MATERIAL SAFETY DATA SHEET

DATE PREPARED: 09/17/1996

MSDS No: 4852

Dursban Lawn & Garden Insect Control

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Dursban Lawn & Garden Insect Control

PRODUCT DESCRIPTION: Insecticide

MANUFACTURER

The SOLARIS Group

of Monsanto Company

P.O. Box 5008

San Ramon, CA 94583-0808

EPA REG. NO.: 239-2570G **PN:** 5602-E

24 HR. EMERGENCY TELEPHONE NUMBERS

Emergency Phone 800-454-2333

2. COMPOSITION/INFORMATION ON INGREDIENTS

Chlorpyrifos, Diethyl(trichloro-2-pyridyl)phosphorothioate

Chemical Name	Wt.%	CAS Registry #
	1	2921-88-2
INERT INGREDIENTS	~ 99 .0 0	

``Inert Ingredients" is a term defined by the U.S. Environmental Protection Agency under the Federal Insecticide, Fungicide, and Rodenticide Act (40 CFR 158.153). It refers to any substance, other than an active ingredient, which is intentionally added to a pesticide product. Some inert ingredients may be hazardous chemicals, as defined by the Federal OSHA Hazard Communication Standard (29 CFR 1910.1200). The hazards associated with these inert ingredients have been included in this document.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

PHYSICAL APPEARANCE: Tan or grey granules with characteristic organophosphate odor

IMMEDIATE CONCERNS: - HARMFUL IF ABSORBED THROUGH THE SKIN
- AVOID CONTACT WITH EYES, SKIN OR CLOTHING
- KEEP OUT OF REACH OF CHILDREN

POTENTIAL HEALTH EFFECTS

EYES: This product is moderately irritating to the eyes. Eye contact may include discomfort, tearing, swelling, redness, and blurred vision. See Toxicological Information, section 11.

SKIN: This substance is not expected to cause skin irritation and is only slightly toxic if absorbed through the skin. See Toxicological Information, section 11.

INGESTION: If swallowed, this substance is considered practically non-toxic to internal organs. See Toxicology Information, section 11.

INHALATION: The systemic toxicity of this substance has not been determined. However, it should be practically non-toxic to internal organs if inhaled. See Toxicology Information, Section 11.

TARGET ORGANS: Chlorpyrifos is an inhibitor of the cholinesterase enzyme, found in nervous tissue, red blood cells, and plasma.

COMMENTS HEALTH: Depending upon the extent and degree of overexposure to the product, signs and symptoms of cholinesterase inhibition can result following either ingestion, skin contact or inhalation routes of exposure. Signs and symptoms of cholinesterase inhibition can also result from either acute (one time), subchronic (repeated short-term) and chronic (daily life-time) exposure to the product.

Signs and symptoms of cholinesterase inhibition usually occur within 12 hours following overexposure. These effects may include, but may not be limited to, headache, dizziness, weakness, nausea, vomiting, diarrhea, constriction of the pupil of the eye, blurred or dark vision, excessive salivation or nasal discharge, profuse sweating and abdominal cramps. Incontinence, unconsciousness, convulsions and breathing difficulties are indicative of severe poisoning. In untreated severe poisoning, death is due to respiratory failure or cardiac arrest.

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4. FIRST AID MEASURES

EYES: Flush eyes immediately with fresh water for at least 15 minutes while holding the eyelids open. Remove contact lenses if worn. No additional first aid should be necessary. However, if irritation persists, see a doctor.

SKIN: If on skin, wash with plenty of soap and water.

INGESTION: If swallowed, immediately telephone a poison control center, emergency treatment center or a physician for advice. DO NOT make person vomit unless directed to do so by medical personnel. If medical

advice cannot be obtained, then immediately take person and product container, with label, to an emergency treatment center.

INHALATION: Since this material is not expected to be an immediate inhalation problem, no first aid procedures are required. If respiratory discomfort or irritation occurs, move the person to fresh air. See a doctor if discomfort or irritation continues.

