## 1 PRODUCT AND COMPANY IDENTIFICATION

**Agrichemicals Group**

Cerexagri, Inc.

630 Freedom Business Center, Suite 402

King of Prussia, PA 19406

**EMERGENCY PHONE NUMBERS:**

Chemtrec: (800) 424-9300 (24hrs) or (703) 527-3887

Medical: Rocky Mountain Poison Control Center (866) 767-5089 (24Hrs)

**Information Telephone Numbers**

<table>
<thead>
<tr>
<th>R&amp;D Technical Service</th>
<th>Phone Number</th>
<th>Available Hrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>610-878-6100</td>
<td></td>
<td></td>
</tr>
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</table>

**Customer Service**

<table>
<thead>
<tr>
<th>Phone Number</th>
<th>Available Hrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-800-438-6071</td>
<td>8:00am - 5:00 pm EST</td>
</tr>
</tbody>
</table>

**Product Name**

Cuprofix (R) MZ Disperss (R)

**Product Synonym(s)**

**Chemical Family**

Inorganic compounds

**Chemical Formula**

CuSO4 + Ca(OH)2, [C4H6N2S4Mn]x[Zn]y

**Chemical Name**

Calcium hydroxide/ Copper sulfate, Manganese ethylene bis(dithiocarbamate) complex with zinc salt

**EPA Reg Num**

4581-397

**Product Use**

Fungicide

## 2 COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Ingredient Name</th>
<th>CAS RegistryNumber</th>
<th>Typical Wt. %</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zinc manganese ethylenebis dithiocarbamate</td>
<td>8018-01-7</td>
<td>&gt;25</td>
<td>Y</td>
</tr>
<tr>
<td>Basic copper sulfate</td>
<td>1344-73-6</td>
<td>22.1</td>
<td>Y</td>
</tr>
<tr>
<td>Naphthalene sulfonic acid polymer with formaldehyde, sodium salt</td>
<td>9084-06-4</td>
<td>&gt;5</td>
<td>Y</td>
</tr>
<tr>
<td>Kaolin</td>
<td>1332-58-7</td>
<td>&lt;10</td>
<td>Y</td>
</tr>
<tr>
<td>Sodium xylene sulfonate</td>
<td>1300-72-7</td>
<td>&lt;10</td>
<td>Y</td>
</tr>
<tr>
<td>Ethylene thiourea</td>
<td>96-45-7</td>
<td>Trace</td>
<td>Y</td>
</tr>
</tbody>
</table>

The substance(s) marked with a "Y" in the OSHA column, are identified as hazardous chemicals according to the criteria of the OSHA Hazard Communication Standard (29 CFR 1910.1200)

## 3 HAZARDS IDENTIFICATION

**Emergency Overview**

White to Blue colored opaque powder

CAUTION!

KEEP OUT OF REACH OF CHILDREN.

MAY CAUSE EYE IRRITATION. MAY CAUSE ALLERGIC SKIN REACTION.

HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN.

Do not breathe dust. Avoid breathing mist. Avoid contact with eyes, skin and clothing.

**Potential Health Effects**

Data on this material and/or its components are summarized below.

Inhalation and skin contact are expected to be the primary routes of occupational exposure to this material. Based on
4 FIRST AID MEASURES

IF IN EYES,
-Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.
-Call a poison control center or doctor for treatment advice.

IF ON SKIN,
-Take off contaminated clothing.
-Rinse skin immediately with plenty of water for 15-20 minutes.
-Call a poison control center or doctor for treatment advice.

IF SWALLOWED,
-Call a poison control center or doctor immediately for treatment advice.
-Have person sip a glass of water if able to swallow.
-Do not induce vomiting unless told to do so by a poison control center or doctor.
-Do not give anything by mouth to an unconscious person.

IF INHALED,
-Move person to fresh air.
-If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible.
-Call a poison control center or doctor for further treatment advice.

