MATERIAL SAFETY DATA SHEET

Dow AgroSciences

Emergency Phone: 800-992-5994
Dow AgroSciences LLC
Indianapolis, IN 46268

DURSBAN* 50W INSECTICIDE IN WATER SOLUBLE PACKETS

Effective Date: 5/25/00
Product Code: 01638
MSDS: 002255

1. PRODUCT AND COMPANY IDENTIFICATION:

PRODUCT: Dursban* 50W Insecticide in Water Soluble Packets

COMPANY IDENTIFICATION:
Dow AgroSciences
9330 Zionsville Road
Indianapolis, IN 46268-1189

2. COMPOSITION/INFORMATION ON INGREDIENTS:

Chlorpyrifos: O,O-diethyl-O-(3,5,6-trichloro-2-pyridinyl) phosphorothioate	CAS# 002921-88-2	50%
Other Ingredients, Total, Including:		50%
Calcium silicate	CAS# 001344-95-2	
Kaolinite clay (crystalline silica)	CAS# 001332-58-7	

The above ingredients are those contained in the wettable powder only and do not reflect the composition of the water-soluble packaging, which is considered to be not hazardous according to OSHA Hazard Communication Standard Definitions.

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). In addition, other substances not 'Hazardous' per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made available as provided in this standard.

3. HAZARDOUS IDENTIFICATIONS:

EMERGENCY OVERVIEW

Hazardous Chemical. Light gray powder with a mercaptan-type odor. May cause eye irritation and/or corneal injury. LD_{50} for skin absorption in rabbits is >5000 mg/kg. Oral LD_{50} for rats is 457-494 mg/kg (males) and 382-457 mg/kg (females). Inhalation LC_{50} for rats is >2.53 mg/L for 4 hours. Cholinesterase inhibitor. Toxic to avian and aquatic organisms.
EMERGENCY PHONE NUMBER: 800-992-5994

POTENTIAL HEALTH EFFECTS: This section includes possible adverse effects, which could occur if this material is not handled in the recommended manner.

EYE: May cause moderate eye irritation, which may be slow to heal. May cause slight corneal injury.

SKIN: Essentially nonirritating to skin. A single prolonged exposure is not likely to result in the material being absorbed through the skin in harmful amounts. The LD_{50} for absorption in rabbits is >5000 mg/kg. It did not cause allergic skin reactions when tested in guinea pigs.

INGESTION: Single dose oral toxicity is moderate. The oral LD_{50} for male rats is 457-494 mg/kg and for female rats is 382-457 mg/kg. Small amounts swallowed incidental to normal handling operations are not likely to cause injury; however, swallowing amounts larger than that may cause serious injury, even death.

INHALATION: Single exposure to dust is not likely to be hazardous. The LC_{50} for rats is >2.53 mg/l for 4 hours.

SYSTEMIC (OTHER TARGET ORGAN) EFFECTS: Excessive exposure may produce organophosphate type cholinesterase inhibition. Signs and symptoms of excessive exposure to chlorpyrifos may be headache, dizziness, incoordination, muscle twitching, tremors, nausea, abdominal cramps, diarrhea, sweating, pinpoint pupils, blurred vision, salivation, tearing, tightness in chest, excessive urination, and convulsions. Chlorpyrifos produced mild adrenal effects when fed to rats, but only at doses that greatly exceeded any exposures that would be received during use of this product.

CANCER INFORMATION: Chlorpyrifos did not cause cancer in laboratory animals. This mixture contains a component, which is listed as a carcinogen for hazard communication purposes under OSHA Standard 29 CFR 1910.1200. Component listed by IARC and NTP: crystalline silica. Crystalline silica has been shown to cause cancer in laboratory animals and humans.

TERATOLOGY (BIRTH DEFECTS): Chlorpyrifos did not cause birth defects in laboratory animals.

REPRODUCTIVE EFFECTS: Chlorpyrifos did not interfere with fertility in reproduction studies in laboratory animals. Some evidence of toxicity to the offspring occurred, but only at a dose high enough to produce significant toxicity to the parent animals.

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4. FIRST AID:

EYES: Irrigate with flowing water immediately and continuously for 15 minutes. Consult medical personnel.

SKIN: Wash off in flowing water or shower.

INGESTION: If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Consult medical personnel.