NOTES TO PHYSICIAN: This material contains a cholinesterase inhibitor. Measurement of blood cholinesterase activity may be useful in monitoring exposure. If signs of cholinesterase inhibition appear, atropine sulfate is antidotal. 2-PAM (PROTOPAM) is also antidotal and may be used in conjunction with atropine but should not be used alone.

ADDITIONAL INFORMATION: Medical Information: Call day or night, 1-800-454-2333 OR 1-800-457-2022.

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5. FIRE FIGHTING MEASURES

FLASHPOINT AND METHOD: Not Applicable

EXTINGUISHING MEDIA: Use CO2, Dry Chemical or Foam extinguishing media.

HAZARDOUS COMBUSTION PRODUCTS: Active ingredient decomposes at 160 C (320 F). In air, decomposition products may be hydrochloric acid, ethyl sulfide, diethyl sulfide and nitrogen oxides.

FIRE FIGHTING PROCEDURES: Products of combustion from fires involving this material may be toxic. Avoid breathing smoke and mists. Avoid personnel and equipment contact with fallout and runoff. Minimize the amount of water used for fire fighting. Do not enter any enclosed area without full protective equipment, including self-contained breathing equipment. Contain and isolate runoff and debris for proper disposal. Decontaminate personal protective equipment and fire fighting equipment before reuse. Read the entire document.

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6. ACCIDENTAL RELEASE MEASURES

SMALL SPILL: Sweep up material and place in disposable container. Dispose of in accordance with instructions in Section 13. "DISPOSAL".

LARGE SPILL: Clean up spills immediately, observing precautions in Exposure Controls/ Personal Protection section. Vacuum with machines equipped with high efficiency filters or sweep up material and place in a disposable container. Scrub contaminated area with detergent and water using a stiff broom. Pick up liquid with Oil Dry, cat litter, clay, rags or other absorbent and place in a disposable container. Dispose of in accordance with instructions in Section 13. "DISPOSAL".

GENERAL PROCEDURES: Observe all protection and safety precautions when cleaning up spills -- see Section 8. "EXPOSURE CONTROLS/PERSONAL PROTECTION". For help with any spill, leak, fire or

exposure involving this material, call day or night (800) 454-2333.

7. HANDLING AND STORAGE

GENERAL PROCEDURES: Keep pesticide in original container. Do not put concentrate or dilute into food or drink containers. Store in a cool, dry place, preferably locked storage area.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Provide natural or mechanical ventilation to control exposure levels below airborne exposure limits (see below). If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment.

PERSONAL PROTECTION

EYES AND FACE: Where there is potential for eye contact, wear chemical goggles and have eye flushing equipment available.

For application of product in accordance with label instructions, no special eye protection is needed.

SKIN: Wear appropriate protective clothing and chemical resistant gloves to prevent skin contact. Consult glove manufacturer to determine appropriate type of glove for given application. Wash contaminated skin promptly. Launder contaminated clothing and clean protective equipment before reuse. Wash thoroughly after handling.

RESPIRATORY: Avoid breathing dust. Use NIOSH/MSHA approved respiratory protection equipment (full facepiece recommended) when airborne exposure limits are exceeded (see below). If used, full facepiece replaces need for chemical goggles. Consult respirator manufacturer to determine appropriate type equipment for given application. Observe respirator use limitations specified by NIOSH/MSHA or the manufacturer. Respiratory protection programs must comply with 29 C.F.R. 1910.134.

For application of product in accordance with label instructions, no special respiratory protection is required.

OSHA HAZARDOUS COMPONENTS (29 CFR 1910.1200):

		EXPOSURE LIMITS		
Chemical Name		**OSHA PEL**	**ACGIH TLV**	**ACGIH STEL**
Diethyl(trichloro-2-pyridyl)phosphorothioate		0.2 mg/m3	0.2 mg/m3	None
Calcium Silicate	Respirable	5 mg/m3	10 mg/m3 Total	None

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: Granular

ODOR: Characteristic organophosphate odor

APPEARANCE: Tan or grey granules.

pH: Not Applicable

DENSITY: 36-42 lbs/cubic ft.

