MATERIAL SAFETY DATA SHEET

DATE PREPARED: 07/20/1995

MSDS No: 4191

SOLARIS

ORTHENEX® Rose & Flower Spray

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: ORTHENEX® Rose & Flower Spray

PRODUCT DESCRIPTION: Insecticide/Fungicide (Aerosol)

MANUFACTURER

The SOLARIS Group

of Monsanto Company

P.O. Box 5008

San Ramon, CA 94583-0808

EPA REG. NO.: 239-2476A **PN:** 1000-083

24 HR. EMERGENCY TELEPHONE NUMBERS

Emergency Phone 800-454-2333

2. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Wt.%	CAS Registry #
Acephate, O,S-Dimethylacetylphosphoramidothioate	0 .2 5	30560-19-1
Resmethrin, 5-(phenylmethyl)-3-furanyl methyl 2,2-dimethyl-3-(2-methyl-1-propenyl) cyclopropanecarboxylate	0 .1	10453-86-8
Triforine, N,N'-(1,4-piperazinediylbis{2,2,2-trichloroethylidene}) bis{formamide}	0 .1	26644-46-2
INERT INGREDIENTS	~ 99 .5 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: Clear light yellow liquid (in aerosol container).

IMMEDIATE CONCERNS: - CAUSES EYE IRRITATION
- HARMFUL IF SWALLOWED
- DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING
- EXTREMELY FLAMMABLE
- CONTENTS UNDER PRESSURE
- KEEP OUT OF REACH OF CHILDREN

POTENTIAL HEALTH EFFECTS

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

SKIN: This substance is not expected to cause prolonged or significant skin irritation. If absorbed through the skin, this substance is considered practically non-toxic to internal organs. This product is not expected to cause allergic skin reaction. See Toxicology Information section (11).

INGESTION: Ingestion may cause irritation of the digestive tract which may include nausea, vomiting, and diarrhea. If swallowed, this substance is considered practically non-toxic to internal organs. See Toxicological Information, section 11.

INHALATION: Overexposure to spray mist may result in minor irritation of the upper respiratory tract. See Toxicology Information section (11) for more information.

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 result from either acute (one time), subchronic (repeated short-term) and chronic (daily life-time) overexposure 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.

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: No first aid procedures are required. As a precaution, wash skin thoroughly with soap and water. Remove and wash contaminated clothing.

INGESTION: If a large amount of the liquid is swallowed, give a large quantity of water to drink, make person vomit and call a doctor. Never give anything by mouth to an unconscious person.

INHALATION: 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.

5. FIRE FIGHTING MEASURES

FLASHPOINT AND METHOD: 15°F TAG Open Cup

FLAMMABLE CLASS: N.F.P.A (Code 30B) Level III Aerosol

EXTINGUISHING MEDIA: Use alcohol foam or water spray when fighting fires involving this material.

HAZARDOUS COMBUSTION PRODUCTS: Normal combustion forms carbon dioxide, water vapor and may produce oxides of sulfur, nitrogen and phosphorous. Incomplete combustion can produce carbon monoxide.

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. Keep containers cool with a water spray. Contain and isolate runoff and debris for proper disposal. Decontaminate personal protective equipment and fire fighting equipment before reuse. Read the entire document.

6. ACCIDENTAL RELEASE MEASURES

SMALL SPILL: 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.

7. HANDLING AND STORAGE

GENERAL PROCEDURES: READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL. Store in accordance with NFPA 30B for a Level III aerosol. DO NOT USE OR STORE near flame, sparks or hot surfaces. USE ONLY IN WELL VENTILATED AREA. CONTAINER UNDER PRESSURE. Exposure to heat or prolonged exposure to sun may cause container to burst. Do not puncture, incinerate or store above 130°F.

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 significant 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.

