MATERIAL SAFETY DATA SHEET

INDUSTRIAL CLEANING EQUIPMENT & SUPPLY
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IDENTITY (As listed on label): ROOT KILLER

SECTION II – HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Hazardous Components:	OSHA PEL	ACGIG TVL	% RANGE
Copper Sulfate Pentahydrate CAS #7758-98-7 (CuSO4 5H2o) Copper 25.2%			99.0

Hazard Data: Health Hazard: Oral LD (rats, male)=300mg/k product is toxic orally but not dermally. It is skin sensitizer and skin irritant. It is corrosive to the eyes
Aquatic Hazard: LC 50 at >0.1<1mg by EP water programs for hazardous subatances
*Reportable under SARA Title III Sec. 313 and 40 CFR Part 372

SECTION III – PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point: -5H2O @ 150C
Specific Gravity (H2O=1): 2.284
Vapor Pressure:7.3mg Hg @ 25C
Melting Point: -4H2O @ 110C
Vapor Density (air=1): N/D
Evaporation Rate (Butyl Acetate=1): N/D
Ph (as is): Not applicable
Ph: 5% solution = pH 4.0
Solubility in Water: 22.37 @ 0C. 117.95 @ 100C.
Appearance and Odor: Blue crystals or powder. No odor

SECTION IV – FIRE AND EXPLOSION HAZARD DATA

Flash Point(Method Used):	Flammable Limits:	LEL:	UEL:
N/A	N/A		

Extinguishing Media: Copper sulfate does not burn, nor will it support combustion. If stored with other combustible products, use water, CO2 or dry chemical
Special Fire Fighting Procedures: If dry heated above 600C, SO2 is evolved. If water is used, it will solubilize the CuSO4.5H2O, and care should be used to keep such water out of streams or other water bodies
Unusual Fire and Explosion Hazards: None

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SECTION V – REACTIVITY DATA
Conditions Contributing To Instability: None known. Product is highly soluble in water, but does not react with the water
Incompatibility (Materials to Avoid): None known when product remains dry. Product readily dissolves in water. Solutions are corrosive to mild steel. Store solutions in plastic, rubber, 304, 347, or 316 stainless steel
Hazardous Decomposition or Byproducts: None at normal process temperatures and pressures. If dry heated above 1100 Deg. F (600 Deg. C) sulfur dioxide (SO2) may be released
Hazardous Polymerization: None known

SECTION VI – HEALTH HAZARD DATA
Route(s) of Entry:
Inhalation:
Hazard Classification: Copper sulfate is a skin irritant and sensitizer including nasal membranes. Copper dusts and mists regulated. OSHA PEL= 1mg (Cu)/M3. ACGIH TWA= 1mg (Cu)/M3
Basis for Classification: Acute inhalation LC50: In excess of 1.48 mg/1 air. OSHA 29 CFR 1910.1000 and American Conference of Governmental Industrial Hygienists (ACGIH) for 1987-1988
Source: Laboratory test in accordance with FHSLA regulations
Skin Contact:
Hazard Classification: Skin irritant and sensitizer especially to some individuals
Basis for Classification: US EPA Pesticide fact sheet No. 87. Copper sulfate, PB87-116570, March 21, 1987
Source: Same as Basis for Classification
Skin Absorption:
Hazard Classification: Not toxic dermally
Basis for Classification: Dermal LD50: In excess of 8,000 mg/kg
Source: Laboratory test in accordance with FHSLA regulations
Eye Contact: Corrosive
Basis for Classification: Eye irritation source:
24hrs=41.67
48hrs=Corrosive
Source: Laboratory test in accordance with FHSLA regulations
Ingestion:
Hazard Classification: Moderate toxicity in humans orally. High intraperitoneal toxicity
Basis for Classification: Acute oral LD50 (male rats)=300mg/kg
*Source: See reference 1 below
Effects of overexposure: Ingestion: Copper sulfate may induce severe gastroenteric distress (vomiting gastroenteric pain, local corrosion and hemorrhages): Prostration,

anuria, hematuria, anemia, increase in white blood cells, coma, respiratory difficulties and circulatory failure
Eye: Corrosive to eye tissue
Chronic overexposure: copper sulfate is reported to be systemic effect in humans (Ref 1), which effects the metabolic and excretory function of the liver and kidney
Emergency and First Aid Procedures:

