

## Section 1 - Identification of Chemical Product and Company

### Statement of Hazardous Nature

This product is classified as: Hazardous according to the criteria of NOHSC Australia.

Dangerous according to the Australian Dangerous Goods (ADG) Code.

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<b>Substance:</b>	Active ingredient is an organophosphorus derivative.
<b>Trade Name:</b>	Monitor Insecticide
<b>Product Use:</b>	Agricultural insecticide for use as described on the product label.
<b>Creation Date:</b>	January, 2003
<b>Revision Date:</b>	January, 2003

## Section 2 - Composition/Information on Ingredients

Ingredients	CAS No	Conc, %	TWA (mg/m <sup>3</sup> )	STEL (mg/m <sup>3</sup> )
Methamidophos	10265-92-6	58	not set	not set
Other non hazardous ingredients	secret	to 100	not set	not set

This is a commercial product whose exact ratio of components may vary slightly. Minor quantities of other non hazardous ingredients are also possible.

The TWA exposure value is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week. The STEL (Short Term Exposure Limit) is an exposure value that should not be exceeded for more than 15 minutes and should not be repeated for more than 4 times per day. There should be at least 60 minutes between successive exposures at the STEL. The term "peak" is used when the TWA limit, because of the rapid action of the substance, should never be exceeded, even briefly.

## Section 3 - Hazards Identification

**Risk Phrases:** R20, R24, R28, R36. Harmful by inhalation. Toxic in contact with skin. Very toxic if swallowed. Irritating to eyes.

**Safety Phrases:** S20, S25, S36, S38. When using, do not eat or drink. Avoid contact with eyes. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment.

**SUSDP Classification:** S7

**ADG Classification:** Class 6.1 (ORGANOPHOSPHORUS PESTICIDE, LIQUID, TOXIC)

**UN Number:** 3018

### Emergency Overview

**Physical Description & colour:** Clear, pale yellow liquid.

**Odour:** Strong, characteristic odour.

**Major Health Hazards:** If ingested, nausea, vomiting, diarrhoea, and cramps are the most common early signs of poisoning. If inhaled, tightness in the chest, wheezing, headache, blurred vision, pinpoint pupils, tearing and runny nose are common early symptoms. Sweating and twitching in the area of absorption are seen with skin exposure. Weakness, shakiness, blurred vision, tightness in the chest, sweating, confusion, changes in heart rate, convulsions, coma, and cessation of breathing may occur with significant inhalation, ingestion or dermal exposure.

### Potential Health Effects

See section 11 for Chronic exposure studies.

Repeated minor exposure may have a cumulative poisoning effect. The main health effects from repeated exposure would be toxic symptoms of cholinesterase inhibition as described above.

#### Inhalation

**Short term exposure:** Symptoms are described fully above.

#### Skin Contact:

**Short term exposure:** Symptoms are described fully above.

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**Eye Contact:**

**Short term exposure:** Available data shows that this product is an eye irritant. Symptoms may include stinging and reddening of eyes and watering which may become copious. Other symptoms may also become evident. If exposure is brief, symptoms should disappear once exposure has ceased. However, lengthy exposure or delayed treatment may cause permanent damage.

**Ingestion:**

**Short term exposure:** Symptoms are described fully above.

**Carcinogen Status:**

**NOHSC:** No significant ingredient is classified as carcinogenic by NOHSC.

**NTP:** No significant ingredient is classified as carcinogenic by NTP.

**IARC:** No significant ingredient is classified as carcinogenic by IARC.

**Section 4 - First Aid Measures****General Information:**

You should call The Poisons Information Centre if you feel that you may have been poisoned, burned or irritated by this product. The number is 13 1126 from anywhere in Australia (0800 764 766 in New Zealand) and is available at all times. Have this MSDS with you when you call.

Atropine tablets 0.6mg and activated charcoal should be available in the area where this product is used, or in a nearby unlocked medicine cabinet. If swallowed, splashed on skin or inhaled, contact a Poisons Information Centre or a doctor at once. Remove any contaminated clothing and wash skin thoroughly. If swallowed, use of activated charcoal may be advised. Give atropine if instructed. The usual instruction is to give one atropine tablet every 5 minutes until dryness of the mouth occurs.

**Inhalation:** If symptoms of poisoning become evident, contact a Poisons Information Centre, or call a doctor at once. Remove source of contamination or move victim to fresh air. If breathing is difficult, oxygen may be beneficial if administered by trained personnel, preferably on a doctor's advice. DO NOT allow victim to move about unnecessarily. Symptoms of pulmonary oedema can be delayed up to 48 hours after exposure. See instructions above about treatment with atropine.