IN CASE OF CONTACT, Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

5 FIRE FIGHTING MEASURES

Fire and Explosive Properties
Auto-Ignition Temperature        NAPP
Flash Point                     NAPP
Flammable Limits- Upper         NAPP
                                   Lower NAPP

Extinguishing Media
Do NOT use water. Use carbon dioxide, foam, dry chemical

Fire Fighting Instructions
Fire fighters and others who may be exposed to products of combustion should wear full fire fighting turn out gear (full Bunker Gear) and self-contained breathing apparatus (pressure demand NIOSH approved or
Fire and Explosion Hazards

None known.

6 ACCIDENTAL RELEASE MEASURES

In Case of Spill or Leak

Contain spill. Sweep or scoop up and remove to suitable container. Flush with water. Prevent spilled product from entering sewers or natural water. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits.

7 HANDLING AND STORAGE

Handling

Avoid creating dust in handling, transfer or clean-up. Avoid breathing dust. Handle in accordance with good industrial hygiene and safety practices. These practices include avoiding unnecessary exposure and removal of material from eyes, skin and clothing.

Storage

Store in a cool, dry place. Do not store in a manner where cross-contamination with pesticides, fertilizers, food or feed could occur. Store in original container. If allowed to become wet the product will deteriorate and represent a fire hazard. The maximum recommended storage temperature for this material is 40 °C.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls

Investigate engineering techniques to reduce exposures below airborne exposure limits. Provide ventilation if necessary to control exposure levels below airborne exposure limits (see below). If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment.

Eye / Face Protection

Where there is potential for eye contact, wear chemical goggles and have eye flushing equipment available.

Skin Protection

Minimize skin contamination by following good industrial hygiene practice. Wearing protective gloves is recommended. Wash hands and contaminated skin thoroughly after handling.

Respiratory Protection

Avoid breathing dust. Where airborne exposure is likely, use NIOSH approved respiratory protection equipment appropriate to the material and/or its components. If exposures cannot be kept at a minimum with engineering controls, consult respirator manufacturer to determine appropriate type equipment for given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where there may be a potential for significant exposure, use an approved full face positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. Respiratory protection programs must comply with 29 CFR § 1910.134.

Airborne Exposure Guidelines for Ingredients

<table>
<thead>
<tr>
<th>Exposure Limit</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH TWA</td>
<td>Respirable fraction</td>
</tr>
<tr>
<td>OSHA TWA PEL</td>
<td>Total dust</td>
</tr>
<tr>
<td>OSHA TWA PEL</td>
<td>Respirable fraction</td>
</tr>
</tbody>
</table>
Zinc manganese ethylenebis dithiocarbamate

OSHA Ceiling PEL For manganese compounds, as Mn 5 mg/m3
WEEL TWA - 1 mg/m3

-Only those components with exposure limits are printed in this section.
- Skin contact limits designated with a "Y" above have skin contact effect. Air sampling alone is insufficient to accurately quantitate exposure. Measures to prevent significant cutaneous absorption may be required.
- ACGIH Sensitizer designator with a value of "Y" above means that exposure to this material may cause allergic reactions.
- WEEL-AIHA Sensitizer designator with a value of "Y" above means that exposure to this material may cause allergic skin reactions.

9 PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance/Odor</td>
<td>White to Blue colored opaque powder</td>
</tr>
<tr>
<td>pH</td>
<td>7.78(in 1%suspension)</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>NA</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>Negligible</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>NA</td>
</tr>
<tr>
<td>Melting Point</td>
<td>NA</td>
</tr>
<tr>
<td>Freezing Point</td>
<td>NA</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>NA</td>
</tr>
<tr>
<td>Solubility In Water</td>
<td>Dispersable</td>
</tr>
<tr>
<td>Bulk Density</td>
<td>0.86 g/cc</td>
</tr>
</tbody>
</table>

10 STABILITY AND REACTIVITY

Stability
This material is chemically stable under normal and anticipated storage and handling conditions.

Hazardous Polymerization
Hazardous polymerization is not known to occur.

