce gases such as hydrogen chloride, chlorinated pyridine and nitrogen oxides.

National Fire Protection Association (NFPA) Hazard Rating:
Rating for this product: Health: 1 **Flammability:** 1 **Reactivity:** 0
Hazards Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Wear appropriate protective gear for the situation. See Personal Protection information in Section 8.
Environmental Precautions: Prevent material from entering public sewer systems or any waterways. Do not flush to drain. Large spills to soil or similar surfaces may necessitate removal of topsoil. The affected area should be removed and placed in an appropriate container for disposal.
Methods for Containment: Dike spill using absorbent or impervious materials such as earth, sand or clay. Collect and contain contaminated absorbent and dike material for disposal.
Methods for Cleanup and Disposal: Pump any free liquid into an appropriate closed container. Collect washings for disposal. Decontaminate tools and equipment following cleanup. See Section 13: DISPOSAL CONSIDERATIONS for more information.
Other Information: Large spills may be reportable to the National Response Center (800-424-8802) and to state and/or local agencies.

7. HANDLING AND STORAGE

Handling:
Avoid contact with eyes, skin, or clothing. 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 Personal Protective Equipment (PPE) immediately after

handling this product. Wash outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

Storage:
Store above 28ºF or warm to 40ºF and agitate before use. Do not contaminate water, food or feed by storage or disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls:
Where engineering controls are indicated by specific use conditions or a potential for excessive exposure, use local exhaust ventilation at the point of generation.

Personal Protective Equipment:
Eye/Face Protection: To avoid contact with eyes, wear chemical goggles or shielded safety glasses. An emergency eyewash or water supply should be readily accessible to the work area.
Skin Protection: To avoid contact with skin, wear long pants, long-sleeved shirt, socks, shoes and chemical-resistant gloves made of any waterproof material. An emergency shower or water supply should be readily accessible to the work area.
Respiratory Protection: Not normally required. If vapors or mists exceed acceptable levels, wear NIOSH approved air-purifying respirator with cartridges/canisters approved for use against pesticides.
General Hygiene Considerations: Personal hygiene is an important work practice exposure control measure and the following general measures should be taken when working with or handling this material: 1) do not store, use and/or consume foods, beverages, tobacco products, or cosmetics in areas where this material is stored; 2) wash hands and face carefully before eating, drinking, using tobacco, applying cosmetics or using the toilet.

Exposure Guidelines:

	OSHA		ACGIH		
Component	TWA	STEL	TWA	STEL	Unit
Clopyralid	NE	NE	NE	NE	
Isopropyl alcohol	400	NE	200	400	ppm

NE = Not Established

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Dark brown colored liquid with a mild odor.

Boiling Point:	Not determined	**Solubility in Water:**	Soluble
Density:	9.66 pounds/cubic foot	**Specific Gravity:**	1.160 @ 20ºC
Evaporation Rate:	Not determined	**Vapor Density:**	Not determined
Freezing Point:	Not determined	**Vapor Pressure:**	Not determined
pH:	8.3 (1% solution)	**Viscosity:**	5.397 cps @ 20ºC

Note: Physical data are typical values, but may vary from sample to sample. A typical value should not be construed as a guaranteed analysis or as a specification.

10. STABILITY AND REACTIVITY

Chemical Stability: This material is stable under normal handling and storage conditions.
Conditions to Avoid: Excessive heat. Do not store near heat or flame.
Incompatible Materials: Acid, oxidizing material, halogenated organics, brass, copper, zinc and aluminum.

Hazardous Decomposition Products: Under fire conditions may produce gases such as hydrogen chloride, chlorinated pyridine and nitrogen oxides.
Hazardous Reactions: Hazardous polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

Toxicological Data:
Data from laboratory studies on this product are summarized below:
Oral: Rat LD_{50}: >5,000 mg/kg (female)
Dermal: Rat LD_{50}: >5,000 mg/kg
Inhalation: Rat 4-hr LC_{50}: >2.13 mg/l
Eye Irritation: Rabbit: Minimally irritating
Skin Irritation: Rabbit: Moderately irritating
Skin Sensitization: Not a contact sensitizer in guinea pigs following repeated skin exposure.

