

MATERIAL SAFETY DATA SHEET



Date of Issue: August 18th, 2010

1. IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND SUPPLIER

Product name Nitofol® Insecticide Spray

Other names None

Product codes and pack sizes 4953737 (10 L)

Chemical group Organophosphorus

Recommended use Agricultural insecticide

Formulation Soluble concentrate (SL)

Supplier Bayer CropScience Pty Ltd ABN 87 000 226 022

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2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

HAZARDOUS SUBSTANCE (see Risk phrases below) - DANGEROUS GOOD
Very poisonous. Cholinesterase inhibitor. Dangerous to the aquatic environment.

Hazard classification Hazardous (National Occupational Health and Safety Commission - NOHSC)

Risk phrases R27/28 – Very toxic in contact with skin and if swallowed.
R23 – Toxic by inhalation

Safety phrases See Sections 4, 5, 6, 7, 8, 9, 13

ADG classification “Dangerous good” for transport by road or rail according to the Australian Code for the Transport of Dangerous Goods by Road and Rail – ORGANOPHOSPHORUS PESTICIDE, LIQUID, TOXIC (contains methamidophos), Class 6.1, Packing Group II, UN 3018, Marine Pollutant.

SUSDP classification Schedule 7 (Standard for the Uniform Scheduling of Drugs and Poisons)

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredients	CAS Number	Concentration (g/L)
Methamidophos	[10265-92-6]	580
Propylene glycol	[57-55-6]	365
Nonylphenol ethoxylate	[9016-45-9]	10
Other ingredients (non-hazardous)	----	273

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4. FIRST AID MEASURES

If poisoning occurs, immediately contact a doctor or Poisons Information Centre (telephone 13 11 26), and follow the advice given. Show this Material Safety Data Sheet to the doctor.

- Inhalation** If inhaled, remove to fresh air and keep at rest. Obtain **urgent** medical advice. If breathing stops or shows signs of failing, start artificial respiration. If advised by doctor or Poisons Information Centre, atropine tablets may be administered. DO NOT attempt to give anything by mouth to a semi-conscious or unconscious person.
- Skin contact** Immediately remove contaminated clothing. Wash affected areas with soap and water. Seek **urgent** medical aid. Persons assisting the patient should protect themselves from contamination. If advised by doctor or Poisons Information Centre, atropine tablets may be administered. DO NOT attempt to give anything by mouth to a semi-conscious or unconscious person.
- Eye contact** Rinse eyes immediately with clean water for at least 15 minutes and obtain **urgent** medical aid.
- Ingestion** Wash out mouth with water. Keep patient at rest and seek **urgent** medical advice as above. **Transport patient to doctor or hospital quickly.** If advised by doctor or Poisons Information Centre, atropine tablets may be administered. DO NOT attempt to give anything by mouth to a semi-conscious or unconscious person.
- First Aid Facilities** Provide eyewash and safety shower facilities in the workplace.
- Medical attention** Nitofol contains methamidophos which is an organophosphorus compound, and as such it is a cholinesterase inhibitor.

Symptoms

Local: Eye contact may cause miosis and lacrimation

Systemic: bradycardia, hypotension, salivation, bronchial secretion, nausea, vomiting, diarrhoea, sweating, muscle fibrillation, tics, myoclonus, paralysis of respiratory muscles, peripheral respiratory paralysis, somnolence, coma, respiratory depression and failure, hypothermia, convulsions. Repeated overexposure may cause more severe cholinesterase inhibition with more pronounced signs and symptoms.

Treatment

Basic aid, decontamination, symptomatic treatment and if necessary administration of antidote, atropine sulfate.

