MATERIAL SAFETY DATA SHEET

DATE PREPARED: 02/14/1997

MSDS No: 4416

SOLARIS

ISOTOX® Insect Killer Formula IV

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: ISOTOX® Insect Killer Formula IV

PRODUCT DESCRIPTION: Insecticide

MANUFACTURER

The SOLARIS Group

of Monsanto Company

P.O. Box 5008

San Ramon, CA 94583-0808

EPA REG. NO.: 239-2595 **PN:** 5616-B

24 HR. EMERGENCY TELEPHONE NUMBERS

Emergency Phone 800-454-2333

2. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Wt.%	CAS Registry #
Acephate, O,S-Dimethylacetylphosphoramidothioate	8	30560-19-1
Hexakis, (2-methyl-2-phenypropyl) distannoxane	0 .5	13356-08-6
INERT INGREDIENTS	~ 91 .5	

``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: Light amber liquid

IMMEDIATE CONCERNS: - CAUSES IRREVERSIBLE EYE DAMAGE
- CAUSES SKIN IRRITATION
- MAY BE HARMFUL IF SWALLOWED OR ABSORBED THROUGH THE SKIN
- DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING
- FLAMMABLE
- KEEP OUT OF REACH OF CHILDREN

POTENTIAL HEALTH EFFECTS

EYES: This substance is a severe eye irritant and could cause permanent damage to your eyes and blindness. The degree of the injury will depend on the amount of material that gets into the eye and the speed and thoroughness of the first aid treatment. Symptoms of overexposure may include discomfort, irritation and redness, and blurred vision. See Toxicological Information, section 11.

SKIN: The undiluted product is considered a moderate skin irritant, therefore contact with the skin can cause prolonged (days) injury to the affected area. The degree of injury will depend on the amount of material that gets on the skin and the speed and thoroughness of the first aid treatment. Skin irritation may include redness, itching and swelling. This substance is considered slightly toxic to internal organs if absorbed through the skin. See Toxicological Information, section 11.

INGESTION: This substance is slightly toxic to internal organs if swallowed. This product containes a petroleum distillate. Because of the low viscosity of the petroleum distillate, it can directly enter or be aspirated into the lungs either during swallowing or vomiting the substance. Once in the lungs, the substance is very difficult to remove and can cause severe injury to the lungs and death. Read the Toxicology Information section (11) of this document for more information.

INHALATION: If inhaled, this substance is considered practically non-toxic to internal organs.

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

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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. Call a physician.

SKIN: If on skin, remove contaminated clothing, wash skin with plenty of soap and water. Wash contaminated clothing before reuse. If irritation persists, see a doctor.

INGESTION: If swallowed: Do not induce vomiting. Call a physician or Poison Control Center (1-800-457-2022). Drink promptly a large quantity of milk, egg whites, or gelatin solution. If these are not available, drink large quantities of water. Avoid alcohol.

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: Ingestion of this product or subsequent vomiting can result in aspiration of light hydrocarbon liquid which can cause pneumonitis. 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.

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5. FIRE FIGHTING MEASURES

FLASHPOINT AND METHOD: 60°F TAG CC

EXTINGUISHING MEDIA: CO2, dry chemical, foam and water fog.

HAZARDOUS COMBUSTION PRODUCTS: Thermal decomposition products may be hazardous. These may include oxides of sulfur, nitrogen, phosphorous and tin compounds.

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: While wearing rubber gloves, soak up spilled material with paper towels or other absorbent material and discard in trash. Product is highly flammable. Keep all sources of ignition away from spill.

LARGE SPILL: Eliminate all sources of ignition in vicinity of spill or released vapor.

Liquid spills on floor or other impervious surfaces should be contained or diked, and should be absorbed with attapulgite, bentonite or other absorbent material. Collect contaminated absorbent, place in plastic-lined metal drum and dispose of in accordance with instructions provided under Section 13. "DISPOSAL". Thoroughly scrub floor or other impervious surface with a strong industrial type detergent solution and rinse with water.

For liquid spills that soak into the ground, contact the applicable Federal, State and or County Health Dept. for disposal recommendations. If disposal is required then refer to Section 13 "DISPOSAL" for instructions.

Leaking containers should be separated from non-leakers and either the container or its contents transferred to a drum or other non-leaking container and disposed of in accordance with instructions provided under Section 13 "Disposal". Any recovered spilled liquid should be similarly collected and disposed of.

Do not contaminate water, foodstuffs or feed by storage or 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.

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7. HANDLING AND STORAGE

GENERAL PROCEDURES: Store away from heat or open flame. Keep pesticide in original container. Do not put concentrate or dilute into food or drink containers. Avoid contamination of feed, foodstuffs. Store in a cool dry place, preferably in a locked storage area. Do not store diluted spray. Store above freezing. Handle concentrate in a ventilated area. Keep container closed.

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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. Consult NFPA Standard 91 for design of exhaust systems.

PERSONAL PROTECTION

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

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. Wear face shield and chemical resistant clothing such as a rubber apron when splashing is likely. Wash contaminated skin promptly. Launder contaminated clothing and clean protective equipment before reuse. Wash thoroughly after handling.