Subchronic (Target Organ) Effects: Excessive exposure to clopyralid may cause effects to liver and kidneys. Isopropanol is a central nervous system depressant. Overexposure to isopropanol may also affect the liver, kidneys and skin.
Carcinogenicity / Chronic Health Effects: Clopyralid did not cause cancer in laboratory animal studies.
Reproductive Toxicity: In animal studies, clopyralid did not interfere with reproduction.
Developmental Toxicity: Clopyralid caused birth defects in test animals, but only at exaggerated doses that were severely toxic to the mothers. No birth defects were observed in animals given clopyralid at doses several times greater than those expected during normal exposure. Isopropanol at extremely high concentrations has been reported to cause birth defects and fetal toxicity in rats. At lower concentrations there were no effects on the fetus.
Genotoxicity: *In-vitro* and animal genetic toxicity studies with clopyralid were negative.

Assessment Carcinogenicity: None listed with ACGIH, IARC, NTP or OSHA.

See Section 2: HAZARDS IDENTIFICATION for more information.

12. ECOLOGICAL INFORMATION

Ecotoxicity:
Data on Clopyralid Acid Technical:

96-hour LC_{50} Bluegill:	125 mg/l	Bobwhite Quail 8-day Dietary LC_{50}:	>4,640 ppm
96-hour LC_{50} Rainbow Trout:	104 mg/l	Mallard Duck Oral LD_{50}:	1,465 mg/kg
48-hour EC_{50} Daphnia:	232 mg/l	Mallard Duck 8-day Dietary LC_{50}:	>4,640 ppm
Honey Bee Oral LD_{50}:	100 μg/bee		

Environmental Fate:
The bioconcentration for clopyralid is low (BCF <100 or Log Pow <3). Potential for mobility in the soil is very high (Koc between 0 and 50). Biodegradation under aerobic laboratory conditions is below detectable limits. Under aerobic soil conditions, the half-life of clopyralid is 71 days. Clopyralid is not significantly degraded by sunlight.

13. DISPOSAL CONSIDERATIONS

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

Container Handling and Disposal:
Metal Containers: Do not reuse container. Triple rinse (or equivalent). Puncture and dispose of in a sanitary landfill, or by other procedures approved by State and local authorities.
Plastic Containers: Do not reuse container. Triple rinse (or equivalent). Puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

14. TRANSPORTATION INFORMATION

Follow the precautions indicated in Section 7: HANDLING AND STORAGE of this MSDS.

D.O.T.:	Not D.O.T. Regulated
Other Shipping Information:	Compounds, Tree or Weed Killing (Herbicide) NMFC Item 50320, LTL Class 60

15. REGULATORY INFORMATION

U.S. Federal Regulations:

TSCA Inventory: This product is exempted from TSCA because it is solely for FIFRA regulated use.

SARA Hazard Notification/Reporting:
Hazard Categories Under Criteria of SARA Title III Rules (40 CFR Part 370): Immediate, Delayed

Section 313 Toxic Chemical(s): None

Reportable Quantity (RQ) under U.S. CERCLA: None

RCRA Waste Code: None

State Information:
The following product components are cited on certain state lists. Check individual state requirements.
Isopropanol (CAS No. 67-63-0) <4.0%

California Proposition 65: Not Listed

16. OTHER INFORMATION

This Material Safety Data Sheet (MSDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-ACCEPTED PRODUCT LABELING (attached to and accompanying the product container). This MSDS provides important health, safety and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course.

Use, storage and disposal of pesticide products are regulated by the EPA under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) through the product labeling, and all necessary and appropriate precautionary, use, storage, and disposal information is set forth on that labeling. It is a violation of Federal law to use a pesticide product in any manner not prescribed on the EPA-accepted label.

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