Note for physicians

In case of ingestion a gastric lavage within the first hour after ingestion and after intubation only with consecutive application of activated charcoal and sodium sulphate should be performed, if a significant amount has been swallowed. Before treatment is started, either clear symptoms of organophosphorous insecticide poisoning as described above should be present or a reduction of cholinesterase activity to below 30% of normal should be found. The following antidotes are generally accepted: atropine and oximes. Additionally a benzodiazepine (e.g. diazepam) should be given in case of seizures/convulsions according to standard regimens. Monitor respiratory, cardiac and central nervous system function. Monitor red blood cell and plasma cholinesterase levels. Administer oxygen if necessary. Watch for pulmonary oedema and delayed neurological symptoms.

4. FIRST AID MEASURES continued

2 regimens for initial atropine treatment are currently suggested, in both cases the cessation of the cholinergic symptoms salivation, bronchial secretion, sweating and bradycardia indicates sufficient atropinization. The skin should be dry, the lungs should be clear on auscultation and the heart rate should be in a range of 80 to 100/minute. Overdoses of atropine have to be strictly avoided, as these can promote heart rhythm disturbances.

Regimen 1: 2-10 mg atropine i.v. , followed every 15 minutes by 2 mg atropine i.v. until cessation of the symptoms as above

Regimen 2:

2 mg atropine i.v., 5 minutes wait, if symptoms persist or reappear
4 mg atropine i.v., 5 minutes wait, if symptoms persist or reappear
8 mg atropine i.v., 5 minutes wait, if symptoms persist or reappear
16 mg atropine i.v., 5 minutes wait, if symptoms persist or reappear
32 mg atropine i.v.

No higher doses of atropine should be given nor are necessary.

It is mandatory to allow 5 minutes after each dose for atropine to become fully effective, the next higher dose must not be given earlier and only if the above symptoms are persisting. Regimen 2 currently is advisable. Further atropine treatment should be done by continuous application of 1 – 2 mg/hour. Atropine treatment can be stopped, when the plasma cholinesterase level has returned to above 30% of normal.

For children the dosage has to be more careful due to a higher sensitivity of children to atropine. The initial dose should be 0.1 mg/kg body weight, then careful repletion or increase depending on the reversal of symptoms as described above.

Contraindications

Adrenergic derivatives. Never give patient morphine, theophylline or theophylline-ethylenediamine. Large amounts of intravenous fluids are generally contraindicated because of the threat of pulmonary oedema.

5. FIRE FIGHTING MEASURES

Extinguishing media Waterspray, foam, dry chemical, carbon dioxide, sand.

Hazards from combustion products In a fire, hydrogen cyanide, carbon monoxide, phosphorus pentoxide, sulphur dioxide and nitrogen oxides may be formed.

Precautions for fire fighters Fire fighters should wear full protective gear, including self-contained breathing apparatus (AS/NZS 1715/1716). Keep unnecessary people away and move all other personnel to windward side of fire. Isolate hazard area and deny entry. Consider evacuation, taking all relevant factors into account. In case of doubt, evacuate immediate vicinity and request emergency services assistance. Use water spray to cool fire-exposed containers. Bund area with sand or earth to prevent contamination of drains or waterways. Dispose of fire control water or other extinguishing agent and spillage safely later.

Hazchem code 2X

6. ACCIDENTAL RELEASE MEASURES

Avoid contact with the spilled material or contaminated surfaces. Do not smoke, eat or drink during the cleanup process. Personnel involved in cleanup should wear full body protective clothing and equipment as described in Section 8 - PERSONAL PROTECTION. Keep people and animals away and upwind. Consider evacuation and obtain assistance from emergency services if needed. Prevent spilled material from entering drains or watercourses. Contain spill and absorb with earth, sand, clay, or other absorbent material. Collect and store in properly labelled drums for safe disposal. Clean floor with a damp cloth and place cloth in drum. Seal and label drums for safe disposal. Thoroughly ventilate the area after cleanup. Deal with all spillages immediately. If contamination of drains, streams, watercourses, etc. is unavoidable, warn the local water authority. Decontaminate tools, equipment and clothing used in the cleanup. Dispose of any heavily soiled clothing, placing it in disposal drum.

