## Section 1 - Identification of Chemical Product and Company

**Farmoz Pty Ltd,** Suite 1, Level 4, Building B
207 Pacific Highway St Leonards, NSW 2068
ACN 050 328 973

Telephone (02)9431 7800 (24 hours)
Fax (02)9431 7700

| | |
|---|---|
| **Substance:** | Diazinon is an organophosphorus derivative. |
| **Trade Name:** | **Farmoz Diazol 800 Insecticide** |
| **Product Use:** | Agricultural insecticide for use as described on the product label. |
| **Creation Date:** | **June, 2005** |
| **Revision Date:** | **June, 2005** |

## Section 2 - Hazards Identification

### 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.

**Risk Phrases:** R48/25, R20/21, R50/53. Toxic: danger of serious damage to health by prolonged exposure if swallowed. Harmful to health by prolonged exposure through inhalation, and in contact with skin. Very toxic to aquatic organisms, may cause long-term adverse effects to the aquatic environment.
**Safety Phrases:** S20, S38, S45, S24/25, S36/37/39. When using, do not eat or drink. In case of insufficient ventilation, wear suitable respiratory equipment. In case of accident or if you feel unwell, contact a doctor or Poisons Information Centre immediately (show the label where possible). Avoid contact with skin and eyes. Wear suitable protective clothing, gloves and eye/face protection.
**SUSDP Classification:** S6
**ADG Classification:** Class 6.1 (ORGANOPHOSPHORUS PESTICIDE, LIQUID, TOXIC)
**UN Number:** 3018

### Emergency Overview

**Physical Description & colour**: Yellow to brown coloured liquid.
**Odour:** Strong, unpleasant odour.
**Major Health Hazards:** The symptoms associated with Diazinon poisoning in humans include weakness, headaches, tightness in the chest, blurred vision, nonreactive pinpoint pupils, salivation, sweating, nausea, vomiting, diarrhoea, abdominal cramps, and slurred speech. Death has occurred in some instances from both dermal and oral exposures at very high levels. The $LD_{50}$ is 300 to 400mg/kg for technical grade Diazinon in rats. The inhalation $LC_{50}$ (4-hour) in rats is 3.5 mg/L. In rabbits, the dermal $LD_{50}$ is 3600 mg/kg. may cause serious damage to health by prolonged exposure, toxic if swallowed, harmful by inhalation and in contact with skin. 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

See section 11 for Chronic exposure studies.

#### Inhalation

**Short term exposure:** Significant inhalation exposure is considered to be unlikely. Symptoms are described fully above.

#### Skin Contact:

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

### Eye Contact:
**Short term exposure:** Exposure via eyes is considered to be unlikely. This product is believed to be not irritating to eyes.

### 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 3 - Composition/Information on Ingredients

| Ingredients | CAS No | Conc,% | TWA (mg/m$^3$) | STEL (mg/m$^3$) |
|---|---|---|---|---|
| Diazinon | 333-41-5 | 80 | 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 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 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:** Wash gently and thoroughly with warm water (use non-abrasive soap if necessary) for 10-20 minutes or until product is removed. Under running water, remove contaminated clothing, shoes and leather goods (e.g. watchbands and belts) and completely decontaminate them before reuse or discard. See instructions above about treatment with atropine.
**Eye Contact:** First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.
**Ingestion:** If swallowed, rinse mouth thoroughly with water and contact a Poisons Information Centre, or call a doctor at once. 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 may be toxic if inhaled. Take appropriate protective measures.
**Extinguishing Media:** Preferred extinguishing media are carbon dioxide, dry chemical, foam, water fog. Water fog or fine spray is the preferred medium for large fires. Ensure that no spillage enters drains or water courses.
**Fire Fighting:** When fighting fires involving significant quantities of this product, wear a splash suit complete with self contained breathing apparatus.
**Flash point:** Combustible but does not meet the AS 1940 definition of a Flammable Liquid.
**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. Immediately call the Fire Brigade. 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. It should be fitted with a type G cartridge, suitable for agricultural chemicals.
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 1000kg or 1000L of Toxic Substances of Packaging Group III, you are probably 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**, Industrial Clothing: **AS2919**, Industrial Eye Protection: **AS1336** and **AS/NZS 1337**, Occupational Protective Footwear: **AS/NZS2210**.

| **Exposure Limits** | **TWA (mg/m$^3$)** | **STEL (mg/m$^3$)** |
|---|---|---|
| Diazinon | 0.1 | not set |

The ADI for Diazinon is set at 0.001mg/kg/day. The corresponding NOEL is set at 0.02mg/kg/day. ADI means Acceptable Daily Intake and NOEL means No-observable-effect-level. Values taken from Australian ADI List, Dec 2004.

