MATERIAL SAFETY DATA SHEET

***e*Chem (Australia) Pty Ltd**
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Issued: April 2013

Emergency Contact: 1800 033 111

SECTION 1 IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name: ***e*Chem ETHEPHON Growth Regulator**

Full Product Name: *e*Chem Ethephon Growth Regulator
Other Names: Ethephon. 2-chloroethylphosphonic acid.
Use: Plant growth regulator for use in cotton and other crops.
Company: *e*Chem (Australia) Pty Ltd
Address: 419 Frome Street, Moree NSW 2400
ACN/ABN: 089 133 095
Telephone Number: 02 6750 8019 **Fax Number:** 02 6752 3123
Emergency Contact : 1800 033 111

SECTION 2 HAZARDS IDENTIFICATION

Classified as hazardous according to criteria of Safe Work Australia.
Classified as a Dangerous Good according to the ADG Code.

Risk Phrases:	R20	Harmful by inhalation
	R21	Harmful in contact with skin.
	R34	Causes burns.
	R41	Risk of serious eye damage.
Safety Phrases:	S2	Keep out of reach of children.
	S13	Keep away from food, drink and other animal foodstuffs.
	S24/25	Avoid contact with skin and eyes.
	S36/37/39	Wear suitable protective clothing, gloves and eye/face protection.

SECTION 3 COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients:

CHEMICAL	***CAS NUMBER***	***PROPORTION***
Ethephon	16672-87-0	720 g/L
Other ingredients (including water) determined not to be hazardous		to 100%

SECTION 4 FIRST AID MEASURES

FIRST AID

Ingestion: If patient is conscious and alert, give 2-3 glasses of water to drink. **If swallowed DO NOT induce vomiting**. Give a glass of water. If swallowed, give one atropine tablet every 5 minutes until dryness of the mouth occurs. Seek immediate medical assistance

Eye contact: Immediately hold eyes open and flood with clean water until chemical is removed. Seek immediate medical advice, preferably an ophthalmologist.

Skin contact: If poisoned by skin absorption or through lungs, remove any contaminated clothing, wash skin thoroughly and give atropine tablets as above. Wash skin thoroughly with soap and water. If skin is irritated, seek medical advice. Launder contaminated clothing before re-use.

SECTION 4 FIRST AID MEASURES (Continued)

Inhalation: Remove to fresh air and observe until recovered. If not breathing, give artificial respiration. Administer oxygen if necessary. Get medical attention.

Advice to Doctor: This product possesses the characteristics of a strong acid and may cause mucosal damage by swallowing. The primary toxicity of this product is due to its irritant properties on mucosal surfaces. However, appropriate conventional treatment for circulatory shock, respiratory depression and convulsions may be needed. In a patient with severe over-exposure by ingestion, careful gastric lavage is required due to the possibility of stomach or oesophageal perforation. Gastric lavage with charcoal is recommended following ingestion, and further treatment if necessary.

This product can produce mild cholinergic symptoms due to its mild chloinesterase inhibiting effect. No specific antidote is known. The usefulness of conventional treatment for cholinesterase inhibiting agents, i.e. atropinization, has not been established for this product. Treat symptomatically.

Victims of severe over-exposure, by inhalation, should be kept under medical observation for up to 72 hours for delayed onset of pulmonary oedema. This material is an acid, but the use of alkaline substances to neutralize is contraindicated.

SECTION 5 FIRE FIGHTING MEASURES

Specific Hazard: Non-combustible material. Generally considered a low risk due to the water content, but once the water has evaporated the product is combustible.

Extinguishing media: Extinguish fire using media suited to burning material. If containers are ruptured contain all runoff.

Hazards from combustion products: Non-combustible, however after evaporation of water, the residual material can burn if ignited and when burning will emit toxic fumes. Will not polymerise.

Precautions for fire-fighters and special protective equipment: Isolate fire area. Evacuate downwind residents. Wear full protective clothing and self contained breathing apparatus. Do not breathe smoke or vapours generated.

SECTION 6 ACCIDENTIAL RELEASE MEASURES

Emergence procedures / Material and methods for containment and cleanup procedures: Wear elbow length PVC gloves and face shield or goggles to prevent skin and eye contamination. In the case of spillage, stop leak if safe to do so, and contain spill. Absorb spilled material with absorbent material such as sand, clay or cat litter. Vacuum, shovel or pump waste into an approved drum. Dispose of drummed waste as indicated in section 13 or according to the Australian Standard 2507 - Storage and Handling of Pesticides Dispose of drummed wastes, in accordance with the requirements of Local or State Waste Management Authorities. Keep material out of streams and sewers.