Incompatibility
Strong acids, oxidizing agents

Hazardous Decomposition Products
Toxic and flammable fumes may occur

11 TOXICOLOGICAL INFORMATION

Toxicological Information
Data on this material and/or its components are summarized below.
Single exposure (acute) studies indicate:
- Oral - No More than Slightly Toxic to Rats (LD50 >4,470 mg/kg)
- Dermal - No More than Slightly Toxic to Rabbits (LD50 >2,000 mg/kg)
- Inhalation - No More than Slightly Toxic to Rats (4-hr LC50 >4.6 mg/l)
- Eye Irritation - Moderately Irritating to Rabbits
- Skin Irritation - Non-irritating to Rabbits

No skin allergy was observed in guinea pigs following repeated exposure. Repeated oral produced thyroid effects in dogs, rats and mice with possible neurotoxic effects in rats. Long-term studies in rats and mice produced no increased incidence of tumors. No adverse effects were observed when rats were exposed orally for 2 successive generations. Developmental effects were observed in
11 TOXICOLOGICAL INFORMATION

the offspring of rats exposed orally during pregnancy, but only at amounts which produced significant adverse effects in the mother. No adverse effects were noted in the offspring of rabbits exposed orally during pregnancy.

Copper sulfate
Workers exposed by inhalation have reported irritation of the nose and throat, occasional ulceration of the nasal septum, and inflammation and diffuse fibrosis of the lungs. Humans exposed to high levels in drinking water have experienced abdominal pain, vomiting, diarrhea, nausea, and a metallic taste in the mouth. Accidental human poisonings have caused similar gastrointestinal symptoms and, in severe cases, fatalities due to vascular injury and hemolytic anemia which caused severe kidney and liver damage. Individuals with Wilson’s Disease, a genetic defect in copper transport, may be particularly susceptible to copper exposure. Liver damage and anemia have been observed in these individuals. Greenish skin discoloration may occur from dermal contact. Although there have been some reports of contact dermatitis in human studies with copper metals, industrial exposure has rarely resulted in allergic reactions or dermatitis.

Acute inhalation exposure of guinea pigs showed evidence of reduced lung function. In studies conducted by the National Toxicology Program (NTP), repeated administration in the feed of rats produced inflammation of the liver and stomach lining, kidney damage, and slight anemia. Mice showed only inflammatory changes of the stomach. Dietary administration prior to and during pregnancy in mice resulted in increased litter size, fetal weight, fetal mortality and the number of birth defects. No genetic changes were observed in tests using bacteria; however, changes were observed in animal cells.

12 ECOLOGICAL INFORMATION

Ecotoxicological Information
Data on this material and/or its components are summarized below.
Copper sulfate
This material is highly toxic to worms, snails, and clams (EC50 35.9-900 ug/l); Daphnia magna, Daphnia pulex, crayfish and midges (EC50 6.5-25.42 ug/l); salmon (LC50 17-890 ug/l); polychaete worm, abalone, mussel, and oyster (LC50 5.3-480 ug/l); and, Florida pompano (LC50 360-510 ug/l). It is moderately to highly toxic to carp, minnows, guppies, pumpkinseed, perch, and bass (LC50 22-1760 ug/l) and bluegill sunfish (LC50 200-10,200 ug/l, depending on water hardness).

Chemical Fate Information
Data on this material and/or its components are summarized below.
Copper sulfate
The bioconcentration factor (BCF) in fish is 10-100, indicating a low potential for bioconcentration. The BCF is higher in molluscs, especially oysters, where it may reach 30,000. The biomagnification ration in fish is less than 1, indicating no biomagnification in the food chain. No bioaccumulation was obtained from a study of pollutant concentrations in the muscle and livers of 10 mammal species and no evidence of biomagnification in the food chain was observed.

13 DISPOSAL CONSIDERATIONS

Waste Disposal
Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.
14 TRANSPORT INFORMATION

<table>
<thead>
<tr>
<th>DOT Name</th>
<th>Environmentally hazardous substances, solid, n.o.s.*</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOT Technical Name</td>
<td>Copper sulfate</td>
</tr>
<tr>
<td>DOT Hazard Class</td>
<td>9</td>
</tr>
<tr>
<td>UN Number</td>
<td>UN3077</td>
</tr>
<tr>
<td>DOT Packing Group</td>
<td>PG III</td>
</tr>
<tr>
<td>RQ</td>
<td>10 lbs.- Copper sulfate</td>
</tr>
<tr>
<td>Marine Pollutant</td>
<td>Yes - Mancozeb and Copper sulfate</td>
</tr>
<tr>
<td>DOT Special Information</td>
<td>* = When shipped in packages exceeding 10 lbs of Copper sulfate the proper shipping name is:</td>
</tr>
<tr>
<td></td>
<td>RQ, Environmentally hazardous substances, solid, n.o.s.</td>
</tr>
</tbody>
</table>

