COLIN CAMPBELL (CHEMICALS) PTY. LTD.

MATERIAL SAFETY DATA SHEET

Date of Issue: 1 February 2005

1) IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name:	**CAMPBELL PYRINEX 500WP INSECTICIDE**
Other Names:	None
Chemical Group:	Organophosphorus
Recommended Use:	Insecticide for use on crops.
Supplier Details:	Colin Campbell (Chemicals) Pty Ltd ABN 29 000 045 590 5 Blackfriar Place Wetherill Park NSW 2164
Telephone:	(02) 9725 2544
Fax:	(02) 9604 7768
Email:	cccsyd@campbellchemicals.com.au
Website:	www.campbellchemicals.com.au
Contact:	Product Development Manager – (02) 9725 2544
Emergency Telephone Number:	(02) 9725 2544 – 8am to 6pm Monday to Friday.

2) HAZARDS IDENTIFICATION

HAZARDOUS SUBSTANCE - DANGEROUS GOOD

Hazardous classification:	Hazardous according to the criteria of the National Occupational Health & Safety Commission (NOHSC)
Risk phrases:	R22 – Harmful if swallowed. R50/53 – Very toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.
Safety phrases:	See sections 4,5,6,7,8,10,12,13
ADG Classification	6
SUSDP classification:	6 (Standard for the Uniform Scheduling of Drugs & Poisons)

3) COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients	CAS Number	Concentration
Chlorpyrifos	2921-88-2	50%
Inert ingredients	Non hazardous	40-60%

4) FIRST AID MEASURES

If poisoning occurs, immediately contact a doctor or Poison Information Centre (Ph: 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 is difficult, give artificial respiration or oxygen. If advised by a doctor or Poisons Information Centre, atropine tablets may be administered - give one atropine tablet 0.6mg every 5 minutes until dryness of the mouth occurs. DO NOT attempt to give anything by mouth to a semi-conscious or unconscious person.

4) FIRST AID MEASURES continued

Skin Contact: Carefully remove contaminated clothing. Wash affected areas with soap and water. Obtain urgent medical advice. If breathing is difficult, give artificial respiration or oxygen. If advised by a doctor or Poisons Information Centre, atropine tablets may be administered - give one atropine tablet 0.6mg every 5 minutes until dryness of the mouth occurs. DO NOT attempt to give anything by mouth to a semi-conscious or unconscious person.

Eye contact: Check and remove any contact lenses. Rinse eyes immediately with clean water for at least 15 minutes and seek medical aid.

Ingestion: Keep patient at rest and seek medical advice. Obtain urgent medical advice. If breathing is difficult, give artificial respiration or oxygen. If advised by a doctor or Poisons Information Centre, atropine tablets may be administered - give one atropine tablet 0.6mg every 5 minutes until dryness of the mouth occurs. DO NOT attempt to give anything by mouth to a semi-conscious or unconscious person.

First Aid facilities Ensure eye wash and safety shower are available. Obtain an emergency supply of atropine tablets 0.6mg.

Medical Attention: Pyrinex contains chlorpyrifos which is an organophosphorus compound and is therefore a cholinesterase inhibitor. Symptoms can occur from one to three hours after exposure.

Symptoms of poisoning.

Mild poisoning - headache, blurred vision, weakness, sweating, mild chest pain, nausea and vomiting.

Severe poisoning - cyanosis (blueness of the skin), muscular twitching, spasms, miosis (pinpoint pupils) and respiratory paralysis.

Repeated minor exposure may have a cumulative poisoning effect.

Treatment

Basic aid, decontamination, symptomatic treatment and administration of antidote.

Antidote : Atropine sulphate, possibly in conjunction with toxogonin or obidoxime (PAM). 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. Continued absorption of chlorpyrifos may occur and relapse may occur after initial improvement. VERY CLOSE SUPERVISION OF THE PATIENT IS INDICATED FOR AT LEAST 48 HOURS.

Contraindications : Adrenergic derivatives. DO NOT give morphine or tranquilisers.

5) FIRE FIGHTING MEASURES

Extinguishing media Water spray, foam, dry chemical, carbon dioxide (CO_2)

Hazard from combustion products In a fire, formation of nitrogen and sulphur oxides, carbon monoxide, carbon dioxide, phosphorus pentoxide and dimethyl sulfide, can be expected.