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:** No special ventilation requirements are normally necessary for this product. However make sure that the work environment remains clean and that vapours and mists are minimised.
**Eye Protection:** Eye protection is not normally necessary when this product is being used. However, if in doubt, wear suitable protective glasses or goggles.
**Skin Protection:** Prevent skin contact by wearing impervious gloves, clothes and, preferably, apron. Make sure that all skin areas are covered. 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.

Safety deluge showers should, if practical, be provided near to where this product is being used.

## Section 9 - Physical and Chemical Properties:

| | |
|---|---|
| **Physical Description & colour**: | Yellow to brown coloured liquid. |
| **Odour:** | Strong, unpleasant 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:** | Approx 1.1 at 20°C |
| **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. Containers should be kept dry. Keep isolated from combustible materials. Store in the closed original container in a dry, cool, well-ventilated area out of direct sunlight.
**Incompatibilities:** 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 will not undergo polymerisation reactions.

## Section 11 - Toxicological Information

**Toxicity: Acute toxicity:** Toxic effects of Diazinon are due to the inhibition of acetylcholinesterase, an enzyme needed for proper nervous system function. The range of doses that results in toxic effects varies widely with formulation and with the individual species being exposed. The toxicity of encapsulated formulations is relatively low because Diazinon is not released readily while in the digestive tract. Some formulations of the compound can be degraded to more toxic forms. This transformation may occur in air, particularly in the presence of moisture, and by ultraviolet radiation. Most modern Diazinon formulations are stable and do not degrade easily. The symptoms associated with Diazinon poisoning in humans include weakness, headaches, tightness in the chest, blurred vision, nonreactive pinpoint pupils, salivation, sweating, nausea, vomiting, diarrhoea, abdominal cramps, and slurred speech. Death has occurred in some instances from both dermal and oral exposures at very high levels. The $LD_{50}$ is 300 to 400mg/kg for technical grade Diazinon in rats. The inhalation $LC_{50}$ (4-hour) in rats is 3.5 mg/L. In rabbits, the dermal $LD_{50}$ is 3600 mg/kg.
**Chronic toxicity:** Chronic effects have been observed at doses ranging from 10 mg/kg/day for swine to 1000 mg/kg/day for rats. Inhibition of red blood cell cholinesterase, and enzyme response occurred at lower doses in the rats. Enzyme inhibition has been documented in red blood cells, in blood plasma, and in brain cells at varying doses and with different species.
**Reproductive effects:** No data are currently available.
**Teratogenic effects:** The data on teratogenic effects due to chronic exposure are inconclusive. One study has shown that injection of Diazinon into chicken eggs resulted in skeletal and spinal deformities in the chicks. Bobwhite quail born from eggs treated in a similar manner showed skeletal deformities but no spinal abnormalities. Acetylcholine was significantly affected in this latter study. Tests with hamsters and rabbits at low doses (0.125 0.25 mg/kg/day) showed no developmental effects, while tests with dogs and pigs at higher levels (1.0 10.0 mg/kg/day) revealed gross abnormalities.
**Mutagenic effects:** While some tests have suggested that Diazinon is mutagenic, current evidence is inconclusive.

**Carcinogenic effects:** Diazinon is not considered carcinogenic. Tests on rats over a 2-year period at moderate doses (about 45 mg/kg) did not cause tumour development in the test animals.
**Organ toxicity:** Diazinon itself is not a potent cholinesterase inhibitor. However, in animals, it is converted to diazoxon, a compound that is a strong enzyme inhibitor.
**Fate in humans and animals:** Metabolism and excretion rates for Diazinon are rapid. The half-life of Diazinon in animals is about 12 hours. The product is passed out of the body through urine and in the faeces. The metabolites account for about 70% of the total amount excreted. Cattle exposed to Diazinon may store the compound in their fat over the short term. One study showed that the compound cleared the cows within 2 weeks after spraying stopped. Application of Diazinon to the skin of cows resulted in trace amounts in milk 24 hours after the application.

