Section 1 - Identification of The Material and Supplier

FARMALINX Pty Ltd
Level 25, Suite 2506 (Tower 2)
101 Grafton Street
Bondi Junction, NSW 2022

Phone: 02 9389 2455
Fax: 02 9389 2844
www.farmalinx.com

Chemical nature:	Active ingredient is an organophosphorus derivative.
Trade Name:	**Farmalinx Neptune 400 EC Nematicide and Insecticide**
APVMA Code:	69011
Product Use:	Agricultural insecticide for use as described on the product label.
Creation Date:	**July, 2013**
This version issued:	**July, 2020** and is valid for 5 years from this date.

Section 2 - Hazards Identification

Statement of Hazardous Nature

This product is classified as: Xi, Irritating. T, Toxic. N, Dangerous to the environment. Hazardous according to the criteria of SWA.

Dangerous according to Australian Dangerous Goods (ADG) Code, IATA and IMDG/IMSBC criteria.

Risk Phrases: R28, R65, R23/24, R36/38, R50/53. Very toxic if swallowed. Harmful: May cause lung damage if swallowed. Toxic by inhalation and in contact with skin. Irritating to eyes and skin. Very toxic to aquatic organisms, may cause long-term adverse effects to the aquatic environment.

Safety Phrases: S23, S38, S46, S60, S61, S24/25, S36/37/39. Do not breathe vapours or mists. In case of insufficient ventilation, wear suitable respiratory equipment. If swallowed, contact a doctor or Poisons Information Centre immediately and show this MSDS or label. This material and its container must be disposed of as hazardous waste. Avoid release to the environment. Refer to special instructions/Safety Data Sheets. Avoid contact with skin and eyes. Wear suitable protective clothing, gloves and eye/face protection.

SUSMP Classification: S7

ADG Classification: Class 6.1: Toxic Substances.

UN Number: 3018, ORGANOPHOSPHORUS PESTICIDE, LIQUID, TOXIC



GHS Signal word: DANGER

HAZARD STATEMENT:

H227: Combustible liquid.
H300: Fatal if swallowed.
H304: May be fatal if swallowed and enters airways.
H311: Toxic in contact with skin.
H315: Causes skin irritation.
H320: Causes eye irritation.
H331: Toxic if inhaled.
H335: May cause respiratory irritation.
H410: Very toxic to aquatic life with long lasting effects.

PREVENTION

P260: Do not breathe fumes, mists, vapours or spray.
P262: Do not get in eyes, on skin, or on clothing.
P264: Wash contacted areas thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P271: Use only outdoors or in a well ventilated area.
P280: Wear protective gloves, protective clothing and eye or face protection.

RESPONSE

P330: Rinse mouth.

P331: Do NOT induce vomiting.
P361: Remove all contaminated clothing immediately.
P363: Wash contaminated clothing before reuse.
P301+P310: IF SWALLOWED: Immediately call a POISON CENTRE or doctor.
P302+P352: IF ON SKIN: Wash with plenty of soap and water.
P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P332+P313: If skin irritation occurs: Get medical advice.
P337+P313: If eye irritation persists: Get medical advice.
P391: Collect spillage.
P370+P378: In case of fire, use carbon dioxide, dry chemical, foam, water fog. Water fog or fine spray is the preferred medium for large fires.

STORAGE

P405: Store locked up.
P402+P404: Store in a dry place. Store in a closed container.
P403+P235: Store in a well-ventilated place. Keep cool.

DISPOSAL

P501: Dispose of contents and containers as specified on the registered label.

Emergency Overview

Physical Description & Colour: Clear yellow liquid.
Odour: Characteristic odour.
Major Health Hazards: Fenamiphos is highly toxic orally, with reported LD_{50} values of 2 to 19 mg/kg in the rat and 56 to 100 mg/kg in guinea pigs. It is also highly toxic to dogs and rabbits. The acute dermal toxicity of the compound is also high, with reported dermal LD_{50} values of 72 to 154 mg/kg in rats. The inhalation toxicity of the compound is also high, with reported inhalation LC_{50} values in rats of 0.11 to 0.17 mg/L. Longer exposures at moderately lower concentrations also caused rat mortality. The compound has the potential to cause significant eye damage at acute exposure levels. It is nonirritating to the skin. Symptoms of acute toxic exposure to the nematicide are consistent with those of other organophosphate compounds and include difficulty in breathing, diarrhoea, urination, and slowness of the heart. Other symptoms include muscle twitching and tremors. Product is toxic by inhalation and in contact with skin, toxic by inhalation, in contact with skin and if swallowed, irritating to eyes and skin, if aspirated, may cause lung damage. Signs and symptoms associated with mild exposures to organophosphate and carbamate pesticides include: headache, fatigue, dizziness, loss of appetite with nausea, stomach cramps and diarrhoea; blurred vision associated with excessive tearing; contracted pupils of the eye; excessive sweating and salivation; slowed heartbeat, often fewer than 50 per minute; rippling of surface muscles just under the skin. These symptoms may be mistaken for those of flu, heat stroke or heat exhaustion, or upset stomach. Moderately severe organophosphate and carbamate insecticide poisoning cases exhibit all the signs and symptoms found in mild poisonings, but in addition, the victim: is unable to walk; often complains of chest discomfort and tightness; exhibits marked constriction of the pupils (pinpoint pupils); exhibits muscle twitching; has involuntary urination and bowel movement. Severe poisonings are indicated by incontinence, unconsciousness and seizures.