INHALATION: Remove to fresh air if effects occur. Consult a physician.

NOTE TO PHYSICIAN: Atropine, only by injection, is the preferable antidote. Oximes, such a 2-PAM/protopam, may be therapeutic if used early; however, use only in conjunction with atropine. If exposed, plasma and red blood cell cholinesterase tests may indicate significance of exposure (baseline data are useful). Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

5. FIRE FIGHTING MEASURES:

FLASH POINT: Not applicable
METHOD USED: Not applicable

FLAMMABLE LIMITS
LFL: Not applicable
UFL: Not applicable

HAZARDOUS COMBUSTION PRODUCTS: During a fire, smoke may contain the original material in addition to unidentified toxic and/or irritating compounds. Hazardous combustion products may include and are not limited to sulfur oxides, phosphorus compounds, nitrogen oxides, hydrogen chloride, carbon monoxide, and carbon dioxide.

FLAMMABILITY INFORMATION: Container may vent and/or rupture due to fire.

EXTINGUISHING MEDIA: Water, carbon dioxide, dry chemical.

FIREFIGHTING INSTRUCTIONS: Keep people away. Isolate fire area and deny unnecessary entry. Consider feasibility of a controlled burn to minimize environmental damage. Foam fire extinguishing system is preferred because uncontrolled water can spread possible contamination. Cool surroundings with water to localize fire zone. Soak thoroughly with water to cool and prevent re-ignition. Contain firewater run-off if possible. Firewater run-off, if not contained may cause environmental damage. Review the "Accidental Release Measures" and "Ecological Information" sections of this MSDS.

PROTECTIVE EQUIPMENT FOR FIREFIGHTERS: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, pants, boots, and gloves).

6. ACCIDENTAL RELEASE MEASURES

ACTION TO TAKE FOR SPILLS/LEAKS: For small spills, sweep up and place into suitable containers for disposal. Report large spills to Dow AgroSciences at 800-992-5994.

7. HANDLING AND STORAGE:

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Consult label for end-use directions. Keep out of reach of children. No smoking, open flames or sources of ignition in handling and storage area. This product may form a potentially explosive dust cloud if suspended in air. Do not remove product from the water-soluble package. Store in original package in a secured dry area at temperatures below 100°F (38°C). Handle carefully to avoid breakage; packets may become brittle when stored <32°F (0°C). Prevent cross-contamination with other pesticides and fertilizers.

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8. EXPOSURE CONTROLS/PERSONAL PROTECTION:

These precautions are suggested for conditions where a potential for exposure exists. Emergency conditions may require additional precautions.

EXPOSURE GUIDELINES:
Chlorpyrifos: ACGIH TLV and OSHA PEL are 0.2 mg/M^3, Skin. ACGIH classification is A4.

Crystalline Silica: ACGIH TLV is 0.1 mg/M^3 (respirable) for quartz, tripoli, and fused silica; 0.05 mg/M^3 (respirable) for cristobalite and tridymite. OSHA PEL is 10/%SiO2 + 2 mg/M^3 (respirable) for quartz, tripoli, and fused silica; 1/2 the value calculated from the respirable dust formula for quartz for cristobalite and tridymite.

PELs are in accord with those recommended by OSHA, as in the 1989 revision of PELs.

A 'skin' notation following the exposure guideline refers to the potential for dermal absorption of the material. It is intended to alert the reader that inhalation may not be the only route of exposure and that measures to minimize dermal exposures should be considered.

ENGINEERING CONTROLS: Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines.

RECOMMENDATIONS FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS:

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guidelines. In dusty atmospheres, use a NIOSH approved dust respirator.

SKIN PROTECTION: Use gloves impervious to this material.

EYE/FACE PROTECTION: Use chemical goggles.

APPLICATORS AND ALL OTHER HANDLERS: Refer to the product label for personal protective clothing and equipment.

9. PHYSICAL AND CHEMICAL PROPERTIES:

BOILING POINT: Not applicable
VAPOR PRESSURE: Very low
VAPOR DENSITY: Not applicable
SOLUBILITY IN WATER: Wettable powder
SPECIFIC GRAVITY: See bulk density
BULK DENSITY: 13.0 lb/cu. ft.
APPEARANCE: Light gray powder
ODOR: Mercaptan-type

10. STABILITY AND REACTIVITY:

STABILITY: Stable under recommended storage conditions. Store below 100°F (38°C). Unstable at elevated temperatures.