5) FIRE FIGHTING MEASURES continued

Precautions for fighting fires Fire fighters should wear full protective gear, including self-contained breathing apparatus (AS/NZS 1715/1716). Keep unnecessary people away. If it can be done safely remove intact containers from the fire. Bund area with sand or earth to prevent contamination of drains or waterways. Dispose of extinguishing agent and spillage safely later. Do not release contaminated water into the environment.

Hazchem Code 2WE

6) ACCIDENTAL RELEASE MEASURES

Avoid contact with spilled material or contaminated surfaces. Do not smoke, eat or drink during the clean up process. Wear personal protective clothing and equipment as detailed in Section 8 PERSONAL PROTECTION. Keep people and animals away. Contain spill and absorb with earth, sand, clay or other absorbent material. Prevent spilled material from entering drains or watercourses. Collect and store in properly labelled drums for safe disposal. Clean floor with a damp cloth and place it in the drum. Seal drums and label ready for safe disposal. Deal with all spillages immediately. If contamination of drains, streams, watercourses etc is unavoidable warn the local water authority. Chlorpyrifos can be hydrolysed in water by adjusting the pH to alkaline.

7) HANDLING AND STORAGE

Handling Keep out of reach of children. Will irritate eyes and skin. Avoid contact with eyes and skin. After use and before eating, drinking or smoking wash hands, arms and face thoroughly with soap and water. After each day's use wash gloves and contaminated clothing.

Storage Store in the closed original container in a cool well ventilated area protected from frost and heat ($<40^{O}C$). Do not store for prolonged periods in direct sunlight. Store in a locked room away from children, animals, food, animal feed, seed and fertilisers.

Flammability Combustible.

8) EXPOSURE CONTROL/PERSONAL PROTECTION

Exposure Standards
TLV for chlorpyrifos is not available.
WES TWA for chlorpyrifos = $0.2mg/m^3$ (skin).
WES TWA for particulates not otherwise classified = $10mg/m^3$

Biological Limit Values None allocated

Engineering Controls Use in a well ventilated area only and minimise contact.

Personal Protective Equipment

Eyes:	Safety goggles or face shield
Clothing:	Cotton overalls buttoned to the neck and wrists.
Gloves:	Elbow length chemical resistant PVC gloves
Respiratory:	Wear suitable respiratory equipment

9) PHYSICAL AND CHEMICALS PROPERTIES

Appearance:	Beige to grey powder
Odour:	Characteristic odour, "rotten fish"
Vapour pressure:	Chlorpyrifos technical = 2.4 x 10^{-5} mm Hg@25°C
Vapour density:	Not available
Boiling point:	Not available
Freezing/Melting point:	Not applicable
pH:	Not applicable
Solubility:	Dispersible in water. **Chlorpyrifos**: Water 2mg/L @25°C. Soluble in benzene, acetone, chloroform, carbon disulfide, diethyl ether, xylene, methylene chloride and methanol .
Specific gravity:	Not established
Flash point:	Not established
Flammability (explosive) limit:	Not applicable
Auto ignition temperature:	Not applicable
Partition coefficient (octanol/water):	Chlorpyrifos : log P_{ow} 4.6990

10) STABILITY AND REACTIVITY

Chemical stability:	Stable at ambient temperatures and pressures. Avoid heating above 40ºC. Chlorpyrifos technical undergoes exothermic decomposition at approximately 130°C which can lead to higher temperatures and violent decomposition if heat generation is not removed. Stable in neutral or slightly acidic conditions at room temperature. Rate of hydrolysis increases as temperature and pH are raised. Hydrolysed by strong alkaline material e.g. Bordeaux mix. Hazardous decomposition products include various oxides and derivatives of phosphoric acids, sulphur, phosphorous, nitrogen, carbon dioxide and hydrochloric acid. As for many organic powders or crystals, if a severe dusty condition occurs, this material may form explosive mixtures with air.
Conditions to avoid:	Avoid extreme high or low temperatures.
Incompatible materials :	Strong acids and strong bases.
Hazardous decomposition products:	In a fire, formation of nitrogen and sulphur oxides, phosphorus pentoxide, carbon monoxide and carbon dioxide can be expected.
Hazardous reactions:	Hazardous polymerisation will not occur.

11) TOXICOLOGICAL INFORMATION

Individuals with allergy history should take extra care in handling this product.