Potential Health Effects

Inhalation:
Short Term Exposure: Symptoms are described fully above.
Long Term Exposure: No data for health effects associated with long term inhalation.

Skin Contact:
Short Term Exposure: Symptoms are described fully above.
Long Term Exposure: No data for health effects associated with long term skin exposure.

Eye Contact:
Short Term Exposure: 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.
Long Term Exposure: No data for health effects associated with long term eye exposure.

Ingestion:
Short Term Exposure: Symptoms are described fully above.
Long Term Exposure: No data for health effects associated with long term ingestion.

Carcinogen Status:

SWA: No significant ingredient is classified as carcinogenic by SWA.
NTP: No significant ingredient is classified as carcinogenic by NTP.
IARC: No significant ingredient is classified as carcinogenic by IARC.

Section 3 - Composition/Information on Ingredients

Ingredients	CAS No	Conc,%	TWA (mg/m^3)	STEL (mg/m^3)
Fenamiphos	22224-92-6	400g/L	0.1	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 SWA 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 may be equalled (but should not be exceeded) for no longer than 15 minutes and should not be repeated 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 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.

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. Hospital treatment may be necessary.

Inhalation: If inhalation occurs, contact a Poisons Information Centre. Urgent hospital treatment is likely to be needed. 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.
Skin Contact: Flush contaminated area with lukewarm, gently flowing water for at least 20-30 minutes, by the clock. DO NOT INTERRUPT FLUSHING. If necessary, keep emergency vehicle waiting (show paramedics this MSDS and take their advice). Under running water, remove contaminated clothing, shoes and leather goods (e.g. watchbands and belts). If breathing has stopped, trained personnel should begin artificial respiration or, if the heart has stopped, cardiopulmonary resuscitation (CPR) immediately.
Eye Contact: Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for 20 minutes or until the product is removed, while holding the eyelid(s) open. Take care not to rinse contaminated water into the unaffected eye or onto the face. Obtain medical attention immediately. Take special care if exposed person is wearing contact lenses.
Ingestion: If swallowed, do NOT induce vomiting; rinse mouth thoroughly with water and contact a Poisons Information Centre, or call a doctor at once. Give activated charcoal if instructed.

Section 5 - Fire Fighting Measures

Fire and Explosion Hazards: The major hazard in fires is usually inhalation of heated and toxic or oxygen deficient (or both), fire gases. This product is classified as a C1 combustible product. There is little 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 irritating if inhaled.
Extinguishing Media: In case of fire, use carbon dioxide, dry chemical, foam, water fog. Water fog or fine spray is the preferred medium for large fires. Try to contain spills, minimise spillage entering drains or water courses.
Fire Fighting: If a significant quantity of this product is involved in a fire, call the fire brigade. There is little danger of a violent reaction or explosion if significant quantities of this product are involved in a fire. Recommended personal protective equipment is liquid-tight chemical protective clothing and breathing apparatus.

Flash point: >61°C
Upper Flammability Limit: No data.
Lower Flammability Limit: No data.
Autoignition temperature: No data.
Flammability Class: C1

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. Wear full protective chemically resistant clothing including eye/face protection, gauntlets and self contained breathing apparatus. See below under Personal Protection regarding Australian Standards relating to personal protective equipment. Suitable materials for protective clothing include rubber, PVC. Eye/face protective equipment should comprise as a minimum, protective goggles. If there is a significant chance that vapours or mists are likely to build up in the cleanup area, we recommend that you use a respirator. Usually, no respirator is necessary when using this product. However, if you have any doubts consult the Australian Standard mentioned below (section 8). Otherwise, not normally necessary.
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. Recycle containers wherever possible after careful cleaning. Refer to product label for specific instructions. 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 schedule 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 "Incompatibilities" in Section 10. If you keep more than 2500kg or L of Dangerous Goods of Packaging Group II, you may be required to license the premises or notify your Dangerous Goods authority. If you have any doubts, we suggest you contact your Dangerous Goods 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**, Occupational Protective Clothing: AS/NZS 4501 set 2008, Industrial Eye Protection: **AS1336** and **AS/NZS 1337**, Occupational Protective Footwear: **AS/NZS2210**.