**Skin Contact:** Remove contaminated clothing and thoroughly wash contacted areas. If any symptoms of poisoning become evident, or if in doubt, contact a Poisons Information Centre or a doctor at once. See instructions above about treatment with atropine.

**Eye Contact:** Quickly and gently blot or brush away product. Immediately flush the contaminated eye(s) with lukewarm, gently flowing water until the product is removed or until a few minutes after irritation has ceased, while holding the eyelid(s) open. Take care not to rinse contaminated water into the unaffected eye or onto the face.

**Ingestion:** If swallowed, rinse mouth thoroughly with water and contact a Poisons Information Centre. Urgent hospital treatment is likely to be needed. Give activated charcoal if instructed. See instructions above about treatment with atropine.

**Section 5 - Fire Fighting Measures**

**Fire and Explosion Hazards:** This product is classified as a C1 combustible product. There is a slight risk of an explosion from this product if commercial quantities are involved in a fire. Violent steam generation or eruption may occur upon application of direct water stream on hot liquids. Vapours from this product are heavier than air and may accumulate in sumps, pits and other low-lying spaces, forming potentially explosive mixtures. They may also flash back considerable distances.

Fire decomposition products from this product are likely to be toxic if inhaled. Take appropriate protective measures.

**Extinguishing Media:** Preferred extinguishing media are carbon dioxide, dry chemical, foam, water fog, dry sand. Water fog or fine spray is the preferred medium for large fires.

**Fire Fighting:** When fighting fires involving significant quantities of this product, wear a fully encapsulated splash suit complete with self contained breathing apparatus.

**Flash point:** Not flammable.

**Upper Flammability Limit:** No data.

**Lower Flammability Limit:** No data.

**Autoignition temperature:** No data.

**Flammability Class:** C1

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## Section 6 - Accidental Release Measures

**Accidental release:** In the event of a major spill, prevent spillage from entering drains or water courses. Evacuate the spill area and deny entry to unnecessary and unprotected personnel. Immediately call the Fire Brigade. Wear full protective chemically resistant clothing including face mask, face shield, gauntlets and self contained breathing apparatus. See above under Personal Protection regarding Australian Standards relating to personal protective equipment. Suitable materials for protective clothing include rubber, PVC. Stop leak if safe to do so, and contain spill. Absorb onto sand, vermiculite or other suitable absorbent material. If spill is too large or if absorbent material is not available, try to create a dike to stop material spreading or going into drains or waterways. Because of the toxicity of this product, special personal care should be taken in any cleanup operation. Sweep up and shovel or collect recoverable product into labelled containers for recycling or salvage, and dispose of promptly. After spills, wash area preventing runoff from entering drains. If a significant quantity of material enters drains, advise emergency services. Full details regarding disposal of used containers, spillage and unused material may be found on the label. If there is any conflict between this MSDS and the label, instructions on the label prevail. Ensure legality of disposal by consulting regulations prior to disposal. Thoroughly launder protective clothing before storage or re-use. Advise laundry of nature of contamination when sending contaminated clothing to laundry.

## Section 7 - Handling and Storage

**Handling:** Keep exposure to this product to a minimum, and minimise the quantities kept in work areas. Check Section 8 of this MSDS for details of personal protective measures, and make sure that those measures are followed. The measures detailed below under "Storage" should be followed during handling in order to minimise risks to persons using the product in the workplace. Also, avoid contact or contamination of product with incompatible materials listed in Section 10.

**Storage:** This product is a Scheduled Poison. Observe all relevant regulations regarding sale, transport and storage of this class of poison. Store in a cool, well ventilated area. Check containers periodically for leaks. Containers should be kept closed in order to minimise contamination. Make sure that the product does not come into contact with substances listed under "Materials to avoid" in Section 10. If you keep more than 100kg or 100L of Toxic Substances of Packaging Group II, you will require a license to do so. If you have any doubts, we suggest you contact your licensing authority in order to clarify your obligations. Check packaging - there may be further storage instructions on the label.

## Section 8 - Exposure Controls and Personal Protection

The following Australian Standards will provide general advice regarding safety clothing and equipment:

Respiratory equipment: **AS/NZS 1715**, Protective Gloves: **AS 2161**, Industrial Clothing: **AS2919**, Industrial Eye Protection: **AS1336** and **AS/NZS 1337**, Occupational Protective Footwear: **AS/NZS2210**.

