

SECTION 1 - PRODUCT & COMPANY IDENTIFICATION

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Substance: paraquat.
Product Name: AGROQUAT
Product Use: Herbicide
Creation Date: April 2006
Revision Date: March 2011

24 Hr Emergency Number: 082 771 2712
In case of Poisoning:
Poison Information Centre 082 446 8946
Tygerberg Hospital: (021) 931 6129
Poison Emergency Enquiries (021) 689 5227
In case of Spillage:
HAZMAT: 0800 147 112

SECTION 2 - COMPOSITION / INFORMATION ON INGREDIENTS

Common Name: Paraquat
Chemical Name: 1,1'-dimethyl-4,4'-bipyridinedium (IUPAC)
CAS No.: 4685-14-7
Chemical Family: Bipyridylum
Chemical formula: C₁₂H₁₄N₂ (Mol. Wt. : 186.3).
Use: Post emergence non-selective contact herbicide in solution, absorbed by the foliage, with some translocation in the xylem. Broad-spectrum herbicide.
Formulation: paraquat ion (bypiridyl): 200 g/l
(as dichloride salt: 276 g/l)
Soluble Liquid.
Hazardous ingredients of toxicological concern:

<u>Inert:</u>	<u>CAS no:</u>	<u>concern:</u>	<u>% present:</u>
Paraquat ion	4685-14-7	toxic	± 20 %
Water		none	< 80 %

SYMBOLS: T, Xi
RISK-PHRASE(S): R24/25, R36/37/38

SECTION 3 - HAZARD IDENTIFICATION

Toxicity class: WHO II (a.i); EPA II (formulation)

Likely routes of exposure:

Ingestion, inhalation, eye contact and skin contact. **Highly toxic.** Paraquat has serious delayed effects if absorbed.

Eye contact:

Irritant. The concentrate can lead to serious eye damage, may be delayed.

Skin contact:

Toxic. May cause moderate to severe irritation. Damaged skin will lead to increase rates of absorption of paraquat. Refer effects under "Ingestion". Contamination of nails may cause white spots or cracking and loss of nails. Regrowth will occur normally.

Ingestion:

Highly toxic by ingestion. Immediate effects depend on the dose of paraquat absorbed into the blood. Early signs of paraquat poisoning are burning of the mouth and throat, followed by gastrointestinal tract irritation, resulting in abdominal pain, loss of appetite, nausea, vomiting and diarrhea. Other toxic effects include thirst, shortness of breath, rapid heart rate, kidney failure, lung sores and liver injury. In severe cases of poisoning diarrhoea follows and kidney and liver damage may develop 1 to 3 days after exposure. Lung damage can be observed after about 3 days and may lead to death.

Inhalation:

Highly toxic by inhalation. However, unlikely to be hazardous as paraquat is not volatile. Exposure to spray mist may cause nose bleeding and soreness of mouth and throat.

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SECTION 4 - FIRST AID MEASURES AND PRECAUTIONS**Eye contact:**

Flush eyes with lukewarm, gently flowing water for at least 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. If irritation, redness or burning sensations develop, get medical attention immediately.

Skin contact:

Remove contaminated clothing, shoes and leather goods immediately. Wash contaminated areas with soap and water. If skin is damaged, the paraquat can be absorbed through the skin. Emergency personnel should wear gloves and avoid contamination. If irritation persists, get medical attention immediately.

Inhalation:

Remove from exposure area to fresh air immediately. Keep affected person warm and at rest. Get medical attention immediately. **Do NOT administer supplementary oxygen.**

Ingestion:

Do not induce vomiting. Wash mouth with water and give water to drink. **Seek medical advice immediately.**

Advice to Physician:

Rapid treatment is essential. 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 suitable purgative (200 ml of aqueous solution of mannitol). Repeat administration of absorbent plus purgative until absorbent is seen in stools. This should normally take between 4 to 6 hours after start of treatment.

Do NOT administer supplement OXYGEN.

SECTION 5 - FIRE-FIGHTING MEASURES**Fire hazard:**

Product is non combustible. Does not burn. However, following evaporation of aqueous component, residual material may burn, forming toxic fumes.

Flash point:

Does not burn.

Hazardous decomposition products:

Fire decomposition products from this product may form toxic and corrosive mixtures.

Extinguishing agents:

Extinguish fires with carbon dioxide, dry chemical powder, or alcohol-resistant foam. Water spray can be used for cooling of unaffected stock. Contain water used for fire fighting for later disposal. Do not get water inside the containers. Runoff to sewers could be corrosive and/or toxic and could cause pollution.

Fire fighting:

Keep upwind. Remove container from fire area if possible. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Contain fire control agents for later disposal. Use a recommended extinguishing agent for the type of surrounding fire. Avoid inhaling hazardous vapours. Keep upwind. Consider evacuation of downwind area if material is leaking.

Personal protective equipment:

Fire may produce a combination of irritating, corrosive and toxic gases or other products of combustion. Fire-fighters and others that may be exposed should wear full protective clothing and self-contained breathing apparatus.

SECTION 6 - ACCIDENTAL RELEASE MEASURES (SPILLAGE)**Personal precautions:**

Avoid contact with skin and eyes. Do not breathe in mist or fumes. For personal protection see Section 8.

Environmental precautions:

Do not allow entering drains or watercourses. Spillage or uncontrolled discharges into water courses (or public waters) to be reported immediately to the Police and to the Department of Water/Environmental Affairs.

Occupational spill:

Do not flush with water. Do not touch or walk through spilled material. Stop leak if you can do so without risk.

Absorb or cover with dry earth or sand or other suitable non-combustible absorbent, and transfer to labelled containers.

In situations where product comes in contact with water, contain contaminated water for later disposal. Do not flush spilled material into drains. Keep spectators away

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SECTION 7 - HANDLING AND STORAGE REQUIREMENTS**Handling:**

Toxic if swallowed. Avoid contact with eyes and skin, and inhalation of mist and vapour. Use with adequate ventilation. Wash hands before eating, drinking, chewing gum, smoking, or using the toilet. Operators should change and wash clothing daily. Remove clothing immediately if the insecticide gets inside. Then wash skin thoroughly using a non-abrasive soap and put on clean clothing. Do not apply directly to areas where surface water is present, or to intertidal areas below the mean high water mark. Water used to clean equipment must be disposed of correctly to avoid contamination.

Storage:

Stable for up to 2 years when stored under dry normal warehouse conditions. Avoid mild steel, galvanized iron and aluminium. The product must be kept under lock and key. Keep out of reach of unauthorized persons, children and animals. Store in its original labelled container in isolated, dry, cool and well-ventilated area. Not to be stored next to foodstuffs and water supplies. Local regulations should be complied with.

SECTION 8 - EXPOSURE CONTROL/PERSONAL PROTECTION

It is essential to provide adequate ventilation. The measures appropriate for a particular work site depend on how this material is used and on the extent of exposure. Ensure that control systems are properly designed and maintained. Comply with occupational safety, environmental, fire, and other applicable regulations.

Personal protective equipment:

If engineering controls and work practices are not effective in controlling exposure to this material, then wear suitable personal protective equipment including approved respiratory protection.

Respirator:

An approved respirator suitable for protection from vapours and mists of pesticides is required. Limitations of respirator use specified by the approving agency and the manufacturer must be observed.

Clothing:

Employee must wear appropriate protective (impervious) clothing and equipment to prevent skin contact with the substance.

Gloves:

Employee must wear appropriate synthetic protective gloves to prevent contact with this substance.

Eye protection:

The use of full face protection is recommended.

Emergency eye wash: Where there is any possibility that an employee's eyes may be exposed to this substance, the employer should provide an eye wash fountain or appropriate alternative within the immediate work area for emergency use.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Water soluble, dark blue/greenish liquid.
Odour:	Characteristic pyridine bases odour.
Flash point:	Does not flash. Not flammable.
Explosive properties:	Not explosive.
Oxidizing properties:	No oxidizing properties.
Specific gravity:	1.08 ± 0.005 g/ml.
Boiling point:	Approximately 100 °C aqueous solution.
pH:	6,5 to 7,5
Solubility in water:	Soluble in water.

SECTION 10 - STABILITY AND REACTIVITY**Stability:**

Stable for up to 2 years in original container, properly closed and under normal storage conditions.

Corrosiveness:

Highly corrosive to most metals e.g., iron, zinc and aluminium.

Incompatibility:

Incompatible with strong bases, strong acids and oxidising agents.

Hazardous decomposition products:

Carbon dioxide, and if combustion is incomplete, carbon monoxide and smoke. Nitrogen, oxides of nitrogen, hydrogen chloride gas, chlorides and water.

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SECTION 11 - TOXICOLOGICAL INFORMATION

Acute oral LD₅₀: 205 mg/kg (rat) (*Technical*)

200 to 220 mg/kg (rat) (*Formulation - calculated*)

Acute dermal LD₅₀: 235 mg/kg (rabbit) (*Technical*)

230 to 250 mg/kg (rabbit) (*Formulation - calculated*)

Inhalation:

If inhaled, may cause nose bleeding.

Acute skin irritation:

Moderate irritant. Damaged skin will increase rate of absorption of paraquat.

Acute eye irritation:

Moderate to severe irritant.

Skin sensitization:

Caused skin sensitization in guinea pigs in some formulations.

Reproductivity:

Paraquat is unlikely to cause reproductive effects in humans at expected exposure levels.

Teratogenicity:

Evidence suggests that paraquat does not cause birth defects at doses which might reasonably be encountered.

Carcinogenicity:

Evidence regarding carcinogenic effects of paraquat is inconclusive.

ADI: 0.004 mg/kg/day (paraquat ion) and 0.002 mg/kg (paraquat dichloride)

TWA paraquat dichloride: 0.1 mg/m³ (8 hour) (respirable dust).

SECTION 12 - ECOLOGICAL INFORMATION

Paraquat is highly persistent in the soil environment, with reported half-lives of greater than 1000 days. Ultraviolet light, sunlight and soil microorganisms can degrade paraquat to products less toxic than parent compound. The strong affinity for adsorption by soil particles may limit the bioavailability of paraquat to plants, earthworms and microorganisms. Paraquat is not significantly mobile in most soils.

Paraquat will be bound to suspended or precipitated sediment in aquatic environment, and may even be more persistent than on land due to limited availability of oxygen. Half-lives vary from 13 hours to 23 weeks.

Paraquat dichloride decomposes when exposed to light after application to maize, tomato and bean plants. Small amounts of residues were found in potatoes however, no residue detected after boiling of potatoes.

ECOTOXICOLOGY :**Birds: Moderately toxic to birds.**

LD₅₀ Bobwhite quail: 175 mg/kg

Mallard ducks: 199 mg/kg

LC₅₀ (5 days) Bobwhite quail: 981 mg/kg

Mallard ducks: 4048 mg/kg

Fish: Slightly to moderately toxic to aquatic life.

LC₅₀ (96 hours) Rainbow trout: 26 mg/ℓ

Mirror carp: 135 mg/ℓ

Daphnia: LC₅₀: 1,2 to 4,0 mg/ℓ

EC₅₀ (48 hours): 6,1 mg/ℓ

Bees: Non toxic to bees.

LD₅₀ (72 hours): oral: 36 µg/ℓ

LD₅₀ (72 hours): contact: 150 µg/ℓ

Algae: At high levels, paraquat inhibits the photosynthesis of some algae.

Other: Aquatic weeds may bioaccumulate the compound.

Earthworms: LC₅₀: > 1380 mg/kg soil.

SECTION 13 - DISPOSAL CONSIDERATION**Pesticide disposal:**

Open dumping or burning of this pesticide is prohibited. Waste resulting from the use of this product that cannot be reused or reprocessed should be disposed of in a landfill approved for pesticide disposal. Do not contaminate rivers, dams or any other water sources with the product or used containers.

Package product wastes:

Emptied containers retain vapour and product residues. Observe all labelled safeguards. TRIPLE RINSE empty containers in the following manner: Invert the empty container over the spray or mixing tank and allow to drain for at least 30 seconds after the flow has slowed down to a drip. Thereafter, rinse the container three times with a volume of water equal to a minimum of 10 % of that of the container. Add the rinsings to the contents of the spray tank before destroying the container.

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Destroy the emptied containers by perforation and flattening. Bury in an approved dump site. Do not re-use the empty container for any other purpose.

SECTION 14 - TRANSPORT INFORMATION

UN NUMBER: 3016
Road Transport ADR/IRD:
Class: 6.1
Packaging group: III
Shipping name: bipyridilium pesticide, liquid, toxic (paraquat).

SECTION 15 - REGULATORY INFORMATION

Symbol: T, Xi
Indication of danger: Toxic, Irritating substance
Risk phrase(s):
R 24/25 Toxic in contact with skin and if swallowed.
R 36/37/38 Irritating to eyes, respiratory system and skin.
R 41 Risk of serious damage to eyes.
Safety phrases:
S 1/2 Keep locked up and out of reach children.
S 13 Keep away from food, drink and animal feeding stuff.
S 20/21 When using do not eat, drink or smoke.
S 23 Do not breath vapour/spray.
S 24/25 Avoid contact with skin and eyes.
S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

SECTION 16 - OTHER INFORMATION**Packing and Labelling**

Packed in 5, 10, 20 & 25 litre fluorinated plastic containers and labelled according to the South African regulations and guidelines.

Disclaimer:

The information on this sheet is not a specification; it does not guarantee specific properties. The information is intended to provide general guidance as to health and safety based upon our knowledge of the handling, storage use of the product. It is not applicable to unusual or non-standard uses of the product nor where instructions or recommendations are not followed.

All information is given in good faith but without guarantee in respect of accuracy, and no responsibility is accepted for errors and omissions or the consequence thereof.

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