SWA Exposure Limits	**TWA (mg/m^3)**	**STEL (mg/m^3)**
Fenamiphos	0.1	not set

The ADI for Fenamiphos is set at 0.0001mg/kg/day. The corresponding NOEL is set at 0.014mg/kg/day. ADI means Acceptable Daily Intake; NOEL means No-observable-effect-level. Data from Australian ADI List, Dec 2012.

No special equipment is usually needed when occasionally handling small quantities. The following instructions are for bulk handling or where regular exposure in an occupational setting occurs without proper containment systems.
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: Usually, no respirator is necessary when using this product. However, if you have any doubts consult the Australian Standard mentioned above. Otherwise, not normally necessary.
Eyebaths or eyewash stations and safety deluge showers should be provided near to where this product is being handled commercially.

Section 9 - Physical and Chemical Properties:

Physical Description & colour:	Clear yellow liquid.
Odour:	Characteristic odour.
Boiling Point:	Not available.
Freezing/Melting Point:	No specific data. Liquid at normal temperatures.
Volatiles:	No data.
Vapour Pressure:	No data.
Vapour Density:	No data.
Specific Gravity:	1.05
Water Solubility:	Emulsifiable.
pH:	No data.
Volatility:	No data.
Odour Threshold:	No data.
Evaporation Rate:	No data.
Coeff Oil/water Distribution:	No data
Autoignition temp:	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 tightly closed. Containers should be kept dry. Keep containers and surrounding areas well ventilated.
Incompatibilities: strong acids, strong bases, strong oxidising agents.
Fire Decomposition: Combustion forms carbon dioxide, and if incomplete, carbon monoxide and possibly smoke. Water is also formed. May form nitrogen and its compounds, and under some circumstances, oxides of nitrogen. Occasionally hydrogen cyanide gas in reducing atmospheres. May form oxides of phosphorus and other phosphorus compounds. Carbon monoxide poisoning produces headache, weakness, nausea, dizziness, confusion, dimness of vision, disturbance of judgment, and unconsciousness followed by coma and death.
Polymerisation: This product will not undergo polymerisation reactions.

Section 11 - Toxicological Information

Toxicity: **Chronic toxicity:** A number of long-term feeding studies have been conducted with this compound on several different species of animals. In dogs, dietary doses of 0.0125 to 0.25 mg/kg/day over 2 years produced depressions in cholinesterase activity at middle doses and above. No effects were noted in the liver or in blood chemistry even at the highest dose. Rats exposed to 1.5 mg/kg/day over 2 years experienced increases in thyroid gland and lung weights in females, and increased heart weight in males. There were no organ weight changes noted in the rats at doses below 0.5 mg/kg/day. Brain weights have also been affected by exposure to moderate amounts of the compound. Two studies have been conducted on the potential risk to pesticide workers (loaders and applicators) from the use of a similar product. One study concluded that occupational exposure levels were more than 100 times lower than the level which causes cholinesterase inhibition in animals and thus the use of the compound did not pose a significant risk to the users. Another study concluded that the main threat to applicators was through the skin on the hands. However, the levels of exposure on the hands were significantly below the level that had caused chronic toxicity in mice. It was concluded that the pesticide could be used safely.
Reproductive effects: Both male and female rats fed moderate to high doses of Fenamiphos (0.15 to 1.5 mg/kg/day) over three generations showed no compound-related reproductive effects at the middle doses tested (0.5 mg/kg/day). At the higher doses the second generation of pups showed a decrease in body weight gain. This effect was not seen in the third generation. It is unlikely that this compound would cause reproductive effects in humans.
Teratogenic effects: A single study of pregnant rats fed Fenamiphos during gestation over a range of doses (up to 1 mg/kg/day) showed a decrease in the maternal weight at doses of 0.3 mg/kg/day and above. At the highest dose a higher number of the pups from the exposed group had died relative to the unexposed controls, and the pups which survived had decreased weights. In tests with pregnant rabbits fed up to 0.4 mg/kg, no birth defects were noted. However, another reference stated that teratogenic studies were positive in rabbits, though the effects in the offspring were induced at doses much higher than those that cause maternal toxicity. The results from these studies suggest that teratogenic effects in humans are unlikely.
Mutagenic effects: A number of studies evaluating the mutagenic potential of Fenamiphos have all shown the compound to be nonmutagenic. The test subjects included bacterial cells and male mice.
Carcinogenic effects: Two studies, one conducted with mice and the other with rats, indicated that Fenamiphos is not carcinogenic. One study was conducted for 1 1/2 years at very high levels (up to 7.5 mg/kg/day in mice) and the other study was conducted over 2 years (up to 1.5 mg/kg/day in rats).

