



Material Safety Data Sheet

Infosafe No. 3NU7W Issue Date : February 2006 ISSUED by NUFARM

Product Name : **REVOLVER Herbicide**

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name REVOLVER Herbicide
Product Code 0679
Product Type Group L Herbicide
Company Name NUFARM AUSTRALIA LIMITED. (ABN 80 004 377 780)
Address 103-105 Pipe Road Laverton North
Victoria 3026 Australia
Emergency Tel. 24hr 1800 033 498
Telephone/Fax Number Tel: (03) 9282-1000 Fax: (03) 9282-1001
Recommended Use For the control of a wide range of grasses and broadleaf weeds.
Can be utilised in crop establishment programs.
Contains non-ionic wetter.
FOR USE ONLY AS AN AGRICULTURAL HERBICIDE. THIS PRODUCT IS TOO HAZARDOUS TO BE USED IN THE HOME GARDEN.
Other Information This MSDS describes, to the best of our knowledge, the properties of the concentrated product. The physical properties and some of the assessments do not apply to the properties of the product once it has been diluted for application. Acute health effects of the diluted product are likely to be much less severe.

2. HAZARDS IDENTIFICATION

Hazard Classification HAZARDOUS SUBSTANCE.
DANGEROUS GOODS.
Hazard classification according to the criteria of NOHSC.
Dangerous goods classification according to the Australia Dangerous Goods Code.
Risk Phrase(s) R21/22 Harmful in contact with skin and if swallowed.
R26 Very toxic by inhalation.
R36/37/38 Irritating to eyes, respiratory system and skin.
R41 Risk of serious damage to eyes.
R43 May cause sensitization by skin contact.
R48/25 Toxic: danger of serious damage to health by prolonged exposure if swallowed.
Safety Phrase(s) S1/2 Keep locked up and out of reach of children.
S13 Keep away from food, drink and animal feeding stuffs.
S23 Do not breathe gas/fumes/vapour/spray
S28 After contact with skin, wash immediately with plenty of
S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
S38 If insufficient ventilation, wear suitable respiratory equipment.
S45 In case of accident or if you feel unwell seek medical advice immediately
Other Information Poisons Schedule S7 DANGEROUS POISON

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Characterization Liquid

Ingredients	Name	CAS	Proportion
	Paraquat present as Paraquat dichloride	1910-42-5	135 g/L
	Diquat (present as diquat dibromide)	85-00-7	115 g/L
	Wetting agents	N/A	10-30 %
	Water		Balance

4. FIRST AID MEASURES

Inhalation Remove patient from exposure, keep warm and at rest.
Obtain medical attention urgently.



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Ingestion	<p>RAPID TREATMENT IS ESSENTIAL IN CASE OF PARAQUAT POISONING. If swallowed do NOT induce vomiting; seek medical advice immediately and show this container or label or contact the Poisons Information Centre on 13 11 26 (Aust). Make every effort to prevent vomit from entering the lungs by careful placement of the patient. The above first aid instructions are mandated by the Commonwealth Department of Health and Aged Care via the National Drugs and Poisons Schedule. These instructions are suitable for ingestion of spray solution and small amounts of concentrate; however, if SUBSTANTIAL AMOUNTS of the concentrate have been swallowed (more than about 5ml) AND if medical assistance is more than 30 minutes away, the induction of vomiting should be CONSIDERED, preferably based on MEDICAL ADVICE if a physician can be contacted by phone. All care must be taken to prevent vomit from being inhaled. Do not give anything by mouth to a semi-conscious or unconscious person.</p> <p>Immediately transfer patient to nearest hospital or medical centre, warning by telephone of the estimated time of arrival so that the start of treatment is not delayed.</p>
Skin	<p>Contact of the concentrate with abraded skin or skin with cuts must be avoided. Wash affected areas thoroughly with soap and water. Remove contaminated clothing and launder before re-use. Seek medical advice, but only after the exposed skin has been thoroughly washed.</p>
Eye	<p>If in eyes, hold eyelids open and wash with copious amounts of water for at least 15 minutes. Seek medical advice immediately.</p>
First Aid Facilities	<p>If poisoning occurs, contact a doctor or Poisons Information Centre on 13 11 26 (Australia).</p>
Advice to Doctor	<p>Rapid treatment for PARAQUAT poisoning is essential. Evacuation of the stomach and stomach washout should be carried out as quickly as possible. A booklet entitled 'Paraquat Poisoning, a practical guide to diagnosis, first aid and hospital treatment' (prepared by Syngenta) or 'The Treatment of Paraquat Poisoning: a guide for doctors' (prepared by ORICA Australia) is available at major hospitals or Poisons Information Centres, or contact the emergency number at the end of this MSDS. TREATMENT: Wash out stomach and test urine and gastric aspirate (if clear) for presence of paraquat. Give up to 1 litre of 15% aqueous suspension of Fuller's Earth orally or via gastric tube, together with a suitable purgative (200ml of an aqueous solution of mannitol). A 7% suspension of bentonite in 10% glycerol in water should be used if Fuller's Earth is unavailable. Repeat administration of absorbent plus purgative until absorbent is seen in the stools. This should normally take between 4 and 6 hours after the start of treatment. Do not use supplemental oxygen.</p>
First Aid	<p>OBTAIN IMMEDIATE MEDICAL ATTENTION. SPEED IS ESSENTIAL.</p>

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media	<p>If involved in a fire, the product will not burn. Choose extinguishing media to suit the burning material.</p>
Hazards from Combustion Products	<p>Non-combustible. If involved in a fire, the dehydrated components may emit oxides of carbon, oxides of nitrogen and hydrogen chloride.</p>
Special Protective Equipment for fire fighters	<p>Breathable air apparatus must be worn when fighting a fire in which this product is involved.</p>
Hazchem Code	<p>2X</p>

6. ACCIDENTAL RELEASE MEASURES



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Spills & Disposal	Contain spill and absorb with clay, sand, soil or proprietary absorbent (such as vermiculite). Collect spilled material and waste in sealable open-top type containers for disposal. On-site disposal of concentrate is not acceptable. If possible, ring 1800 033 498 for specialist advice.
Personal Protection	Wear specified PPE to decontaminate personnel and equipment, or to handle broken packages or containers. Wear eye protection, chemically resistant gloves, boots and overalls. Decontaminate emergency personnel with soap and water before leaving the emergency area.
Clean-up Methods - Large Spillages	If large liquid spills occur, attempt to recover as much spilt material from sumps and bunded areas before absorbing remaining material into vermiculite or other absorbent.
Environmental Precautions	Use earthen bunds or absorbent bunding to prevent spreading of spillage.

7. HANDLING AND STORAGE

Precautions for Safe Handling	For use by licensed pest control operators or primary producers only. Do not work in spray mist. Do not continue to use if skin irritation or nose bleed occurs. This may be caused by exposure to spray mist as the result of incorrect use of equipment or adverse climatic conditions. Stop and review handling and spraying techniques before further spraying. If symptoms persist seek medical advice.
Conditions for Safe Storage	Store in the closed, original container in a cool, well ventilated area. Do not store for prolonged periods in direct sunlight. Store in a locked enclosure. For use by licensed pest-control operators or primary producers only.
Other Information	Always read the label and any attached leaflet before use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

National Exposure Standards	No exposure standard for this product has been set, however, an exposure standard has been set for paraquat (respirable sizes) at 0.1 mg/m ³ . An exposure standard has been set for diquat dibromide at 0.5 mg/m ³ .
Engineering Controls	No special requirements. Ensure workplace is well ventilated. Some people who are extremely sensitive to the product may develop nose bleeds when handling the concentrate. If possible, these people should not handle the material; if they must, provide effective local ventilation.
Respiratory Protection	If exposure to vapour, spray or dusts from dried product is expected, wear a high efficiency particulate respirator covering nose and mouth.
Personal Protective Equipment	When opening the container, preparing spray and using the prepared spray wear cotton overalls buttoned to the neck and wrist and a washable hat, elbow-length PVC gloves and goggles. When there is a risk of exposure to spray mist wear waterproof footwear and waterproof protective clothing, impervious gauntlet length gloves (rubber or PVC), goggles and a face mask and respirator covering nose and mouth and capable of filtering spray droplets. A high efficiency type particulate respirator is recommended, but in any event use a respirator which complies with the requirements of AS1716 (Standards Association of Australia). Further advice on safety equipment should be obtained from a safety equipment manufacturer. Avoid contacting vegetation wet with spray, but if necessary to do so, wear waterproof footwear and waterproof protective clothing and gloves.
Hygiene Measures	After use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water. After each day's use, wash contaminated clothing and safety equipment.
Requirements Concerning Special Training	NSW regulations require that people who use pesticides in their job or business must have training in the application of the materials. By 1st September, 2005 all users must have received such training.



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9. PHYSICAL AND CHEMICAL PROPERTIES

Form	Liquid
Appearance	Clear dark blue liquid
Odour	Obnoxious odour
Boiling Point	~100°C
Solubility in Water	Soluble in water.
Specific Gravity	1.16
pH Value	5.0 - 6.5
Vapour Pressure	<1 x 10 ⁻² mPa (25°C, paraquat dichloride); <0.01 mPa (diquat dibromide monohydrate).
Octanol/Water Partition Coefficient	Kow Log P is -4.5 (@ 20°C for paraquat); -4.6 (diquat)
Flammability	Non combustible material.

10. STABILITY AND REACTIVITY

Chemical Stability	Paraquat and diquat are inactivated by adsorption onto clay.
Incompatible Materials	Paraquat and diquat are highly corrosive to most metals, e.g. aluminium, zinc and iron.
Hazardous Reactions	Keep away from strong oxidising agents.

11. TOXICOLOGICAL INFORMATION

Inhalation	Highly toxic if inhaled. However, unlikely to be hazardous by inhalation because of low vapour pressure of the material at ambient temperature. Nose bleeding and soreness of the throat may result from spray mist or dust trapped on the nasal mucosa. Irritating to the respiratory system. Pulmonary oedema may occur up to 48 hours after exposure and could prove fatal. If the concentrate is allowed to dry out, solid paraquat dust can be created. Paraquat dust is highly toxic (TLV 0.1mg/m ³) and should not be handled without full respiratory protection. This product contains a stenching agent to give an offensive smell. This has been done to reduce the likelihood of accidental ingestion. This stenching agent may cause headaches and nausea in some people when inhaled. The presence of this offensive smell in the air does not necessarily indicate the presence of paraquat.
Ingestion	TREATMENT OF PARAQUAT POISONING MUST COMMENCE AS RAPIDLY AS POSSIBLE. Rapid treatment is essential. The immediate effects of poisoning depend on the dose of paraquat absorbed into the blood. Mild poisoning occurs at <20 mg paraquat ion/kg body weight and the effects are vomiting and diarrhoea. Moderate to severe poisoning occurs at 20-30 mg paraquat ion/kg body weight and the effects are vomiting, abdominal discomfort, soreness and inflammation of the mouth, throat and oesophagus, difficulty in swallowing and, later, diarrhoea. Kidney and liver damage may appear 1-3 days after exposure. Can cause death by a delayed proliferating fibrosis of the lung within 1-3 weeks. Lethal poisoning occurs at >30 mg paraquat ion/kg body weight and the effects are nausea and vomiting, and can cause death by multi-organ failure and circulatory collapse within 48 hours.
Skin	Contact with concentrate on skin will result in moderate irritation. Can cause inflammation and in severe cases blistering of the skin. Contamination of the nails may cause white spots or in severe cases cracking and loss of the nail. Normal growth follows without delay. Intact skin is a very effective barrier to paraquat. Damaged skin removes the barrier and paraquat may be absorbed with effects as outlined above under ingestion.
Eye	Eye irritation may be delayed. May lead to ulceration of corneal and conjunctival epithelium giving rise to secondary infection. Although healing may be slow, the injury is superficial and with proper medical care will be complete, even in severe cases.