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10. STABILITY AND REACTIVITY

STABLE: YES

HAZARDOUS POLYMERIZATION: NO

CONDITIONS TO AVOID: Avoid high temperatures. Active ingredient decomposes at 160 C (320 F).

HAZARDOUS DECOMPOSITION: Active ingredient decomposes at 160 C (320 F) in air; decomposition products may be hydrochloric acid, ethyl sulfide, diethyl sulfide and nitrogen oxides.

INCOMPATIBLE MATERIALS: Avoid contact with alkaline materials.

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11. TOXICOLOGICAL INFORMATION

ACUTE

EYES: Found to be moderately irritating to rabbit eyes; irritation cleared by test day 4. EPA FIFRA Toxicity Category - III.

DERMAL LD_{50}: Pratically non-toxic, (Rat LD50 = >5000 mg/Kg). Nonirritating to skin (Rabbit). EPA FIFRA Toxicity Category - IV.

ORAL LD_{50}: Practically nontoxic. Rat acute oral LD50 >5,000 mg/kg. EPA FIFRA toxicity category - IV.

INHALATION LC_{50}: This product if inhaled is considered to be slightly toxic. 4 hour inhalation LC50 for rats > 0.68 mg/liter/hour for a similar product (highest attainable concentration). EPA FIFRA toxicity category - IV.

SENSITIZATION: No product toxicology data available. Results of guinea pig skin sensitization studies, using other chlorpyrifos formulations, were negative.

CARCINOGENICITY:

CARCINOGENICITY COMMENTS: Chlorpyrifos is not considered to be a carcinogen. There were no carcinogenic findings in any of the chronic animal toxicology investigations. The signs of systemic toxicity were primarily due to inhibition of cholinesterase.

Rat 2 year feeding study: The systemic NOEL was 1.0 mg/kg/day while the plasma and brain cholinesterase NOEL was 0.1 mg/kg/day.

Mouse 2 year feeding study: There were no systemic effects noted at the high dose of 2.25 mg/kg/day (NOEL). Cholinesterase was not measured in the study.

Dog 2 year feeding study: The systemic NOEL was 1.0 mg/kg/day while the cholinesterase NOEL's were 0.01, 0.1 and 1.0 mg/kg/day for the plasma, red blood cell and brain cholinesterase, respectively.

NEUROTOXICITY: Chlorpyrifos is not considered to produce organophosphate induced delayed neuropathy. However, certain human anecdotal cases, involving the ingestion of lethal doses of chlorpyrifos, survived because of immediate aggressive antidotal therapy and respiratory support, later developed temporary signs of neuropathy.

Chicken: Dose levels of 100 and 300 mg/kg resulted in 34% and 70% inhibition of brain neurotoxic esterase (NTE), respectively. No neuropathology was conducted.

TERATOGENICITY: Chlorpyrifos in not considered to be a teratogen (a substance that causes birth defects).

Rats: Results of 2 rat teratology studies indicated that there was no evidence of maternal toxicity or developmental effects at dose levels of 0.1 - 2.5 mg/kg/day.

Mice: Developmental NOEL greater than 25 mg/kg/day (highest dose tested), even though severe maternal toxicity was observed at this dose.

Rabbit: Maternal and developmental NOEL = 81 mg/kg/day.

REPRODUCTIVE TOXIN: Chlorpyrifos is not considered to be a reproductive toxin.

Rats: No adverse reproductive effects were observed in a 3-generation dietary study (high dose 1.0 mg/kg/day).

MUTAGENICITY: Chlorpyrifos is not considered to be a mutagen. Results of several mutagenicity studies were negative, e.g. Ames test, Chinese hamster ovary cell mutation assays, micronucleus assay for chromosomal aberrations, in vitro chromosomal aberration assay with and without enzymatic activation and unscheduled DNA synthesis assay.

COMMENTS: See Section 16 for definition of EPA FIFRA toxicity categories.

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12. ECOLOGICAL INFORMATION

ENVIRONMENTAL DATA: No data available.

ECOTOXICOLOGICAL INFORMATION: This material is toxic to aquatic organisms and should be kept out of sewage and drainage systems and all bodies of water. This pesticide is extremely toxic to fish, birds and other wildlife. Do not apply directly to water.