Organ toxicity: Target organs identified in studies of test animals and exposed workers are the central nervous system, heart, lungs, and thyroid.
Fate in humans and animals: Fenamiphos is readily absorbed through the digestive tract and lungs. One study placed the amount absorbed near 95% of the ingested dose. The compound is rapidly broken down within the organism, and the by-products are excreted in the urine. The majority of a dose was recovered in urine within 15 hours after treatment.

Classification of Hazardous Ingredients

Ingredient	Risk Phrases
Fenamiphos	Conc>=25%: T+; R28; R24

Section 12 - Ecological Information

Very toxic to aquatic organisms, may cause long-term adverse effects to the aquatic environment. This product is biodegradable. It will not accumulate in the soil or water or cause long term problems.
Effects on birds: Fenamiphos is very highly toxic to birds, with a reported acute oral LD_{50} for the most sensitive species tested, the ring-necked pheasant, of 0.5 mg/kg. LD_{50} values for other species range from 1.0 to 2.4 mg/kg, all of which indicate that this is a very highly toxic compound. In a controlled experiment, Fenamiphos was determined to be the most toxic of thirteen different cholinesterase inhibitors. In tests with wild songbirds (red-winged blackbirds and house sparrows) an unspecified dose of a similar product was highly toxic to these species, with death of the birds occurring within an hour of eating the granules.
Effects on aquatic organisms: The toxicity of Fenamiphos to aquatic species varies from moderate to high. Bluegill sunfish are extremely sensitive to the presence of the compound. The LC_{50} for Fenamiphos is 9.6 mg/L in this species. Other species tested include the rainbow trout (LC_{50} is 0.11 mg/L) and the goldfish (LC_{50} is 3.2 mg/L). The compound is not expected to bioaccumulate appreciably in aquatic organisms.
Effects on other organisms: Fenamiphos is practically nontoxic to honeybees.
Environmental Fate:
Breakdown in soil and groundwater: Fenamiphos is moderately persistence in the soil environment, with a reported soil half-life of about 50 days. It appears to have no effect on the activity of soil bacteria. Aerobic processes are most important for breakdown of the compound. Fenamiphos is not strongly adsorbed to soils , but neither it nor its breakdown products have been found in over 1200 wells tested in six states in USA.
Breakdown in water: Fenamiphos disappears quickly from water in acidic and alkaline water, but it is stable in neutral water when held in the dark. The compound, when in the presence of artificial light, disappears very rapidly. In a neutral solution, half of the initial amount of the compound degraded within 4 hours.
Breakdown in vegetation: In plants, the compound is absorbed through the roots and translocated to the leaves. It is broken down within the plant. The products of its breakdown are relatively persistent and can also inhibit cholinesterase.

Section 13 - Disposal Considerations

Disposal: Special help is available for the disposal of Agricultural Chemicals. The product label will give general advice regarding disposal of small quantities, and how to cleanse containers. However, for help with the collection of unwanted rural chemicals, contact ChemClear 1800 008 182 http://www.chemclear.com.au/ and for help with the disposal of empty drums, contact DrumMuster http://www.drummuster.com.au/ where you will find contact details for your area.

Section 14 - Transport Information

Dangerous according to Australian Dangerous Goods (ADG) Code, IATA and IMDG/IMSBC criteria.

UN Number: 3018, ORGANOPHOSPHORUS PESTICIDE, LIQUID, TOXIC
Hazchem Code: 2X
Special Provisions: 61, 274
Limited quantities: ADG 7 specifies a Limited Quantity value of 100 ml for this class of product.
Dangerous Goods Class: Class 6.1: Toxic Substances.
Packaging Group: II
Packaging Method: P001, IBC02

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)

It is good practice to not transport agricultural chemical products with food, food related materials and animal feedstuffs.

Section 15 - Regulatory Information

AICS: All of the significant ingredients in this formulation are compliant with NICNAS regulations.
The following ingredient: Fenamiphos, is mentioned in the SUSMP.

Section 16 - Other Information

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

Acronyms:

ADG Code	Australian Code for the Transport of Dangerous Goods by Road and Rail (7th edition)
AICS	Australian Inventory of Chemical Substances
SWA	Safe Work Australia, formerly ASCC and NOHSC
CAS number	Chemical Abstracts Service Registry Number
Hazchem Code	Emergency action code of numbers and letters that provide information to emergency services especially firefighters
IARC	International Agency for Research on Cancer
NOS	Not otherwise specified
NTP	National Toxicology Program (USA)
R-Phrase	Risk Phrase
SUSMP	Standard for the Uniform Scheduling of Medicines & Poisons
UN Number	United Nations Number

Please read all labels carefully before using product.

This MSDS is prepared in accord with the SWA document “National Code of Practice for the Preparation of Material Safety Data Sheets” 2nd Edition [NOHSC:2011(2003)]

http://www.kilford.com.au/ Phone (02)9251 4532