<b>Exposure Limits</b>	<b>TWA (mg/m<sup>3</sup>)</b>	<b>STEL (mg/m<sup>3</sup>)</b>
Exposure limits have not been established by NOHSC for any of the significant ingredients in this product.		

The ADI for Methamidophos is set at 0.0006mg/kg/day. The corresponding NOEL is set at 0.06mg/kg/day. ADI means Acceptable Daily Intake and NOEL means No-observable-effect-level. Values taken from Australian ADI List, June 2002.

**Ventilation:** This product should only be used in a well ventilated area. If natural ventilation is inadequate, use of a fan is suggested.

**Eye Protection:** Protective glasses or goggles should be worn when this product is being used. Failure to protect your eyes may cause them harm. Emergency eye wash facilities are also recommended in an area close to where this product is being used.

**Skin Protection:** It is essential that all skin areas are adequately covered by impermeable gloves, overalls, hair covering, apron and face shield. See below for suitable material types.

**Protective Material Types:** We suggest that protective clothing be made from the following materials: rubber, PVC.

**Respirator:** If there is a significant chance that vapours or mists are likely to build up in the area where this product is being used, we recommend that you use a respirator. It should be fitted with a type G cartridge, suitable for agricultural chemicals.

Eyebaths or eyewash stations and safety deluge showers should be provided near to where this product is being used.

## Section 9 - Physical and Chemical Properties:

**Physical Description & colour:** Clear, pale yellow liquid.

**Odour:** Strong, characteristic odour.

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<b>Boiling Point:</b>	188°C at 100kPa
<b>Freezing/Melting Point:</b>	No specific data. Liquid at normal temperatures.
<b>Volatiles:</b>	No specific data. Expected to be low at 100°C.
<b>Vapour Pressure:</b>	2.3mPa (active ingredient)
<b>Vapour Density:</b>	No data.
<b>Specific Gravity:</b>	1.217 at 20°C
<b>Water Solubility:</b>	Emulsifiable.
<b>pH:</b>	No data.
<b>Volatility:</b>	No data.
<b>Odour Threshold:</b>	No data.
<b>Evaporation Rate:</b>	No data.
<b>Coeff Oil/water distribution:</b>	No data
<b>Autoignition temp:</b>	No data.

## Section 10 - Stability and Reactivity

**Reactivity:** This product is unlikely to react or decompose under normal storage conditions. However, if you have any doubts, contact the supplier for advice on shelf life properties.

**Conditions to Avoid:** This product should be kept in a cool place, preferably below 30°C. Keep containers and surrounding areas well ventilated. Keep away from sources of sparks or ignition. Protect this product from light.

**Incompatibilities:** acids, bases, strong oxidising agents.

**Fire Decomposition:** Carbon dioxide, and if combustion is incomplete, carbon monoxide and smoke. Nitrogen and its compounds, and under some circumstances, oxides of nitrogen. Occasionally hydrogen cyanide gas. Oxides of sulfur (sulfur dioxide is a respiratory hazard) and other sulfur compounds. Most will have a foul odour. Oxides of phosphorus and other phosphorus compounds. Water. Carbon monoxide poisoning produces headache, weakness, nausea, dizziness, confusion, dimness of vision, disturbance of judgment, and unconsciousness followed by coma and death. Hydrogen cyanide poisoning signs and symptoms are weakness, dizziness, headache, nausea, vomiting, coma, convulsions, and death. Death results from respiratory arrest. Hydrogen cyanide gas acts very rapidly; symptoms and death can both occur quickly.

**Polymerisation:** This product is unlikely to undergo polymerisation processes.

## Section 11 - Toxicological Information

**Toxicity: Acute Toxicity:** Methamidophos is highly toxic via oral, dermal and inhalation routes of exposure LD<sub>50</sub> values are 21 and 16 mg/kg body weight for male and female rats respectively, 30-50 mg/kg body weight in guinea pigs and 10-30 mg/kg body weight in rabbits. Dermal LD<sub>50</sub> values include 50 mg/kg body weight in rats and 118 mg/kg body weight in rabbits. Inhalation LD<sub>50</sub> values include 9 mg/kg in rats, and 19 mg/kg in mice.