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

RESPIRATORY: Avoid breathing vapor or mist. Use NIOSH/MSHA approved respiratory protection equipment when airborne exposure limits are exceeded (see below). 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
5-(phenylmethyl)-3-furanyl methyl 2,2-dimethyl-3-(2-methyl-1-propenyl) cyclopropanecarboxylate	For solvent.	100 ppm		
N,N'-(1,4-piperazinediylbis{2,2,2-trichloroethylidene})bis{formamide}		None	None	None
N-Methyl Pyrrolidone		None	None	None
Propane		1800 mg/m3		

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: Aerosol

APPEARANCE: Clear light yellow liquid in aerosol container

SPECIFIC GRAVITY: 0.78 to 0.82 at 20°C

COMMENTS:

pH: 6.3 in a 5% Solution in water.

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10. STABILITY AND REACTIVITY

STABLE: YES

HAZARDOUS POLYMERIZATION: NO

CONDITIONS TO AVOID: Avoid contact with temps. above 130F. Contents under pressure.

HAZARDOUS DECOMPOSITION: No Data Available

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 moderate to severely irritating to eyes with all irritation clearing by day 21. EPA FIFRA toxicity category - II.

DERMAL LD_{50}: Pratically non-toxic, (Rat) LD50 >5.0 gm/Kg; EPA FIFRA toxicity category - IV. Negligible irritation to skin (Rabbit); EPA FIFRA toxicity category - IV.

ORAL LD_{50}: This product is slightly toxic if ingested. Rat LD50 (Male) = 4.1 g/kg, 3.0 g/kg. (Female). EPA FIFRA toxicity category III.

INHALATION LC_{50}: This product if inhaled is practically nontoxic. 4 hour inhalation LC50 for rats > 56 mg/liter/hour. EPA FIFRA toxicity category - IV.

SENSITIZATION: No product toxicology data available.

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). The NOEL's for triforine in the rat chronic study and the dog 2-year feeding study were 625 and 100 ppm (31 and 2.5 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.

Results of a mouse lifetime Triforine feeding study indicated that there was an increased incidence of liver and lung tumors. There was no significant increase in tumors in the rat chronic study (NOEL = 626 ppm or 31.3 mg/kg/dy).

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

TERATOGENICITY: Neither acephate or triforine 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 triforine rat 3 generation studies.

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. Triforine 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 pesticide is highly toxic to fish. Do not apply directly to water or wetlands (swamps, bogs, marches and potholes).

Drift and runoff from treated sites may be hazardous to dish in adjacent waters.

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.

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.

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:** YES

CARCINOGEN: Acephate IRIS Carcinogen Assessment is: C

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16. OTHER INFORMATION

HMIS CODES

FIRE: 4 **HEALTH:** 1 **REACTIVITY:** 0 **PROTECTION:** -

HMIS RATINGS NOTES: HMIS rating includes hazards from propellent.

NFPA CODES

FIRE: 4 **HEALTH:** 1 **REACTIVITY:** 0 **SPECIAL:** -

APPROVAL DATE: 12/06/1996

REVISION SUMMARY Revision #: 1

This MSDS replaces the September 12, 1995 MSDS. Any changes in information are as follows:
In Section 5
Flash Point °F (From) Flash Point Method

In Section 8
Engineering Controls (text) Skin Protection (text) Eyes-Face Protection (text) Respiratory Protection (text)

In Section 9
(Group Field) for pH (pH) (text) (Group Field) for Vapor Pressure (Group Field) for Water Solubility Specific Gravity (From) Specific Gravity (To) (Group Field) for Evaporation Rate

In Section 11
Acute Eye (text) Dermal LD50 (text) Chronic (text) Carcinogenicity (text) Neurotoxicity (text) Oral LD50 (text) Inhalation LC50 (text) Teratology (text) Reproduction (text) Mutagenicity (text) Section 11 Footnotes Sensitization (text)

In Section 16

Manufacturer Supplemental Notes (text)

HMIS RATINGS NOTES: HMIS rating includes hazards from propellent.

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.