

1: Identification of the Substance and Supplier

Product Name	NUVOS
Recommended Use	Insecticide
Company Details	Orion AgriScience Ltd Unit 1, 15 Sir Gil Simpson Drive, Harewood, Christchurch, 8053 PO Box 39 071, Harewood, Christchurch, 8545
Web Address	www.orionagriscience.co.nz
Email Address	orders@orionagriscience.co.nz
Telephone Number	(03) 928 2386 (office hours), 0800 674 6627 (free phone)
Emergency Telephone	0800 CHEMCALL (0800 243 622) (24 hours)
National Poison Centre	0800 POISON (0800 764 766) (24 hours)
Date of Issue/Revision	August 2017

2: Hazards Identification

Hazard Pictograms



Priority Identifiers:

Toxic, Combustible Liquid, Ecotoxic, Keep Out of Reach of Children

HSNO Classes:

Secondary Identifiers:

3.1D	Combustible liquid
6.1B	May be fatal if swallowed, inhaled or absorbed through the skin
6.3B	May cause mild skin irritation
6.4A	May cause eye irritation
6.5B	May cause an allergic skin reaction
6.6A	May cause genetic defects
6.7B	May be carcinogenic
6.8A	May cause reproductive/developmental damage
6.9A	May cause nervous system damage
9.1A	Very toxic to aquatic organisms
9.2D	Harmful to the soil environment
9.3A	Very toxic to terrestrial vertebrates
9.4A	Very toxic to terrestrial invertebrates

3: Composition/ Information on Ingredients

Ingredient	CAS No	Content (% w/v)
Dichlorvos (active ingredient)	62-73-7	77
1,2-benzenedicarboxylic acid dibutyl ester	84-74-2	16
Other ingredients, surfactants, etc	Proprietary	Remainder

4: First Aid Measures

Skin Contact	In case of contact, immediately wash affected area with soap and water. Wash contaminated clothing before reuse. Seek medical advice if irritation persists.
Eye Contact	Hold eyes open and rinse with water for at least 15 minutes. Remove contact lenses if easy to do so. Seek medical advice immediately.
Ingestion	Do not induce vomiting. Keep strictly at rest as continued movement enhances toxic effects. Seek medical advice immediately.

Inhalation	Immediately move to fresh air and rest. Maintain half upright position if breathing is difficult. Seek medical advice immediately.
Workplace Facilities	Hand wash facility. Eye wash facility.
Advice to Doctor	Nuvos is an organophosphorus insecticide, which inhibits cholinesterase activity, and interferes in nerve pulse transmission. On set of symptoms may be delayed for several hours. Atropine is the specific antidote and may be given immediately by qualified staff, at a level of 2 - 5mg (intravenously or intramuscularly), every 20 minutes until atropinisation occurs. Considerable amounts of atropine may be necessary. Atropine must NOT be given to cyanosed patients; administer oxygen first. Do NOT use opiates or barbiturates. If convulsions occur, administer diazepam (10mg intravenously). Take venous blood sample for determination of blood cholinesterase activity. Cholinesterase reactivators (Pralidoxime) should, if possible, be given at the same time as atropine. They are not effective after 24 hours post exposure and are not substitutes for atropine. Pralidoxime should be administered at: Mild poisoning: 1g in 2 - 3ml water (intramuscularly), Severe poisoning: 2g in 30ml water (intravenously).
National Poison Centre	0800 POISON (0800 764 766) (24 hours)

5: Fire-Fighting Measures

Fire/Explosion Hazard	Flammable liquid and vapour. Explosive concentrations of vapours may form in enclosed or poorly ventilated areas
HAZCHEM Code	2X
ERP Guide No	35
Extinguishing Media	Water spray, foam, dry chemical or CO2. Avoid water jet.
Fire Fighting Instructions	During a fire, toxic fumes may be emitted. Wear self-contained breathing apparatus. Contain runoff.

6: Accidental Release Measures

Caution: Floors may be slippery if wet. Eliminate all ignition sources and naked lights. Use non-sparking equipment. Leave and/or avoid entering confined spaces. When dealing with spills wear personal protective clothing and equipment as described in section 8. Respiratory protection (with organic vapour cartridge) required for any spill other than minor. Prevent further spillage or leakage. Keep bystanders away. Absorb spillage with inert material such as spill kit, sand or cat litter. Collect and place in a sealable container for disposal. Wash down affected area with water and detergent. Absorb and collect washings for disposal. Dispose of safely to a suitable landfill.

7: Storage, Handling and Use

Storage:	Keep out of reach of children. Do not store near heat, flame or other source of ignition. Store in the original, tightly closed container, in a secure and well ventilated area away from feed or foodstuffs. Do not store in direct sunlight.
Handling and Use:	Keep out of reach of children. Avoid contact with eyes and skin. Avoid inhalation of vapour or spray mist. Avoid handling, mixing or use of the product or container near heat, flame or other source of ignition. Heavy vapours can flow along surfaces to distant ignition sources and flash back. Take precautionary measures against static discharge. Do not use with thermal foggers. Mix in a well ventilated area. Do not spray onto food or food contact surfaces. Do not use near air vents or ducts. Exclude people and animals from the application area, both during application and for the duration of the REI. This includes areas where treated produce may be moved to within the REI. When used indoors, do not apply at a rate exceeding 5 mL / 100 cubic metres. When used outdoors, do not apply at a rate exceeding 2.4 L/ha, and do not apply to the same area more than 3 times per year. When handling, mixing, loading, applying or entering into treated areas within the REI, wear protective clothing as described in section 8. This also applies to other areas where treated produce may be moved to within the REI. Wash splashes of concentrate from skin immediately. Do not eat, drink or smoke while using. Wash hands and face after use. Do not apply onto or into water. This product must not be applied using aerial application. This product must not be used in residential dwellings, schools, playgrounds, early childhood centres, prisons, hospitals, care facilities, or any places where non-occupational bystanders may be present.
Maximum Handling Quantities	The following are the maximum quantities of Nuvos that a person may apply in a 24 hour period:

Application Method	Max Quantity
Handgun	15 mL
Handheld Fogger	15 mL
Knapsack	15 mL
Trolley Boom	15 mL
Semi-Automated Sprayer	15 mL
Fully Automated Sprayer	1.3 L
Fully Automated Fogger	1.3 L
Dipping	600 mL
Outdoor	7.2 L

Required.

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Written notification of application must be given to any occupants of property, buildings or land within 100m of the boundary of the application area. This includes both outdoor and indoor application. This requirement does not apply in the case of application by knapsack sprayer, handgun, or handheld cold fogger. Notification must be made 12 – 48 hours ahead of the application. Notification must include the proposed date and approximate time and duration of the application, the steps to be taken by those notified to avoid exposure (e.g., staying indoors, closing windows and doors, moving washing indoors, disconnecting roof water supply, etc.); and the notifiers details (including name and phone number for immediate contact during application, and email or postal address).

Required for indoor applications. Signs must be posted at every access point to the application area stating an application is being carried out using a substance that is toxic to people; access is not permitted unless appropriate protective equipment is worn; details of the required protective equipment required to be worn for entry, the person in charge; the date of the application; and the time/date of the expiry of the REI. Signs must be removed within 72 hours of the end of the REI. Signs must be in compliance with the Hazardous Substances (Identification) Regulations 2001.

A record of each application must be made. This record must include

- The measures implemented to comply with the REI
- Size of application area and any associated enclosed space
- Location and extent of any Exclusion Zone or Buffer Zone
- Application method used
- Quantity of product used by each person during the application
- Measures implemented to monitor worker exposure
- Where notification was required, details of how it was determined who should be notified, details of the persons notified, and what information was provided

For indoor applications only, an Exclusion Zone must be established, from which persons must be excluded (unless wearing personal protective equipment as outlined below). This zone extends 20m from the outside edge of the building or structure being treated. Persons must be excluded from the start of the application until a minimum of 24 hours after the end of the application. This product must not be used if residential dwellings, schools, playgrounds, early childhood centres, prisons, hospitals, care facilities, or any places where non-occupational bystanders are present within this zone.

For outdoor applications only, a buffer zone must be established. Application must not occur in a buffer zone. This is the area extending 20m upwind from residential dwellings, schools, playgrounds, early childhood centres, prisons, hospitals, care facilities, or any places where non-occupational bystanders may be present.

24 hours (glasshouses and outdoor application for rates up to 2L/ha) or 48 hours (indoor application and outdoor application for rates over 2L/ha). Note: For outdoor application over 2L/ha, a person may enter the application area after 24 hours if they are wearing the following: Gloves, long sleeved shirt, long trousers and closed footwear. A person can enter a treated area within the REI if protective clothing as

described in section 8 is worn, and the person is present for less than 30 minutes in any 24 hour period.

Site Requirements under the HSNO Act 1996 and HSNO Regulations:

- A location test certificate is not required
- A hazardous atmosphere zone is not required
- Fire extinguishers are required for more than 500 litres (2 fire extinguishers)
- Signage is required for 100 litres or more
- Emergency information is required for any quantity
- An emergency plan is required for more than 100 litres
- Secondary containment is required for more than 100 litres
- Separation/Segregation from incompatible substances (classes 1, 2, 3.2, 4 and 5) is required.

Additional Requirements

All aspects of storage, handling, use, disposal and record keeping must be in accordance with NZS 8409:2004 'Management of Agrichemicals', and relevant local and regional council plans.

8: Exposure Control / Personal Protection

Tolerable Exposure Limit	None established.
Workplace Exposure Standards	Product – None established (Use lowest practicable level). Note: When used indoors, do not apply at a rate exceeding 5 mL / 100 cubic metres Active ingredient - Dichlorvos 0.1 ppm / 0.9 mg/m ³ (8hr TWA) (skin absorption). Excipients – 1,2-benzenedicarboxylic acid dibutyl ester 5 mg/m ³ (8hr TWA) Others - None established (Use lowest practicable level)
Engineering Controls	Limited given nature of use
Personal Protection:	
Eye	Full face respirator.
Skin	Chemical resistant coveralls with hood tightly fitting at head, wrists and ankles (e.g., Tychem F suit), chemical resistant boots and chemical resistant gloves (barrier multilayer, nitrile, neoprene). Clean or replace coveralls frequently.
Respiratory	Respirator (organic vapour and particulate matter) when mixing or applying. Self-contained breathing apparatus in enclosed or poorly ventilated areas. Respirators and breathing apparatus must be stored, maintained and replaced in accordance with manufacturer's instructions.
Biological Monitoring	Regular users in direct contact (mixing and application) should undergo biological monitoring of cholinesterase activity. Consult with your GP or Occupational Health Adviser.

9: Physical and Chemical Properties

Form	Amber Clear liquid
Odour	Characteristic
Boiling Point	Not available
Flash Point	80 - 90°C (closed cup method)
Auto ignition Temperature	Not available
Explosive Limits	Not available. May form explosive mixture in enclosed or poorly ventilated areas
Density	1.316 g/mL (approx)
Vapour Pressure	2.1 x 10 ³ (dichlorvos)
Vapour Density	> 1 (heavier than air)
Solubility in Water	Emulsifiable
pH	Not available
Oxidising Properties	Not an oxidizer
Corrosive Properties	Not a corrosive

10: Stability and Reactivity

Stability	Stable under normal conditions.
Incompatibility	Avoid mixing with strong acids, alkalis, and oxidizing agents such as chlorine compounds, ammonium

Decomposition	nitrate, etc.
Dangerous Reactions	Decomposition will not occur under normal conditions. Products arising from combustion or thermal decomposition may be toxic, corrosive or flammable.

11: Toxicological Information

This section describes effects which could occur if this material is not handled in accordance with this data sheet.

Swallowed	Abdominal cramps, nausea, diarrhoea, vomiting, excessive sweating, headache, weakness, faintness, giddiness, small pupils, blurred vision and muscle twitching.
Eye	Irritation. May cause constriction of the pupil.
Skin	Mild irritation. Contact may induce an allergic response in susceptible individuals. Can be absorbed via the skin (see symptoms under 'swallowed' above).
Inhalation	Excessive sweating, headache, weakness, faintness, giddiness, small pupils, blurred vision and muscle twitching.
Note: Symptoms may be delayed for up to 24 hours or more following exposure	
Acute Toxicity (Active Ingredient)	<ul style="list-style-type: none"> • Acute Oral LD50 (Rat) 50 mg/kg • Acute Dermal LD50 (Rat) 90 mg/kg • Inhalation LC50 (4 hr) (Rat) > 0.34 mg/l
Sensitisation Effects	Potential contact sensitiser in susceptible individuals
Mutagenic Effects	May cause genetic effects
Carcinogenic Effects	There is no evidence of dichlorvos being a human carcinogen. However, dichlorvos is classed as a possible carcinogen because of limited evidence in some animal studies. Feeding studies in rats and mice over 103 weeks showed increased incidence of benign tumours and leukaemia. However, there were no tumours in other feeding studies in rats and dogs over 2 years.
Reproductive Effects	May cause reproductive effects
Teratogenic (Birth) Effects	May cause teratogenic effects
Systemic Effects	Interferes with cholinesterase, an enzyme essential for the correct functioning of the nervous system.