**Signs and Symptoms of Acute Poisoning:** Early symptoms of acute organo-phosphate poisoning are dependent on route of exposure, and usually develop during or shortly after exposure (within 12 hours). If ingested, nausea, vomiting, diarrhoea, and cramps are the most common early signs of poisoning. If inhaled, tightness in the chest, wheezing, headache, blurred vision, pinpoint pupils, tearing and runny nose are common early symptoms. Sweating and twitching in the area of absorption are seen with skin exposure. Weakness, shakiness, blurred vision, tightness in the chest, sweating, confusion, changes in heart rate, convulsions, coma, and cessation of breathing may occur with significant inhalation, ingestion or dermal exposure. An intermediate syndrome has been described in cases of poisonings in Sri Lanka, where patients experienced paralysis of limb, neck, and respiratory muscles 24-96 hours after exposure. Delayed neurological problems (delayed peripheral neuropathy) have been described 2-4 weeks after large exposures to organophosphates, and include a loss of feeling and pins and needles type of pains in the feet, legs, and hands. Atropine is an antidote for organophosphate poisoning. People with high blood pressure, gastrointestinal disorders, heart, liver, lung, or nervous system problems may be more sensitive to Methamidophos.

**Chronic Toxicity:** A 56-day rat feeding study resulted in a NOEL of 0.03 mg/kg/day. The reference dose (RfD) is based on this study. In another study, dogs were fed up to 32 ppm (or 32 mg/1000 g of food per day) Methamidophos for 1 year without observed adverse effects on body weights, organ weights, food consumption, blood chemistry, and urine chemistry. Measurable cholinesterase inhibition was found at all treatment levels.

**Reproductive Effects:** A two generation feeding study in rats showed a decrease in the percentage of females delivering offspring at all dose levels (0.15, 0.5, and 1.65 mg/kg/day). A systemic NOEL was 0.5 mg/kg/day based on reduced body weights during pre-mating period. In humans, reduced sperm count and sperm viability were seen in men who were exposed to the product Tamaron in China.

**Teratogenic Effects:** Some fetal liver pathologic changes were observed when pregnant rabbits were exposed to Methamidophos. In two teratology studies, no birth defects were observed at the highest levels tested (3 mg/kg/day in rats, and 2.5 mg/kg/day in rabbits). Decreased body weights were observed in offspring and mothers in the rat study at 3 mg/kg/day. In rabbits, a maternal low effect level (LEL) of 0.1 mg/kg/day (lowest dose tested) was observed based on low body weights.

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**Mutagenic Effects:** Methamidophos has tested positive for genotoxicity, or ability to induce changes in chromosomes, in some tests and negative in others. It may be weakly mutagenic.

**Carcinogenic Effects:** There is no evidence of carcinogenicity in tests with rats and mice.

**Organ Toxicity:** The primary target of organophosphate compounds is the nervous system. Some liver damage has been observed in rabbits. Reduced sperm count and reduced sperm viability have been observed in humans.

**Fate in Humans and Animals:** Methamidophos is rapidly absorbed through the stomach, lungs and skin. It is eliminated primarily in the urine.

## Section 12 - Ecological Information

**Effects on Birds:** Methamidophos is very toxic to birds. Oral LD<sub>50</sub> values were 8-11 mg/kg in tests with bobwhite quail.

**Effects on Aquatic Organisms: Methamidophos** is toxic to aquatic organisms. The LC<sub>50</sub> ranges from 25-51 mg/l in 96-hour tests with rainbow trout, 46 mg/l in guppies, 100 mg/l in carp and 100 mg/l in goldfish. Freshwater, estuarine and marine crustaceans are extremely sensitive to Methamidophos. Concentrations as low as 0.22 ng/l (.00000022 mg/l) were lethal to larval crustaceans in 96-hour toxicity tests.

**Effects on Other Animals (Nontarget species):** Methamidophos is toxic to bees. A field study of the effects of Methamidophos on honey bees during alfalfa pollination demonstrated that the chemical can severely reduce the foraging activity of bees for a prolonged period of time after application.

### ENVIRONMENTAL FATE

**Breakdown of Chemical in Soil and Groundwater:** In aerobic soils, the half-life of Methamidophos is as follows: 1.9 days in silt, 4.8 days in loam, 6.1 days in sand, and 10-12 days in sandy loam.

**Breakdown of Chemical in Surface Water:** The half-life of the chemical in water is 309 days at pH 5.0, 27 days at pH 7.0, and 3 days at pH 9.0. The chemical will break down in the presence of sunlight, and has a half-life of 90 days in water at pH 5 when there is sunlight.