RESPIRATORY: Avoid breathing vapor or mist. 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**
O,S-Dimethylacetylphosphoramidothioate	None	None	None
(2-methyl-2-phenypropyl) distannoxane	None	None	None
Isopropyl Alcohol	400 ppm	400 ppm	500 ppm
N-Methyl Pyrrolidone	None	None	None
Toximul 3406F			

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: Liquid

COLOR: Amber to yellow liquid

pH: 6.2

SPECIFIC GRAVITY: 0.8444 gr/cc at 20°C

COMMENTS:

WATER SOLUBILITY: Miscible in water

10. STABILITY AND REACTIVITY

STABLE: YES

HAZARDOUS POLYMERIZATION: NO

INCOMPATIBLE MATERIALS: May react with strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

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11. TOXICOLOGICAL INFORMATION

ACUTE

EYES: The results of the rabbit eye irritation study indicate that this product is severely irritating to eyes with all irritation clearing by day 21. EPA FIFRA toxicity category - I.

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

ORAL LD_{50}: This product is slightly toxic if ingested. Rat LD50 = 2,749 mg/kg (male), 1,839 mg/kg (female). EPA FIFRA Toxicity Category - III.

INHALATION LC_{50}: 4 hour aerosol inhalation LC50 for rats : > 5.1 mg/liter/hour. EPA FIFRA toxicity category - IV.

SENSITIZATION: No evidence of allergic skin reactions was observed in guinea pigs following repeated skin exposure.

SUBCHRONIC: This product contains acephate, an organophosphate that is considered to be a cholinesterase inhibitor. Cholinesterase is an enzyme involved in the transmission of nerve impulses. Therefore, repeated daily exposure to the product can gradually lower the cholinesterase levels to a point that signs and symptoms of organophosphate poisoning may occur.

CHRONIC: Results of the rat chronic acephate feeding study indicate that the no observed effect level (NOEL) was 5 parts per million (ppm) or (0.25 mg/kg/dy). Hexakis NOEL's for the rat chronic and 2-year dog studies are 2,000 and 16,000 ppm (100 and 400 mg/kg/dy), respectively.

The dog 2-year acephate feeding study NOEL for cholinesterase inhibition was 30 ppm (0.75 mg/kg/dy). The effect level for cholinesterase inhibition occurred at the high dose of 200 ppm (5 mg/kg/dy).

CARCINOGENICITY:

CARCINOGENICITY COMMENTS: EPA has classed acephate in category C as a possible human carcinogen based on the liver tumor findings in the mouse lifetime feeding study. Liver pathology was observed at dose levels of 250 and 1000 ppm (37.5 and 150 mg/kg/dy), while an increased incidence of liver cancer was noted in the high dose (150 mg/kg/dy) female mice only. Acephate has not demonstrated any evidence of carcinogenic potential in any other species.

Hexakis was not carcinogenic in either the rat or mouse lifetime feeding studies or the 2 year dog chronic study.

NEUROTOXICITY: Based on the results of the chicken neurotoxicity studies, acephate has not demonstrated potential to cause delayed neuropathy. Hexakis has not been associated with neuro-histopathological changes.

TERATOGENICITY: Neither acephate, or hexakis have been demonstrated to cause birth defects.

REPRODUCTIVE TOXIN: When male and female rats were fed acephate continuously for two generations through weaning of the third generation, animals in the mid and high-dose groups demonstrated compound-related effects on reproductive performance. The low-dose was considered the no-effect-level. There was no evidence of adverse reproductive effects in the hexakis rat 3 generation study.

MUTAGENICITY: Acephate has demonstrated weak mutagenic potential in microbes or cultured cells, while results of in vivo studies indicate that it does not cause mutation in whole animals. Hexakis is not considered to be a mutagen in either in vitro or in vivo studies.

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

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12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION: This material is toxic to fish and birds. Drift and runoff from treated areas may be hazardous to aquatic organisms in neighboring areas. Do not apply directly to water. Do not contaminate water by cleaning of equipment or disposal of wastes. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting treatment area.

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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 container. Rinse throughly before discarding in trash.

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14. TRANSPORT INFORMATION

DOT (DEPARTMENT OF TRANSPORTATION)

PROPER SHIPPING NAME: Consumer Commodity

PRIMARY HAZARD CLASS/DIVISION: ORM-D

UN/NA NUMBER: NONE

PACKING GROUP: NO

U.S. SURFACE FREIGHT CLASS: NMFC NBR. 102120

AIR (ICAO/IATA)

PROPER SHIPPING NAME: Consumer Commodity

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.

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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:** YES	**REACTIVITY:** NO	**PRESSURE GENERATING:** NO

313 REPORTABLE INGREDIENTS: Acephate. (CAS 30560-19-1); Hexakis (CAS 13356-08-6); N-methyl Pyrrolidone (CAS 872-50-4). De Minimis Concentrations for Section 313 of EPCRA is 1.0%.

TSCA (TOXIC SUBSTANCE CONTROL ACT)

TSCA REGULATORY: All non FIFRA regulated 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: 3 **HEALTH:** 3 **REACTIVITY:** 0

NFPA CODES

FIRE: 3 **HEALTH:** 3 **REACTIVITY:** 0

APPROVAL DATE: 02/14/1997

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.

Although the information and recommendations set forth herein (herinafter "Information") are presented in good faith and believed to be correct as of the date hereof, Monsanto Company and The Solaris Group make no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determinations as to its suitability for their purposees prior to use. In no event will Monsanto Company or The Solaris Group be responsible for damages of any nature whatsoever resulting from the use of or reliance upon Information. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS.