

VETPAK SAFETY DATA SHEET

Section 1: Identification of the Substance or Mixture and of the Supplier

Product Name: Copper Sulphate Pentahydrate.

Other names: Copper sulphate, Bluestone, Sulphuric Acid, Copper (2+) Salt (1:1), Pentahydrate.

Recommended Use: Used as an agricultural fungicide, bactericide, algacide, herbicide, and feed and fertilizer additive.

Company Details: Vetpak Ltd.

Address: 150 Rickit Road, Te Awamutu.

Telephone Number: (07) 870 2024

Emergency Telephone Number: (07) 870 2024 8.00am to 5.00pm Monday to Friday except public holidays. National Poisons Centre, Department of Preventative and Social Medicine, University of Otago, P O Box 913, Dunedin, New Zealand. Phone (0800) 764-766 24 hours.

Date of Review: 8th August 2008.

Section 2: Hazards Identification

Hazards Classification: 6.1D, 6.3A, 6.4A, 6.5B, 6.9B, 9.1A, 9.3C.

ERMA New Zealand Approval Code: HSR 003126

Hazard Pictograms:



Hazard Statements: Warning:

Harmful if swallowed.

Causes skin irritation.

Causes serious eye irritation.

May cause an allergic skin reaction.

Causes damage to liver and kidneys through prolonged or repeated exposure.

Very toxic to aquatic life with long lasting effects.

Harmful to terrestrial invertebrates.

Prevention Statements:

Keep out of reach of children.

Read label before use.

Wash hands thoroughly after handling.

Do not eat, drink or smoke when handling this product.

Wear protective gloves, and eye / face protection.



VETPAK SAFETY DATA SHEET

Avoid breathing dust.

Contaminated work clothing should not be allowed out of the work place.

Avoid release to the environment.

Section 3: Composition / Information on Ingredients:

Pure Substance	CAS Number	Proportion
Copper sulphate pentahydrate	7758-99-8	>98%

Section 4: First Aid Measures:

Swallowed: Induce vomiting with fingers down the back of the throat, ONLY IF CONSCIOUS. Position patient on left side (head down position if possible) to maintain open airway and prevent aspiration. If poisoning occurs seek medical aid.

Skin: Remove contaminated clothing immediately. Flush affected areas with running water (and soap if available). Seek medical aid in the event of irritation.

Eye: Immediately hold eyelids apart and flush the eye continuously with running water for at least 15 minutes. Transport to hospital.

Inhaled: Remove from exposure to fresh air immediately. Encourage patient to blow nose to ensure clear passage of breathing. If irritation persists, seek medical aid.

First Aid Facilities: Ensure an eye bath and running water are available and ready for use.

Advice to Doctor: For copper intoxication:- Unless extensive vomiting has occurred, empty the stomach with water and milk, sodium bicarbonate solution or a 0.1% solution of potassium ferrocyanide (the resulting copper ferrocyanide is insoluble). Administer egg white and other demulcents. Maintain electrolyte and fluid balances. Morphine or meperidine (Demerol) may be necessary for control of pain. If symptoms persist or intensify (especially circulatory collapse or cerebral disturbances), try BAL intramuscularly or penicillamine in accordance with the suppliers recommendations. Treat shock vigorously with blood transfusions and perhaps vasopressor amines.

Additional Information: Principal routes of exposure are usually by skin contact / absorption and inhalation of generated dust. Copper has fairly low toxicity. Some rare hereditary conditions (Wilson disease or hepatolenticular degeneration) can lead to accumulation of copper on exposure, causing irreversible damage to a variety of organs (liver, kidney, CNS, bone, vision) and lead to death.

Section 5: Fire Fighting Measures

Extinguishing Media: In case of fire, use appropriate media most suitable for surrounding fire conditions.

Hazards from Combustion Products: Product is stable under normal conditions of use and storage. Avoid contact with high temperatures, sources of ignition and incompatible materials such as oxidising agents, nitrates, oxidizing acids, chlorine bleaches, pool chlorine, powdered metals, magnesium, alkalis, and hydroxylamine. Copper dust or mist may react with acetylene to form shock sensitive copper acetylides. Reacts violently with hydroxylamine.

Recommended Protective Clothing: Fire fighters should wear a self contained breathing apparatus and full protective clothing along with protective equipment.

Section 6: Accidental Release Methods

Emergency Procedures; Personnel involved in the clean up should wear full protective clothing. Eliminate all sources of ignition. Increase ventilation. Avoid generating dust. Do not allow product to reach drains, sewers or waterways. If the product does enter a waterway, advise the Environmental



VETPAK SAFETY DATA SHEET

Protection Authority or your local Waste Management Authority. Use spark-proof tools and equipment.

Methods and Materials for Containment and Clean Up: Contain and sweep/shovel up spills with dust binding material or use an industrial vacuum cleaner. Transfer to a suitable, labeled container and hold for disposal.