12: Ecotoxicity Information

This section describes effects which could occur if this material is not handled in accordance with this data sheet.

The following information is presented in respect of the active ingredient:

Ecotoxic Effects	<ul style="list-style-type: none"> • Acute Oral LD50 (Bobwhite quail) 24 mg/kg • LC50 (96 hr) (Rainbow trout) 0.2 mg/l • LC50 (48 hr) (Daphnia) 0.19 µg/l • Algae EC50 (5 day) 52.8 mg/l • Acute Oral LD50 (Bee) 0.29 µg/bee
Environmental Fate	Biodegradable. DT50 (soil) < 1 day
Partition Co-Efficient (Kow)	LogP = 1.9 (low)
Environmental Exposure Limit:	None established.

13: Disposal Considerations

Product	Dispose of product by using it in accordance with the label. Waste product should be disposed of to a suitable landfill. For disposal of large quantities contact Orion AgriScience Ltd.
Container	Dispose of to a suitable landfill. Do not burn. Do not use packaging for any other purpose.

14: Transport Information

Dangerous Goods	
UN Number	3018

Proper Shipping Name	ORGANOPHOSPHORUS PESTICIDE, LIQUID, TOXIC (DICHLORVOS 77%)
Class	6
Subsidiary Class	None
Packing Group	II
Additional Information	MARINE POLLUTANT
MTQ (Non-Commercial)	50 litres
Passenger Service Vehicle:	Maximum quantity 0.1 litre

15: Regulatory

HSNO Approval No	HSR000211
ACVM Registration No	P3590

16: Other Information

Glossary	
Approved Handler	For some hazardous substances, persons storing, handling and using must be trained and certified
DT50	Time (days) for 50% reduction in concentration
EC50	Concentration required to produce an effect in 50% of organisms
Environmental Exposure Limit	Maximum concentration limit of a substance in an environmental medium, e.g., water, soil.
ERP Guide	Dangerous Goods – Initial Emergency Response Guide SNZ HB 76:2008
HAZCHEM Code	Emergency action code for emergency services
HSNO	Hazardous Substances and New Organisms
LC50	Concentration that will kill 50% of organisms
LD50	Dose that will kill 50% or organisms
MTQ	Maximum Transport Quantity. The maximum amount of dangerous goods that can be transported by road by the user
Partition Co-Efficient Kow	Ratio of concentration between octanol and water. Values are given as the log value. A high value indicates a substance may bioaccumulate
Record Keeping	Includes a spray diary
REI	Restricted Entry Interval – The length of time after application before entry into the treated area is permitted without the use of protective equipment. For indoor environments, this time period commences once ventilation after treatment begins.
Safety Note	A brief document providing hazardous substance information for transport, storage and emergency management purposes
STEL	Short term exposure level
Tolerable Exposure Limit	Maximum concentration limit of a substance above which persons must not be exposed
Tracking	For some hazardous substances, a record must be kept of the transport, storage, sale and use of the product
TWA	Time weighted average
Workplace Exposure Standard	An occupational health standard limiting concentrations of specified substances to which persons are exposed
Wide Dispersive Use	A method of application involving equipment such as boom sprayers, mist blowers, vine sprayers, row sprayers, etc., as well as aerial application. Hand gunning within 30m of a property boundary is also classed as wide dispersive use. Knapsack sprayers are not classed as wide dispersive use

Please Note

Users must ensure that the most up to date version of this safety data sheet is used.

SAFETY DATA SHEET

NUVOS



This Safety Data Sheet summarises information on this product, and how to safely handle and use the product. Each user should familiarise themselves with the product label, Safety Note and Safety Data Sheet, and consider the information in the context of how the product will be handled and used, including in conjunction with other products. Orion AgriScience Ltd assumes no responsibility for the accuracy, completeness or suitability of this information. The user is responsible for determining the suitability and accuracy of this information for their particular purposes. If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the user should contact this company. Always read the product label before use.