After spills, wash area preventing runoff from entering drains. If a significant quantity of material enters drains, advise emergency services. Thoroughly launder protective clothing before storage or re-use.

SECTION 7 HANDLING AND STORAGE

Precautions for safe Handling: No smoking, eating or drinking should be allowed where material is used or stored. This product possesses the characteristics of a strong acid. Product is harmful if swallowed. Attacks eyes. Repeated minor exposure may have a cumulative poisoning effect. Obtain an emergency supply of atropine tablets 0.6 mg. Protect eyes while using. When preparing spray and using the prepared spray wear elbow length PVC gloves and face shield or goggles. Wash hands after use. After each day's use, wash gloves and face shield or goggles and contaminated clothing.

Conditions for safe Storage: Keep out of reach of children. Store in original containers only. Store in a cool, dry and well ventilated location. Avoid excess heat. Store as for Class 8 (Corrosive) Dangerous Goods. Do not store for prolonged periods in direct sunlight. This product is a Schedule 6 Poison (S6) and must be stored and sold in accordance with the relevant Health Department regulations.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines:
No exposure standard has been established by Safe Work Australia.

Biological Limit Values:
No biological limit allocated

Engineering controls:
Use in ventilated areas. Keep containers closed when not in use. No special engineering controls are required.

Personal Protective equipment (PPE):
General: When preparing spray and using the prepared spray wear elbow length PVC gloves and face shield or goggles. Wash hands after use. After each day's use, wash gloves and face shield or goggles and contaminated clothing. This product possesses the characteristics of a strong acid.

Personal Hygiene: Clean water should be available for washing in case of eye or skin contamination. Wash skin before eating, drinking or smoking. Shower at the end of the workday.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear colourless to pale yellow liquid.
Odour:	Characteristic mild odour.
Boiling point:	Approximately 100°C
Freezing point:	Approximately 0°C.
Specific Gravity:	1.3 g/mL.
Solubility in Water:	Soluble.
pH:	Approximately 2.
Flammability:	Not flammable.
Corrosive hazard:	Corrosive.
Flashpoint (°C):	Not established. Water based product.
Flammability Limits (%):	Not established.
Poisons Schedule:	S6.

SECTION 10 STABILITY AND REACTIVITY

Chemical Stability: Product is considered stable in ambient conditions for a period of at least 2 years after manufacture.

Conditions to avoid: Avoid high temperatures. Avoid naked flames

Incompatible materials: Incompatible with alkaline materials, metallic salts and metals such as iron, copper and aluminium. *e*Chem Ethephon is corrosive to acrylic plastics, certain paints and metals. Flush and rinse all exposed equipment, including aircraft surfaces, with detergent and water after use.

Hazardous decomposition products: Hazardous decomposition products include hydrogen chloride and ethylene.

Hazardous reactions: No particular reactions to avoid.

SECTION 11 TOXICOLOGICAL INFORMATION

No specific data is available for this product as no toxicity tests have been conducted on this product. Information presented is our best judgement based on similar products and/or individual components. As with all products for which limited data is available, caution must be exercised through the use of protective equipment and handling procedures to minimise exposure.

Potential Health Effects:

ACUTE EFFECTS

Swallowed: Corrosive to the mouth, throat, oesophagus and stomach. Acute oral LD_{50} (rat) > 2000 mg/kg (similar product).

Eye: Attacks the eyes. Corrosive to eyes. Contact can cause corneal damage. Contamination of eyes can result in permanent damage.

SECTION 11 TOXICOLOGICAL INFORMATION (Continued)

Skin: Corrosive to the skin and may cause skin burns. Acute Dermal LD_{50} (rabbit) 1710 - 2210 mg/kg (similar product). Not a sensitiser.

Inhaled: Corrosive to the mouth, throat and lungs. Acute inhalation LC_{50} (rat) 4.5 mg/L/4 hours (similar product).

Long Term Exposure: Prolonged contact can cause chronic bronchitis. Repeated minor exposure may have a cumulative poisoning effect. Ethephon did not cause carcinogenic or mutagenic effects and did not cause reproductive effects in animal studies. This product contains an organophosphorus compound and is therefore expected to be a cholinesterase inhibitor.