Inhalation: Irritating to lungs and respiratory tract. Breathing of vapour or sprays may aggravate acute or chronic asthma and inflammatory or fibrotic pulmonary disease.
Inhalation may result in respiratory irritation.

Skin contact: Harmful in contact with skin. Prolonged exposure may cause a reversible slight to moderate dermal irritation. Skin irritation may be aggravated in persons with existing skin lesions.

Eye contact: Slight eye irritation, but not corneal injury. Conjunctivitis may occur.

Ingestion: May be harmful.

ANIMAL TOXICITY DATA – PRODUCT

Acute:

Oral toxicity Acute oral LD50 (rats) = 270-326mg/kg
Acute oral LD50 (rabbit) = 2,000-4,000mg/kg

Dermal toxicity: Acute dermal LD50 (rabbit) >4000mg/kg

Inhalation toxicity: No data

Skin irritation: Irritant.

Irritation of mucous membranes: No data

Sensitisation: May be a skin sensitiser

Chronic:
Not carcinogenic, not mutagenic, not teratogenic in animal experiments.
Repeated or prolonged exposure to organophosphates may result in the same effects as acute exposure including the delayed symptoms. Other effects reported in workers repeatedly exposed include impaired memory and concentration, disorientation, severe depressions, irritability, confusion, headache, speech difficulties, delayed reaction times, nightmares, sleepwalking, and drowsiness or insomnia. An influenza-like condition with headache, nausea, weakness, loss of appetite, and malaise has also been reported . When technical chlorpyrifos was fed to dogs for 2 years, increased liver weight occurred at 3.0 mg/kg/day. Signs of cholinesterase inhibition occurred at 1 mg/kg/day. Rats and mice given technical chlorpyrifos in the diet for 104 weeks showed no adverse effects other than cholinesterase inhibition . Two-year feeding studies using doses of 1 and 3 mg/kg/day of chlorpyrifos in rats showed moderate depression of cholinesterase. Cholinesterase levels recovered when the experimental feeding was discontinued. Identical results occurred in a 2-year feeding study with dogs. No long term health effects were seen in either the dog or rat study . A measurable change in plasma and red blood cell cholinesterase levels was seen in workers exposed to chlorpyrifos spray. Human volunteers who ingested 0.1 mg/kg/day of chlorpyrifos for 4 weeks showed significant plasma cholinesterase inhibition

12) ECOLOGICAL INFORMATION

Harmful to aquatic organisms and may cause adverse effects in the aquatic environment.
DO NOT contaminate streams, rivers or waterway with Pyrinex or the used containers.

Ecotoxicity:

Chlorpyifos: Severe marine pollutant. Toxic to bees. Spray must not contact plants in flower if they are likely to be visited by bees.

LC 50 (rainbow trout) = 7.1 ug/L (96 hours) (for 100% technical)
Daphnia LC-50 (48 hours) = 1.7ug/L (for 100% technical)
Acute oral LD 50 (chickens) = 32mg/kg (for 100% technical)
Mallard duck LD-50 = 476mg/kg (for 100% technical)
Toxic to crustaceans.
Mature rainbow trout LC-50 (96-hour) 0.009 mg/L
Lake trout LC-50 0.098 mg/L
Goldfish LC-50 0.806 mg/L

Studies involving continuous exposure of fish during the embryonic through fry stages have shown bioconcentration values of 58 to 5100.

Environmental fate, persistence and degradability, mobility

Chlorpyrifos does not have a bioaccumulation potential.
In soil, chlorpyrifos is slowly degraded, with half-life of 80-279 days to 3,5,6-trichloropyridin-2-ol, which is subsequently degraded to organochlorine compounds and carbon dioxide.

13) DISPOSAL CONSIDERATIONS

Triple or preferable pressure rinse containers before disposal. Add rinsings to the mixing tank. Do not dispose of undiluted chemical 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 500mm 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.

14) TRANSPORT INFORMATION

UN Number:	2783
Proper Shipping name:	PESTICIDES, ORGANOPHOSPHORUS, SOLID, TOXIC, N.O.S.
Class and subsidiary risk:	6
Packing Group:	III
EPG:	
Hazchem code:	2WE

15) REGULATORY INFORMATION

Registered under the Agricultural and Veterinary Chemicals Act 1988 (Commonwealth).
Australian Pesticides and Veterinary Medicines Authority approval number: 40812

16) OTHER INFORMATION

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 the 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.

END OF MSDS