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13. DISPOSAL CONSIDERATIONS

FOR LARGE SPILLS: Material collected that cannot be reprocessed should be disposed of in a landfill approved for pesticide disposal or in accordance with applicable Federal, State or local procedures.

PRODUCT DISPOSAL: The Solaris Group is committed to responsible environmental practices and recommends that all of the product be used up, carefully following all label directions and precautions.

If necessary to dispose of partially filled product container, then securely wrap it in several layers of newspaper and discard in trash.

EMPTY CONTAINER: Do not reuse empty container. Discard container in trash.

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14. TRANSPORT INFORMATION

DOT (DEPARTMENT OF TRANSPORTATION)

PROPER SHIPPING NAME: Not Regulated

PRIMARY HAZARD CLASS/DIVISION: None

UN/NA NUMBER: None

PACKING GROUP: No

U.S. SURFACE FREIGHT CLASS: Insecticides, Fungicides, Insect or animal repellents or vermin exterminators, NOI, Other than poison

AIR (ICAO/IATA)

PROPER SHIPPING NAME: Not Regulated

VESSEL (IMO/IMDG)

MARINE POLLUTANT #1: Chlorpyrifos (Severe Marine Pollutant)

SPECIAL SHIPPING NOTES: The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

COMMENTS: RQ for Chlorpyrofos is 1 Lb. Some shipping configurations of this product may meet or exceed the RQ limit. If shipment meets or exceeds RQ, proper shipping name will be "Consumer Commodity, ORM-D, RQ (Chlorpyrifos)".

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15. REGULATORY INFORMATION

UNITED STATES

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

PRODUCT CLASSIFICATION UNDER SECTION 311 OF SARA				
ACUTE: YES	**CHRONIC:** NO	**FIRE:** NO	**REACTIVITY:** NO	**PRESSURE GENERATING:** NO

311/312 HAZARD CATEGORIES: Immediate

313 REPORTABLE INGREDIENTS: No SARA 313 reportable ingredients.

CERCLA (COMPREHENSIVE RESPONSE, COMPENSATION, AND LIABILITY ACT)

CERCLA RQ: 1 Lb. of Chlorpyrifos

TSCA (TOXIC SUBSTANCE CONTROL ACT)

TSCA REGULATORY: All components are on the US EPA's TSCA Inventory List.

STATE REGULATIONS

PROPOSITION 65 STATEMENT: No ingredients on list.

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16. OTHER INFORMATION

HMIS CODES

FIRE: 0 **HEALTH:** 1 **REACTIVITY:** 0 **PROTECTION:** -

NFPA CODES

FIRE: 0 **HEALTH:** 1 **REACTIVITY:** 0 **SPECIAL:** -

APPROVAL DATE: 12/09/1996

REVISION SUMMARY New MSDS

MANUFACTURER SUPPLEMENTAL NOTES: EPA FIFRA (Federal Insecticide, Fungicide and Rodenticide Act) Toxicity Categories: The EPA toxicity categories are based on the results of the acute toxicology studies. The toxicology findings are compared to the FIFRA criteria to determine the product label signal word, precautionary and first aid statements. The EPA FIFRA toxicity category summary:

EPA FIFRA Product Label Toxicity Rating
Toxicity Category Signal Word

I DANGER Most toxic and irritating
II WARNING
III CAUTION
IV CAUTION Least toxic and irritating

COMMENTS: For additional information concerning this product, call the SOLARIS Groups Consumer Helpline at 800-225-2883.

MANUFACTURER DISCLAIMER: This Material Safety Data Sheet (MSDS) contains health, safety and environmental information for you and your employees. It does not replace the precautionary language, use directions, or the storage and disposal information found on the product label. Information contained in this MSDS will help you to prepare for emergency response and to meet community right-to-know, emergency response and reporting requirements under SARA Title III and many other laws. Emergency response agencies and health care providers will also find this additional information useful.

Use of this product is regulated by the U.S. Environmental Protection Agency (EPA) through the approved label copy. It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

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