## Section 12 - Ecological Information

Very toxic to aquatic organisms, may cause long-term adverse effects to the aquatic environment.
**Effects on birds:** Birds are quite susceptible to Diazinon poisoning. In 1988, the EPA concluded that the use of Diazinon in open areas poses a "widespread and continuous hazard" to birds. Bird kills associated with Diazinon use have been reported in every area of the USA and at all times of the year. Canadian geese and mallard ducks may be exposed to $LC_{50}$ concentrations in very short periods of time after application (from 15 to 80 minutes depending on the application rate of the pesticide). Birds are significantly more susceptible to Diazinon than other wildlife. $LD_{50}$ values for birds range from 2.75 mg/kg to 40.8 mg/kg.
**Effects on aquatic organisms:** Diazinon is highly toxic to fish. In rainbow trout, the Diazinon $LC_{50}$ is 2.6 to 3.2 mg/L. In hard water, lake trout and cutthroat trout are somewhat more resistant. Warm water fish such as fathead minnows and goldfish are even more resistant with Diazinon $LC_{50}$ values ranging up to 15 mg/L. There is some evidence that saltwater fish are more susceptible than freshwater fish. Bioconcentration ratios range from 200 in minnows to 17.5 for guppies. These studies show that Diazinon does not bioconcentrate significantly in fish.
**Effects on other organisms:** Diazinon is highly toxic to bees.
**Environmental Fate:**
**Breakdown in soil and groundwater:** Diazinon has a low persistence in soil. The half-life is 2 to 4 weeks. Bacterial enzymes can speed the breakdown of Diazinon and have been used in treating emergency situations such as spills. Diazinon seldom migrates below the top half inch in soil, but in some instances it may contaminate groundwater. The pesticide was detected in 54 wells in California and in tap water in Ottawa, Canada, and in Japan.
**Breakdown in water:** The breakdown rate is dependent on the acidity of water. At highly acidic levels, one half of the compound disappeared within 12 hours while in a neutral solution, the pesticide took 6 months to degrade to one half of the original concentration.
**Breakdown in vegetation:** In plants, a low temperature and a high oil content tend to increase the persistence of Diazinon. Generally the half-life is rapid in leafy vegetables, forage crops and grass. The range is from 2 to 14 days. In treated rice plants only 10% of the residue was present after 9 days. Diazinon is absorbed by plant roots when applied to the soil and translocated to other parts of the plant.

## 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:** III
**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.
The following ingredients: Diazinon, are mentioned in the SUSDP.

## 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 |
| **AICS** | Australian Inventory of Chemical Substances |
| **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 |
| **NOHSC** | National Occupational Health and Safety Commission |
| **NOS** | Not otherwise specified |
| **NTP** | National Toxicology Program (USA) |
| **R-Phrase** | Risk Phrase |
| **SUSDP** | Standard for the Uniform Scheduling of Drugs & Poisons |
| **UN Number** | United Nations Number |

Contact Points:

**Call Farmoz on (02)9431 7800 and ask for the technical manager.** **Fax: (02)9431 7700**

| | |
|---|---|
| **Police and Fire Brigade:** | **Dial 000** |
| **Emergency contact:** | **1800 024 973 (24 hours)** |

**If ineffective:** **Dial Poisons Information Centre**
**(13 1126 from anywhere in Australia)**

The information contained in this Material Safety Data Sheet is provided in good faith and is believed to be correct at the date hereof. However, it is expected that individuals receiving the information will exercise their independent judgement in determining its appropriateness for a particular purpose. Farmoz Pty Ltd makes no representation as to the accuracy or comprehensiveness of the information and to the full extent allowed by law excludes all liability whatsoever, whether with respect to negligence or otherwise, for any loss or damage arising from or connection with the supply or use of the information in this Material Safety Data Sheet.

Please read all labels carefully before using product.

This MSDS is prepared in accord with the NOHSC 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