15 REGULATORY INFORMATION

Hazard Categories Under Criteria of SARA Title III Rules (40 CFR Part 370)

<table>
<thead>
<tr>
<th>Immediate (Acute) Health</th>
<th>Y</th>
<th>Fire</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delayed (Chronic) Health</td>
<td>N</td>
<td>Reactive</td>
<td>N</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sudden Release of Pressure</td>
<td>N</td>
</tr>
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</table>

Ingredient Related Regulatory Information:

<table>
<thead>
<tr>
<th>SARA Reportable Quantities</th>
<th>CERCLA RQ</th>
<th>SARA TPQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium xylene sulfonate</td>
<td>NE</td>
<td></td>
</tr>
<tr>
<td>Kaolin</td>
<td>NE</td>
<td></td>
</tr>
<tr>
<td>Zinc manganese ethylenebis dithiocarbamate</td>
<td>NE</td>
<td></td>
</tr>
<tr>
<td>Naphthalene sulfonic acid polymer with formaldehyde, sodium salt</td>
<td>NE</td>
<td></td>
</tr>
<tr>
<td>Ethylene thiourea</td>
<td>10 LBS</td>
<td>NE</td>
</tr>
<tr>
<td>Basic copper sulfate</td>
<td>NE</td>
<td>NE</td>
</tr>
</tbody>
</table>

SARA Title III, Section 313

This product does contain chemical(s) which are defined as toxic chemicals under and subject to the reporting requirements of, Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372. See Section 2

Basic copper sulfate
Ethylene thiourea
Zinc manganese ethylenebis dithiocarbamate

SARA Title III, Section 302

This product does contain chemical(s), as indicated below, currently on the Extremely Hazardous Substance List, Section 302, SARA Title III. See Section 2 for further details regarding concentrations and registry numbers.

Basic copper sulfate

California Prop 65 - Carcinogen

This product does contain the following chemical(s), as indicated below, currently on the California list of Known Carcinogens.

Ethylene thiourea
Zinc manganese ethylenebis dithiocarbamate

California Prop 65 - Developmental Toxin

This product does contain the following chemical(s), as indicated below, currently on the California List of Developmental Toxins.

Ethylene thiourea

Massachusetts Right to Know

This product does contain the following chemicals(s), as indicated below, currently on the Massachusetts Right to Know Substance
Massachusetts Right to Know
This product does contain the following chemicals(s), as indicated below, currently on the Massachusetts Right to Know Substance List.
   Ethylene thiourea
   Kaolin

New Jersey Right to Know
This product does contain the following chemical(s), as indicated below, currently on the New Jersey Right-to-Know Substances List.
   Basic copper sulfate
   Ethylene thiourea
   Zinc manganese ethylenebis dithiocarbamate

Pennsylvania Environmental Hazard
This product does contain the following chemical(s), as indicated below, currently on the Pennsylvania Environmental Hazard List.
   Ethylene thiourea

Pennsylvania Right to Know
This product does contain the following chemical(s), as indicated below, currently on the Pennsylvania Hazardous Substance List.
   Ethylene thiourea
   Kaolin

Pennsylvania Special Hazard
This product does contain the following chemical(s), as indicated below, currently on the Pennsylvania Special Hazard List.
   Ethylene thiourea

16 OTHER INFORMATION

Revision Information
Revision Date 13 JAN 2005  Revision Number 7
Supercedes Revision Dated 15-OCT-2004

Revision Summary
Add trademark and reference to sections 1 & 16

Key
NE= Not Established  NA= Not Applicable  (R) = Registered Trademark

Miscellaneous
R&D ref: TD2390-02
   TD2390-03

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