7. HANDLING AND STORAGE

Handling	Keep out of reach of children. Very dangerous. Poisonous if absorbed by skin contact, inhaled or swallowed. Repeated minor exposures may have a cumulative poisoning effect. Will irritate the eyes and skin. Avoid contact with eyes, skin and clothing. Do not inhale vapour or spray mist. If clothing becomes contaminated with product or wet with spray remove it immediately. If product on skin, immediately wash area with soap and water. After use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water. After each day's use, take a shower or bath and wash gloves, goggles, respirator and contaminated clothing. Wash respirator with detergent and warm water.
Storage	Store in the closed, original container in a cool, well-ventilated area. Do not store for prolonged periods in direct sunlight. Store in a locked room or place away from children, animals, food, feedstuffs, seed and fertilisers.
Flammability	This product is a Class C1 Combustible liquid – flash point between 60.5 °C and 150 °C.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure standards	The NOHSC Exposure standard (TWA) for propylene glycol is 10 mg/m ³ . <u>Definitions:</u> <i>Exposure standard – time weighted average (TWA)</i> – the average airborne concentration of a particular substance when calculated over a normal eight-hour working day, for a five-day working week.
Biological limit values	Production workers and agricultural workers handling this product should be monitored for cholinesterase levels. A baseline level should be established prior to any potential exposure. See Guidelines for Health Surveillance [NOHSC:7039(1995)]
Engineering controls	Control process conditions to avoid contact. Use local exhaust ventilation during manufacture. Use this product in a well-ventilated area only.

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8. EXPOSURE CONTROLS / PERSONAL PROTECTION - continued

Personal Protective Equipment	Product is very dangerous – poisonous if absorbed by skin contact, inhaled or swallowed. <ul style="list-style-type: none">• Wear goggles or face shield• Wear full face piece respirator with combined dust and gas cartridge - AS/NZS 1715/1716 approved. In enclosed spaces a respirator or hood with an independent air supply should be worn.• Wear protective waterproof clothing and impervious footwear.• Wear elbow-length PVC gloves.• Keep work clothes separate. Remove soiled or soaked clothing immediately. Clean them separately, taking suitable precautions, or destroy if necessary.
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9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Slightly hazy straw coloured liquid
Odour:	Slight characteristic odour, like rotten eggs
pH:	Not available
Vapour pressure:	2.3×10^{-5} hPa at 20° C (<i>methamidophos</i>)
Vapour density:	Not available
Boiling point:	188° C
Freezing/melting point:	Not available
Solubility:	Miscible with water
Density:	Approx. 1.23 g/mL at 20° C
Flash Point:	> 70° C
Flammability (explosive) limits:	Not available
Auto-ignition temperature:	Not available
Partition coefficient (octanol/water):	<i>Methamidophos</i> : Log P_{ow} = - 0.80 at 20° C

10. STABILITY AND REACTIVITY

Chemical stability	Stable under normal conditions of use.
Conditions to avoid	Avoid sources of ignition and extreme heat.
Incompatible materials	Oxidising agents, alkaline materials. <i>Methamidophos</i> is slightly corrosive to mild steel and copper alloys.
Hazardous decomposition products	Mercaptans, disulphates, thioether. In a fire, hydrogen cyanide, carbon monoxide, phosphorus pentoxide, sulphur dioxide and nitrogen oxides may be formed.
Hazardous reactions	Dangerous reactions are possible with strong oxidising agents.

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11. TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

Methamidophos, the active ingredient in Nitofol Insecticide Spray, is an anticholinesterase compound. Symptoms typical of cholinesterase inhibition:

Local: Eye contact may cause miosis and lacrimation

Systemic: bradycardia, hypotension, salivation, bronchial secretion, nausea, vomiting, diarrhoea, sweating, muscle fibrillation, tics, myoclonus, paralysis of respiratory muscles, peripheral respiratory paralysis, somnolence, coma, respiratory depression and failure, hypothermia, convulsions. Repeated overexposure may cause more severe cholinesterase inhibition with more pronounced signs and symptoms.