Eyes: Irrigate eyes with large amounts of water for at least 15 minutes. Hold Eyelids apart during irrigation. Send patient to a physician immediately
Skin: Wash or shower thoroughly with water. Remove and wash contaminated Clothes
Ingestion: If swallowed, call physician or Poison Control Center. Drink 1 or 2 glasses of water and induce vomiting by touching back of throat with finger or, if available, by administering syrup of ipecac. Do not induce vomiting or give anything by mouth to an unconscious person
Inhalation: Remove worker from exposure and seek medical aid

Notes to Physician: Probable muscosal damage may contraindicate the use of gastric lavage. Measure against circulatory shock, respiratory depression and convulsion may be needed
* Reference 1: Dangerous Properties of Industrial Materials. Sixth Edition by N.I. Sax. Van Nostrand Reinhold Co., 1984

SECTION VII – PRECAUTIONS FOR SAFE HANDLING AND USE
Aquatic Toxicity: LC50 24hr. = Daphnia magna=.182 mg/l. Rainbow Trout=0.17 mg/l. Bluegill=1.5 mg/l. All values are expressed as copper sulfate pentahydrate. Test water was soft
Steps to be taken in case material is released or spilled: 1. Contact appropriate, local, state, or federal pollution control officials if warranted and especially if spilled into public waters. 2. If spill is confined to the use site, neutralize with lime or soda ash and use absorbent and remove to approved landfill
Neutralizing Chemicals: Soda ash or lime
Waste Disposal Method: Sweep up crystal or powdered product and dispose in an approved landfill. If product is in confined solution, introduce lime or soda ash to form insoluble copper salts and then dispose in an approved landfill. Reportable quantity of a spill os 10lbs/4.54kg. Product when discarded is not listed by EPA in 40 CFR 261.33
Precautionary Statements: No special precautions are known other than those stated on the bag and in this Material Safety Data Sheet. Under some use conditions copper sulfate dust may be irritating to the skin of some individuals. Problem use conditions seem to be aggravated by high humidity and sweating when copper sulfate is applied undiluted and dust contact occurs
Other handling and storage requirements: Store product in a dry place

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Additional Regulatory Concerns:
FDA: Is generally recognized as safe (GRAS) as a trace mineral for livestock when used in accord with geed management practices. 21 CFR 582.80 is GRAS when used in food wrap paper and paperboard products. 21 CFR 182.90
TSCA: Is this product, or all of its ingredients, being certified for inclusion on the toxic substances control act inventory of chemical substances? YES
OTHER: Laveled and registered with EPA as a pesticide to control algae in water and roots in sewers or diseases on some plants. Follow specific label instructions
OSHA: Product is a hazardous material as defined by 29 CFR 1910.1200 because it is corrosive to the eye, it is toxic orally and it is a regulated air contaminant for dusts and mists. Product is not listed by the National Toxicology Program, the International Agency for Research on Cancer, nor the Registry of Toxic Effects of Chemical Substances (1983-84) as a carcinogen or potential carcinogen
DOT: 49 CFR 171 and 172. Copper sulfate is classified as a hazardous substance classed as ORM-E with a reportable quantity (RQ) as 10lbs/4.54kg

SECTION VIII - CONTROL MEASURES

Ventilation Requirements: TWA = 1mg (Cu)/m3 (ACGIH) and PEL = 1mg (Cu)/m3 (OSHA) for all copper dusts and mists. If TWA or PEL exceeds this limit in workplace, appropriate ventilation should be provided, or respiratory protective equipment must be provided
Specific Personal Protective Equipment: TWA = 1mg (Cu)/m3 (ACGIH). PEL = 1mg (Cu)/m3 (OSHA) for all copper dusts and mists. If TWA or PEL exceeds this limit in workplace, respiratory protective equipment must be provided in accordance with Paragraph 1910.13 of Title 29, Code of Federal Regulations
Protective Gloves: Rubber gloves may be worn
Eye Protection: Chemical goggles should be worn when handling product
Other Protective Clothing or Equipment: Wear long sleeve protective clothing when handling product. Avoid breathing dust

DATE PREPARED: APRIL 2010

This information herein is based on data considered to be accurate as of the date of preparation of this Material Safety Data Sheet. However, no warranty or representation, Expressed or implied, is made as to the accuracy or completeness of the foregoing data and safety information. The user assumes all liability for any failure to adhere to recommended practices, or from any hazards inherent in the nature of this product.

This form complies with OSHA Form 174.