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Chronic Effects	Based on available data, repeated exposures are not anticipated to cause additional significant adverse effects.
Reproductive Toxicity	Data indicates no reproductive effects.
Carcinogenicity	Data indicates no carcinogenic effects.
Acute Toxicity - Oral	LD50 (rat) 129 - 157 mg/kg for paraquat dichloride LD50 (guinea pig) 30 - 58 mg/kg LD50 (rat) 408 mg/kg for diquat dibromide
Acute Toxicity - Dermal	LD50 (rat) 911 mg/kg for paraquat dichloride LD50 (rabbit) 240 mg/kg for paraquat ion LD50 (rat) >793 mg/kg for diquat dibromide May cause temporary damage to nails and a delay in the healing of cuts and wounds.
Acute Toxicity - Inhalation	LC50 (rat) (4hr) 0.5 - 1.5 µg/l for paraquat dichloride LC50 (rat) (4hr) 571 - 673 µg/l for diquat dibromide
Eye Irritation	The product is an eye irritant.
Skin Irritation	The product is a skin irritant.
Skin Sensitisation	Product is not a skin sensitiser.
Other Information	The Australian Acceptable Daily Intake (ADI) for paraquat (as cation) for a human is 0.004 mg/kg/day, set for the public for daily, lifetime exposure. This is based on the NOEL of 0.45 mg/kg/day, the level determined to show no effects during long term exposure for the most sensitive indicators and the most sensitive species. (Ref: Comm. Dept. of Health and Ageing, 'ADI List', TGA, September 2005). ADI for diquat is 0.002 mg/kg/day, NOEL 0.2 mg/kg/day.

12. ECOLOGICAL INFORMATION

Persistence / Degradability	Paraquat and diquat are rapidly absorbed and inactivated by contact with soil. There is evidence of photodegradation in air.
Acute Toxicity - Fish	LC50 (96 hr) for brown trout is 2.5 - 13 mg/l for paraquat dichloride LC50 (96 hr) for mirror carp is 135 mg/l LC50 (96 hr) for rainbow trout is 21 mg/l for diquat dibromide
Acute Toxicity - Daphnia	EC50 (48 hr) for daphnia is 6.1 mg/l for paraquat dichloride. EC50 (48 hr) for daphnia is 1.3 mg/l for diquat dibromide.
Acute Toxicity - Other Organisms	The following data is for the active ingredient, paraquat dichloride. LD50 for mallard duck is 199 mg/kg LD50 for bobwhite quail is 175 mg/kg Bees: Not toxic to bees. LD50 36 µg/bee. LD50 for mallard duck is 155 mg/kg for diquat

13. DISPOSAL CONSIDERATIONS

Product Disposal	On site disposal of the concentrated product is not acceptable. Ideally, the product should be used for its intended purpose. If there is a need to dispose of the product, approach local authorities who hold periodic collections of unwanted chemicals (ChemCollect).
Container Disposal	Do not use this container for any other purpose. Triple rinse containers, add rinsate to the spray tank, then offer the container for recycling/reconditioning, or puncture top, sides and bottom and dispose of in landfill in accordance with local regulations. drumMUSTER is the national program for the collection and recycling of empty, cleaned, non returnable crop production and on-farm animal health chemical containers. If the label on your container carries the drumMuster symbol, triple rinse the container, ring your local Council, and offer the container for collection in the program. Returnable containers: empty contents fully into application equipment. Replace cap, close all valves and return to the point of supply for refill or storage. 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.



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14. TRANSPORT INFORMATION

U.N. Number 3016
Proper Shipping Name BIPYRIDILIUM PESTICIDE, LIQUID, TOXIC - (Contains Paraquat and diquat)
DG Class 6.1
Hazchem Code 2X
Packaging Method 3.8.6.1
Packing Group III
Storage and Transport Considered dangerous for transport by the Australian Code for the Transport of Dangerous Goods by Road and Rail.
EPG Number 6B1
IERG Number 34
UN Number (Sea Transport) 3016
IMO Class/Packing Group Class 6.1; Packing Group III
IMO Proper Shipping Name BIPYRIDILIUM PESTICIDES, LIQUID, TOXIC, N.O.S. (contains paraquat and diquat)

15. REGULATORY INFORMATION

Poisons Schedule S7
Packaging & Labelling DANGEROUS POISON
KEEP OUT OF REACH OF CHILDREN
READ SAFETY DIRECTIONS BEFORE OPENING OR USING
CAN KILL IF SWALLOWED
DO NOT PUT IN DRINK BOTTLES
KEEP LOCKED UP
Hazard Category Very Toxic, Irritant
AICS (Australia) All of the components in this product are listed on the Australian Inventory of Chemical Substances.

16. OTHER INFORMATION

Contact Person/Point Normal Hours: Mr Volker Maier Phone: (03) 9282 1000
After Hours: Shift Supervisor Phone: 1800 033 498
Revisions Highlighted The MSDS was reviewed. Minor changes were made to the information.
...End Of MSDS...