Inhalation	Very poisonous by inhalation.
Skin contact	Very poisonous if absorbed by skin contact. May irritate the skin.
Eye contact	Will irritate the eyes.
Ingestion	Very poisonous if swallowed.

ANIMAL TOXICITY DATA

Acute:

Oral toxicity	LD ₅₀ rat: 18 mg/kg (<i>similar product</i>)
Dermal toxicity	LD ₅₀ rat: 49 mg/kg (<i>similar product</i>)
Inhalation toxicity	LC ₅₀ (4 h) rat: approx. 0.252 mg/L aerosol (<i>similar product</i>)
Skin irritation	Non irritant (rabbit) (<i>similar product</i>)
Eye irritation	Non irritant (rabbit) (<i>similar product</i>)
Sensitisation	Not a sensitiser in Buehler test (methamidophos)

Chronic:

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. Animal studies with methamidophos showed no evidence of oncogenic, carcinogenic or teratogenic potential. It may be weakly mutagenic.

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12. ECOLOGICAL INFORMATION

Very toxic to aquatic organisms. Toxic to bees and birds.
DO NOT contaminate streams, rivers or waterways with Nitofol or the used containers.

Ecotoxicity	<u>Methamidophos:</u>
	<i>Fish toxicity:</i> LC ₅₀ (96 h): 25 mg/L rainbow trout (<i>Oncorhynchus mykiss</i>)
	LC ₅₀ : 34 mg/L (96 h); (<i>Lepomis macrochirus</i>)
	<i>Daphnia toxicity:</i> EC ₅₀ (48 h): 0.27 mg/L <i>Daphnia magna</i>
	<i>Algae toxicity:</i> E _r C ₅₀ (96 h): > 178 mg/L (<i>Scenedesmus subspicatus</i>)
	<i>Bird toxicity:</i> LD ₅₀ : 10 mg/kg; bobwhite quail
	<i>Worms:</i> LC ₅₀ (14 d): 44 mg/kg soil (<i>Eisenia foetida</i>)

Environmental fate, persistence and degradability, mobility	Rapidly degraded in soil; field DT ₅₀ approx. < 2 days. In water, DT ₅₀ 5 to 27 days (pH 7); photolysis may contribute to degradation. Rapidly degraded in air, DT ₅₀ 0.578 days.
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13. DISPOSAL CONSIDERATIONS

Triple or preferably pressure rinse containers before disposal. Add rinsings to spray tank. Do not dispose of undiluted chemicals on site. If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, break, crush, or puncture and bury empty containers in a local authority landfill. If no landfill is available, bury the containers below 500 mm in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots. Empty containers and product should not be burnt.
Dispose of waste product as hazardous waste via a licensed disposal contractor to an approved landfill. Do not discharge into drains or sewers.

14. TRANSPORT INFORMATION

UN number	3018
Proper shipping name	ORGANOPHOSPHORUS PESTICIDE, LIQUID, TOXIC (contains methamidophos)
Class and	6.1
Subsidiary Risk	No subsidiary risk
Packing Group	II
EPG	Guide 35 – Dangerous Goods - Initial Emergency Response Guide
Hazchem code	2X
Marine Pollutant	Yes (Methamidophos is a Marine Pollutant Class "P")

15. REGULATORY INFORMATION

Registered according to the Agricultural and Veterinary Chemicals Code Act 1994.
Australian Pesticides and Veterinary Medicines Authority approval number: 33036

Training in the use of farm chemicals is recommended before handling this product.

See also Section 2.

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16. OTHER INFORMATION

Trademark information Nitofol® is a Registered Trademark of Bayer.

Preparation information Replaces September 29th 2008 edition.
Reasons for revision: First Aid measures.

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 should read this MSDS and consider the information in the context of how the product will be handled and used in the workplace including in conjunction with other products.

If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the user should contact this company.

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.

END OF MSDS