CONDITIONS TO AVOID: Avoid temperatures above 158°F (70°C). Chlorpyrifos decomposes at elevated temperatures.

HAZARDOUS DECOMPOSITION PRODUCTS: Hazardous decomposition products depend upon temperature, air supply and the presence of other materials. Hazardous decomposition products may include and are not limited to hydrogen chloride, organic sulfides, and sulfur oxide.

INCOMPATIBLE MATERIALS: Avoid contact with oxidizing materials and bases.

HAZARDOUS POLYMERIZATION: Not known to occur.

11. TOXICOLOGICAL INFORMATION:

MUTAGENICITY: Based on a majority of negative data and some equivocal or marginally positive results, chlorpyrifos is considered to have minimal mutagenic potential.

12. ECOLOGICAL INFORMATION:

ENVIRONMENTAL FATE:

MOVEMENT & PARTITIONING:
Based largely or completely on information for chlorpyrifos. Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Expected to be relatively immobile in soil (Koc greater than 5000).

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DEGRADATION & PERSISTENCE:
Based largely or completely on information for chlorpyrifos.
The photolysis for half-life in water is 3-4 weeks.
In the atmospheric environment, material is estimated to have a tropospheric half-life is estimated to be 1.4 hours.
Degradation is expected in the soil environment within days to weeks.
Under aerobic soil conditions the half-life is generally 30-60 days.

ECOTOXICOLOGY:
Based largely or completely on information for chlorpyrifos.
Material is very highly toxic to aquatic organisms on an acute basis (LC_{50}/EC_{50} <0.1 mg/L in most sensitive species).
Material is highly toxic to birds on a dietary basis (LC_{50} between 50 and 500 ppm).
Material is moderately toxic to birds on an acute basis (LD_{50} between 51 and 500 mg/kg).

13. DISPOSAL CONSIDERATIONS:

DISPOSAL METHOD: Do not contaminate food, feed, or water by storage or disposal. Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility. Follow all local, state, and federal requirements for disposal.

14. TRANSPORT INFORMATION:

For DOT regulatory information, if required, consult transportation regulations, product-shipping papers, or consult your Dow AgroSciences representative.

15. REGULATORY INFORMATION:

NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations.

U.S. REGULATIONS

SARA 313 INFORMATION: To the best of our knowledge, this product contains no chemical subject to SARA Title III Section 313 supplier notification requirements.

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

An immediate health hazard
A delayed health hazard

TOXIC SUBSTANCES CONTROL ACT (TSCA): All ingredients are on the TSCA inventory or are not required to be listed on the TSCA inventory.

STATE RIGHT-TO-KNOW: The following product components are cited on certain state lists as mentioned. Non-listed components may be shown in the composition section of the MSDS.

CHEMICAL NAME	CAS NUMBER	LIST
KAOLIN	001332-58-7	PA1
SILICIC ACID, CALCIUM SALT	001344-95-2	PA1
CHLORPYRIFOS	002921-88-2	PA3 NJ3 PA1

NJ3=New Jersey Workplace Hazardous Substance (present at greater than or equal to 1.0%).
PA1=Pennsylvania Hazardous Substance (present at greater than or equal to 1.0%).
PA3=Pennsylvania Environmental Hazardous Substance (present at greater than or equal to 1.0%).

OSHA HAZARD COMMUNICATION STANDARD: This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

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NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) RATINGS:

Health	2
Flammability	2
Reactivity	1

COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT (CERCLA, or SUPERFUND): This product contains the following substance(s) listed as "Hazardous Substances" under CERCLA which may require reporting of releases:

Chemical Name	CAS#	RQ	% in Product
Chlorpyrifos	002921-88-2	1	50%

16. OTHER INFORMATION:

MSDS STATUS: Revised Sections 3,5,6,7,8, & 10
Reference: DR-0226-8420
Replaces MSDS dated: 3/11/99
Document Code: D03-091-505
Replaces Document Code: D03-091-504

The Information Herein Is Given In Good Faith, But No Warranty, Express or Implied, Is Made. Consult Dow AgroSciences for Further Information.

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