**Breakdown of Chemical in Vegetation:** Methamidophos is taken up through the roots and leaves. In studies of Methamidophos in tomato plants, the half-lives in fruit and leaves were measured as 4.8-5.1 days and 5.5-5.9 days, respectively.

## Section 13 - Disposal Considerations

**Disposal:** Instructions concerning the disposal of this product and its containers are given on the product label. These should be carefully followed.

## Section 14 - Transport Information

**ADG Code:** 3018, ORGANOPHOSPHORUS PESTICIDE, LIQUID, TOXIC

**Hazchem Code:** 2X

**Special Provisions:** SP61, SP109, SP274

**Dangerous Goods Class:** Class 6.1, Toxic Substances.

**Packaging Group:** II

**Packaging Method:** 3.8.6

Class 6 Toxic Substances shall not be loaded in the same vehicle or packed in the same freight container with Classes 1 (Explosives), 3 (Flammable Liquids where the Flammable Liquid is nitromethane), 5.1 (Oxidising Agents where the Toxic Substances are Fire Risk Substances), 5.2 (Organic Peroxides where the Toxic Substances are Fire Risk Substances), 8 (Corrosive Substances where the Toxic Substances are cyanides and the Corrosives are acids), Foodstuffs and foodstuff empties. They may however be loaded in the same vehicle or packed in the same freight container with Classes, 2.1 (Flammable Gases), 2.2 (Non-Flammable, Non-Toxic Gases), 2.3 (Toxic Gases), 3 (Flammable liquids, except where the flammable liquid is nitromethane), 4.1 (Flammable Solids), 4.2 (Spontaneously Combustible Substances), 4.3 (Dangerous When Wet Substances), 5.1 (Oxidising Agents except where the Toxic Substances are Fire Risk Substances), 5.2 (Organic Peroxides except where the Toxic Substances are Fire Risk Substances), 7 (Radioactive Substances), 8 (Corrosive Substances except where the Toxic Substances are cyanides and the Corrosives are acids), 9 (Miscellaneous Dangerous Goods)

## Section 15 - Regulatory Information

**AICS:** All of the significant ingredients in this formulation are to be found in the public AICS Database.

## Section 16 - Other Information

Much of the Information in this MSDS came from Extoxnet, a Pesticide Information Project of Cooperative Extension Offices of Cornell University, Oregon State University, the University of Idaho, and the University of California at Davis and the Institute for Environmental Toxicology, Michigan State University.

### MATERIAL SAFETY DATA SHEET

This MSDS contains only safety-related information. For other data see product literature.

**Acronyms:**

<b>ADG Code</b>	Australian Code for the Transport of Dangerous Goods by Road and Rail
<b>AICS</b>	Australian Inventory of Chemical Substances
<b>CAS number</b>	Chemical Abstracts Service Registry Number
<b>Hazchem Number</b>	Emergency action code of numbers and letters that provide information to emergency services especially firefighters
<b>IARC</b>	International Agency for Research on Cancer
<b>NOHSC</b>	National Occupational Health and Safety Commission
<b>NOS</b>	Not otherwise specified
<b>NTP</b>	National Toxicology Program (USA)
<b>R-Phrase</b>	Risk Phrase
<b>SUSDP</b>	Standard for the Uniform Scheduling of Drugs & Poisons
<b>UN Number</b>	United Nations Number

THIS MSDS SUMMARISES OUR BEST KNOWLEDGE OF THE HEALTH AND SAFETY HAZARD INFORMATION OF THE PRODUCT AND HOW TO SAFELY HANDLE AND USE THE PRODUCT IN THE WORKPLACE. EACH USER MUST REVIEW THIS MSDS IN THE CONTEXT OF HOW THE PRODUCT WILL BE HANDLED AND USED IN THE WORKPLACE.

IF CLARIFICATION OR FURTHER INFORMATION IS NEEDED TO ENSURE THAT AN APPROPRIATE RISK ASSESSMENT CAN BE MADE, THE USER SHOULD CONTACT THIS COMPANY SO WE CAN ATTEMPT TO OBTAIN ADDITIONAL INFORMATION FROM OUR SUPPLIERS. OUR RESPONSIBILITY FOR PRODUCTS SOLD IS SUBJECT TO OUR STANDARD TERMS AND CONDITIONS, A COPY OF WHICH IS SENT TO OUR CUSTOMERS AND IS ALSO AVAILABLE ON REQUEST.

Please read all labels carefully before using product.

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