



NUVOS SAFETY DATA SHEET

1: Identification of the Substance and Supplier

Product Name:	NUVOS
Recommended Use:	Insecticide
Company Details:	Orion Crop Protection Ltd 14 – 22 Triton Drive, North Harbour, Auckland PO Box 100 570, North Shore Mail Centre, 0745 New Zealand
Telephone Number:	(09) 415 1679 (office hours)
Emergency Telephone:	0800 CHEMCALL (0800 243 622) (24 hours)
National Poison Centre:	0800 POISON (0800 764 766) (24 hours)
Date of Issue/Revision:	June 2009

2: Hazards Identification

Priority Identifiers:	Toxic, Combustible Liquid, Ecotoxic, Keep Out of Reach of Children
HSNO Classes:	Secondary Identifiers:
3.1D	Combustible liquid
6.1A	May be fatal if swallowed, inhaled or absorbed through the skin
6.4A	May cause eye irritation
6.5B	May cause an allergic skin reaction
6.7B	May be carcinogenic
6.8A	May cause reproductive/developmental damage from repeated oral exposure
6.9A	May cause nervous system damage from repeated exposure at high doses
9.1A	Very toxic to aquatic organisms
9.3A	Very toxic to terrestrial vertebrates
9.4A	Very toxic to terrestrial invertebrates

3: Composition/ Information on Ingredients

Ingredient	CAS No	Content (% w/w)
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.
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. 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.
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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. Take precautionary measures against static discharge. Mix in a well ventilated area. Do not spray onto food or food contact surfaces. Do not use near air vents or ducts. When mixing or applying, wear protective clothing as described in section 8. Wash splashes of concentrate from skin immediately. Do not eat, drink or smoke while using. Wash hands and face after use. Wash protective clothing after use.
Approved Handler	Required.
Tracking	Required.
Record Keeping	Record of use must be kept if applied where members of the public may be lawfully present, or where it is likely to enter air or water and leave that place.
Site Requirements under the HSNO Act 1996 and HSNO Regulations:	<ul style="list-style-type: none"> • 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 50 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	Very toxic to bees – Spray must not contact plants in flower if they are likely to be visited by bees, except in the evening when bees have stopped foraging. 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:	<p>Product – None established (Use lowest practicable level).</p> <p>Active ingredient - Dichlorvos 0.1 ppm / 0.9 mg/m³ (8hr TWA)</p> <p>Excipients – 1,2-benzenedicarboxylic acid dibutyl ester 5 mg/m³ (8hr TWA). Others - None established (Use lowest practicable level).</p>
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).
Respiratory:	Respirator (organic vapour and particulate matter) when mixing or applying. Self contained breathing apparatus in enclosed or poorly ventilated areas.
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

Appearance:	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. Undiluted product may form explosive mixture in enclosed or poorly ventilated areas (if container not kept tightly closed).
Density:	1.316 g/mL (approx)
Vapour Pressure:	2.1×10^3 (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 nitrate, etc.
Decomposition:	Decomposition will not occur under normal conditions.
Dangerous Reactions:	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 12 hours or more following exposure	
Acute Toxicity:	Acute Oral LD50 (Rat) 50 mg/kg
(Active Ingredient)	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:	None
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.
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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:	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. Do not burn. Waste product should be disposed of to a suitable landfill. For disposal of large quantities contact Orion Crop Protection 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:	Must not be carried on passenger service vehicle.

15: Regulatory Information

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.
ERMA	Environmental Risk Management Authority
ERP Guide	Dangerous Goods – Initial Emergency Response Guide SNZ HB 76:2008
HAZCHEM Code	Emergency action code for emergency services
HAZNOTE	A brief document providing hazardous substance information for transport, storage and emergency management purposes
HSNO	Hazardous Substances and New Organisms
LC50	Concentration that will kill 50% of organisms
LD50	Dose that will kill 50% of 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	Spray diary
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

Please Note

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

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, HazNote 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 Crop Protection 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.