SECTION 12 ECOLOGICAL INFORMATION

Environmental Toxicology: No data is available on this product. The active ingredient, Ethephon, has moderate to low toxicity to birds with and eight-day dietary LC_{50} > 10000 mg/kg (Mallard duck) and an acute LD_{50} = 1000 mg/kg (Bobwhite quail). Low toxicity to fish with 96 hour LC_{50} > 350 mg/L (Rainbow trout); 300 mg/L (Bluegill sunfish). Non toxic to bees and earthworms.

Environmental Fate: Ethephon is rapidly degraded in both plants and soil. Ethephoon has low mobility in soil and is unlikely to leach. Breaks down in UV radiation.

SECTION 13 DISPOSAL CONSIDERATIONS

Spills and Disposal: Persons involved in cleanup require adequate skin and eye protection -see section 8. In case of spillage, contain and absorb spilled material with absorbent material such as clay, sand or cat litter and dispose of waste as indicated below or in accordance to the Australian Standard 2507- Storage and Handling of Pesticides. Keep out animals and unprotected persons. Keep material out of streams and sewers. Vacuum, shovel or pump waste into an approved drum. To decontaminate spill area, tools and equipment, wash with detergent and water and add the solution to the drums of wastes already collected and label contents.

Dispose of drummed wastes, including decontamination solution in accordance with the requirements of Local or State Waste Management Authorities.

Disposal of empty containers: Triple or preferably pressure rinse containers before disposal. Add rinsings to spray tank. Do not dispose of undiluted chemicals on-site. If recycling, replace cap and return clean containers to recycler or designated collection point. If not recycling, break, crush, or puncture and bury empty containers in a local authority landfill. If no landfill is available, bury the containers below 500 mm 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.

SECTION 14 TRANSPORT INFORMATION

This product is classified as a Dangerous Good of class 8, with label "Corrosive 8", UN No. 3265, Packaging Group III. Proper Shipping Name: CORROSIVE LIQUID, ACIDIC, ORGANIC N.O.S. Hazchem Code: 2XE. Initial Response guide No. 37. Do not load with Dangerous Goods Class 1, 4.3, 5.1, 5.2, 7, foodstuffs or foodstuff empties.
This product is a Schedule 6 Poison (S6) and must be stored, transported and sold in accordance with the relevant Health Department regulations.

SECTION 15 REGULATORY INFORMATION

Under the Standard for Uniform Scheduling of medicines and Poisons (SUSMP), this product is a schedule 6 poison.
This product is registered under the Agricultural and Veterinary Chemicals Code Act 1994. Product Registration No.53313.
This product is classified as a Hazardous Substance under the criteria of Safe Work Australia. C: Corrosive; Xn: Harmful.

SECTION 15 REGULATORY INFORMATION Continued)

This product is classified as a Dangerous Good under the Australian Code for the Transport of Dangerous Goods by Road and Rail.
Requirements concerning special training:
Check State or Territory regulations that require people who use pesticides in their job or business to have training in the application of the materials.

SECTION 16 OTHER INFORMATION

Issue Date: 29 April 2013. Valid for 5 years. (Updated with new address)

Key to abbreviations and acronyms used in this MSDS:

ADG Code: Australian Dangerous Goods Code (for the transport of dangerous goods by Road and Rail).
Carcinogen: An agent which is responsible for the formation of a cancer.
Genotoxic: Capable of causing damage to genetic material, such as DNA.
LD_{50}: Median Lethal Dose. A statistically derived single dose of a substance that can be expected to cause death in 50% of dosed animals.
Mutagenic: Capable of inducing a genetic mutation in an organism.
PPE: Personal protective equipment.
Teratogen: An agent capable of causing abnormalities in a developing foetus.
TWA: The Time Weighted Average airborne concentration over an eight-hour working day, for a five day working week over an entire working life.
Safe Work Australia: Formally known as Australian Safety & Compensation Council (ASCC) which was formally known as the National Occupational Health & Safety Commission (NOHSC).

References

1. "Search Hazardous Substances". Work Safe Australia HSIS website. (2013).
2. "Approved Criteria for Classifying Hazardous Substances" 3rd Ed. NOHSC Australia. [NOHSC:1008 (2004)]. October 2004.

This MSDS summarises our best knowledge of the health and safety hazard information of the product and how to safely handle and use the product in the workplace. Each user should read this MSDS and consider the information in the context of how the product will be handled and used in the workplace including in conjunction with other products.

If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the user should contact this company.

End of MSDS