Section 7: Handling Storage

Handling Practices: Ensure an eye bath and wash room facilities are available and ready for use. Observe good personal hygiene practices and recommended procedures. Wash thoroughly after handling. Take precautionary measures against static discharges by bonding and grounding equipment.

Subsection 2: Storage: Store in a cool, dry, well-ventilated area. Keep labeled containers tightly sealed when not in use. Inspect regularly for deficiencies such as damage or leaks. Protect from physical damage. Store away from incompatible materials including strong oxidizing agents, strong acids, acetylene gas, sodium hypobromite solutions, finely powdered metals (magnesium metal), plain steel, galvanized pipes, strong reducing agents, hydroxylamine and sources of ignition. Protect from direct sunlight, moisture and static charges. This product is not classified dangerous for transport according to The Australian Code for the Transport of Dangerous Goods By Road and Rail.

Section 8: Exposure Controls / Personal Protection

National Exposure Standards: ERMA NZ recommends the following exposure limits: Copper fume: TWA 0.2mg/m³. Dusts and mists as Cu: 1mg/m³.

Biological Limit Values: No information available on biological limit values for this product.

Engineering Controls: A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area.

Personal Protection:

Respirator: Wear an approved, suitable respirator (where engineering controls are inadequate).

Eyes: Safety glasses with side shields.

Hands: Wear protective gloves.

Clothing: Protective coveralls and safety footwear.

Section 9: Physical and Chemical Properties

Physical State: Solid.

Appearance: Blue granules or powder.

Formula: CuSO₄·5H₂O.

Boiling Point: N/A°C

Melting Point: 110°C (loses water)

Vapour Pressure: N/A.

Specific Gravity: 2.29 (Water = 1).

Flash Point: N/A.

Flammability Limits: N/A.

Solubility in Water: 317g/L (20°C)



VETPAK SAFETY DATA SHEET

pH: 3.5-4.5 (50g/L H₂O 20°C)

Section 10: Stability and Reactivity

Stability of the Substance: Product is considered stable.

Conditions to avoid: Presence of incompatible materials.

Hazardous polymerization: Hazardous polymerisation will not occur.

Section 11: Toxicological Information

Acute Health Effects

Swallowed: Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual. Sulphates are not well absorbed orally, but can cause diarrhoea. A metallic taste, nausea, vomiting and burning feeling in the upper stomach region occurs after ingestion of copper and its derivatives. The vomitus is usually green / blue and discolours contaminated skin. Acute poisonings from ingestion are rare due to their prompt removal by vomiting. Should vomiting not occur or is delayed, systemic poisoning may occur producing kidney and liver damage, wide-spread capillary damage, and be fatal; death may occur after relapse from an apparent recovery. Anaemia may occur in acute poisoning.

Eye: Although the material is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may cause transient discomfort characterised by tearing or conjunctival redness as with windburn). Slight abrasive damage may also result. The material may produce foreign body irritation in certain individuals. Copper salts, in contact with the eye, may produce inflammation of the conjunctiva, or even ulceration and cloudiness of the cornea.

Skin: Skin contact is not thought to produce harmful health effects (as classified under EC Directives using animal models). Systemic harm, however, has been identified following exposure of animals by at least one other route and the material may still produce health damage following entry through wounds, lesions or abrasions. Good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting. Exposure to copper, by skin, has come from its use in pigments, ointments, ornaments, jewellery, dental amalgams and IUDs (intra-uterine devices), and in killing fungi and algae. Although copper is used in the treatment of water in swimming pools and reservoirs, there are no reports of toxicity from these applications. Reports of allergic contact dermatitis following contact with copper and its salts have appeared in the literature, however the exposure concentrations leading to any effect have been poorly characterized. In studies, the possible contamination with nickel (which causes allergies definitely) has been raised as a reason for any reactions observed. Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

Inhaled: Inhalation of dusts, generated by the material during the course of normal handling, may be damaging to the health of the individual. The material is not thought to produce respiratory irritation (as classified by EC Directives using animal models). Nevertheless inhalation of dusts, or fumes, especially for prolonged periods, may produce respiratory discomfort and occasionally, distress. Copper poisoning following exposure to copper dusts and fume may result in headache, cold sweat and weak pulse. Capillary, kidney, liver and brain damage are the longer term manifestations of such poisoning. Inhalation of freshly formed metal oxide particles sized below 1.5 microns and generally between 0.02 to 0.05 microns may result in "metal fume fever". Symptoms may be delayed for up to 12 hours and begin with the sudden onset of thirst, and a sweet, metallic or foul taste in the mouth. Other symptoms include upper respiratory tract irritation accompanied by coughing and a dryness of



VETPAK SAFETY DATA SHEET

the mucous membranes, lassitude and a generalised feeling of malaise. Mild to severe headache, nausea, occasional vomiting, fever or chills, exaggerated mental activity, profuse sweating, diarrhoea, excessive urination and prostration may also occur.

Chronic Health Effects:

Long term exposure to high dust concentrations may cause changes in lung function i.e. pneumoconiosis; caused by particles less than 0.5 micron penetrating and remaining in the lung. Prime symptom is breathlessness; lung shadows show on X-ray. Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure. Copper has fairly low toxicity. Some rare hereditary conditions (Wilson disease or hepatolenticular degeneration) can lead to accumulation of copper on exposure, causing irreversible damage to a variety of organs (liver, kidney, CNS, bone, vision) and lead to death. There may be anaemia and cirrhosis of the liver.

Toxicity:

Oral (human) LDLo: 1088 mg/kg, Oral (human) TDLo: 272 mg/kg, Oral (rat) LD₅₀: 300 mg/kg, Dermal (rat) LD₅₀: >2000 mg/kg, Oral (Mouse) LD₅₀: 43 mg/kg, Oral (Human) TDLo: 429 mg/kg

Section 12: Ecological Information

Potential Environmental Considerations:

Copper is unlikely to accumulate in the atmosphere due to a short residence time for airborne copper aerosols. Airborne coppers, however, may be transported over large distances. Copper accumulates significantly in the food chain. The toxic effect of copper in the aquatic biota depends on the bio-availability of copper in water which, in turn, depends on its physico-chemical form (ie.speciation). Bioavailability is decreased by complexation and adsorption of copper by natural organic matter, iron and manganese hydrated oxides, and chelating agents excreted by algae and other aquatic organisms. Toxicity is also affected by pH and hardness. Total copper is rarely useful as a predictor of toxicity. In natural sea water, more than 98% of copper is organically bound and in river waters a high percentage is often organically bound, but the actual percentage depends on the river water and its pH. Copper exhibits significant toxicity in some aquatic organisms. Some algal species are very sensitive to copper with EC₅₀ (96 hour) values as low as 47 µg/litre dissolved copper whilst for other algal species EC₅₀ values of up to 481 µg/litre have been reported. However many of the reportedly high EC₅₀ values may arise in experiments conducted with a culture media containing copper-complexing agents such as silicate, iron, manganese and EDTA which reduce bioavailability. Toxic effects arising following exposure by aquatic species to copper are typically:

Algae EC₅₀ (96 h): 47-481 µg/litre
Daphnia magna LC₅₀ (48-96 h): 7-54 µg/litre
Amphipods LC₅₀ (48-96 h): 37-183 µg/litre
(Gastropods LC₅₀ (48-96 h): 58-112 µg/litre
Crab larvae LC₅₀ (48-96 h): 50-100 µg/litre

Exposure to concentrations ranging from one to a few hundred micrograms per litre has led to sub-lethal effects and effects on long-term survival. For high bioavailability waters, effect concentrations for several sensitive species may be below 10 µg Cu/litre. In fish, the acute lethal concentration of copper ranges from a few µg/litre to several mg/litre, depending both on test species and exposure conditions. Where the value is less than 50 µg Cu/litre, test waters generally have a low dissolved organic carbon (DOC) level, low hardness and neutral to slightly acidic pH. Exposure to concentrations ranging from one to a few hundred micrograms per litre has led to sub-lethal effects and effects on long-term survival. Lower effect concentrations are generally associated with test waters of high bioavailability.

Fish LC₅₀ (96 hr): Rainbow trout, Harlequin fish, goldfish, eel: 0.1-2.5 mg/l
Daphnia magna LC₅₀ (48 h): 24 µg/l µ
Oral (wild bird) LD₅₀: 300 mg/kg
Oral (duck) LD₅₀: 600 mg/kg



VETPAK SAFETY DATA SHEET

Environmental risk phrases:

Very toxic to aquatic life with long lasting effects.

Harmful to terrestrial invertebrates.

Section 13: Disposal Considerations

Disposal Information: Recycle wherever possible or consult manufacturer for recycling options.

- Consult Local Waste Management Authority for disposal.
- Bury residue in an authorised landfill.
- Recycle containers if possible, or dispose of in an authorised landfill.
- Containers may still present a chemical hazard/ danger when empty.
- Return to supplier for reuse/ recycling if possible. Otherwise:
- If container can not be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill.

Where possible retain label warnings and MSDS and observe all notices pertaining to the product.

Section 14: Transport Information

Environmentally Hazardous Substance.



Labels Required: MISCELLANEOUS

Hazchem: 2X

UNDG: Dangerous Goods Class: 9

Subrisk: None

UN Number: 3077

Packing Group: III

Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.

Section 15: Regulatory Information

Regulatory status: ERMA New Zealand Approval Code: HSR 003126

Section 16: Other Information

Additional Information: National Poisons Centre, Department of Preventative and Social Medicine, University of Otago, P O Box 913, Dunedin, New Zealand. Phone (0800) 764-766 24 hours.

1. The above information has been compiled on the basis of good faith, and our experience from the available technical knowledge and data for this product.
 2. Where health or safety data given discloses a risk to the user or environment, it is the responsibility of the Purchaser to pass on that information to employees or those who may be using the product, ensuring that adequate safety procedures are used.
 3. No responsibility can be accepted for the wrongful or misinterpretation of this data.
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