1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: ChampION++ Fungicide/Bactericide
EPA Reg. No.: 55146-115
Synonyms: Copper Hydroxide, Copper Hydrate, Cupric Hydroxide
Product Type: Fungicide / Bactericide
Company Name: Nufarm Americas Inc., AGT Division
11901 S. Austin Avenue
Alsip, IL 60803
Telephone Numbers: For Chemical Emergency, Spill, Leak, Fire, Exposure, or Accident,
Call CHEMTREC Day or Night: 1-800-424-9300
For Medical Emergencies Only, Call 1-877-325-1840
Date of Issue: January 20, 2014
Supersedes: November 15, 2013
Sections Revised: Format, 4, 7

2. HAZARDS IDENTIFICATION

Emergency Overview:
Appearance and Odor: Blue-green granular solid with a mild odor
Warning Statements: Keep out of reach of children. CAUTION. Harmful if inhaled. Harmful if swallowed. Causes moderate eye irritation. Avoid contact with eyes or clothing. Avoid breathing dust.

Potential Health Effects:
Likely Routes of Exposure: Inhalation, eye and skin contact.
Eye Contact: Mildly irritating based on toxicity studies. May cause tearing, pain, or blurred vision.
Skin Contact: No more than slightly toxic and no more than slightly irritating by dermal exposure. Excessive exposure, especially if prolonged, may cause skin irritation. Repeated exposure may cause allergic contact dermatitis.
Ingestion: Slightly toxic by oral exposure. This material may produce toxicity if ingested in large quantities. Symptoms of overexposure may include nausea and vomiting, abdominal pain, and central nervous system depression, which, if severe enough, may lead to death.
Inhalation: Slightly toxic by inhalation. Overexposure by inhalation may cause cough, mucous production, shortness of breath, reflecting metal fume fever.
Medical Conditions Aggravated by Exposure: Copper intolerant individuals should not be exposed to this material. No additional information is available on whether overexposure to this material would aggravate other existing special medical conditions.

See Section 11: TOXICOLOGICAL INFORMATION for more information.

Potential Environmental Effects:
This pesticide is toxic to fish and aquatic invertebrates and may contaminate water through runoff. This product has a potential for runoff for several months or more after application. Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas.

See Section 12: ECOLOGICAL INFORMATION for more information.
3. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>CAS NO.</th>
<th>% BY WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper Hydroxide</td>
<td>20427-59-2</td>
<td>46.1%</td>
</tr>
<tr>
<td>Other ingredients which may contain:</td>
<td>14808-60-7</td>
<td>53.9%</td>
</tr>
<tr>
<td>Crystalline silica as quartz</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

If Inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further 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 the poison control center or doctor. Do not give anything to an unconscious person.

If in Eyes: Hold eye open and rinse slowly and gently with water for 15 to 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 or Clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15 to 20 minutes. Call a poison control center or doctor for treatment advice.

Note to Physician: Probable mucosal damage may contraindicate use of gastric lavage.

5. FIRE FIGHTING MEASURES

Flash Point: Not applicable

Autoignition Temperature: Not determined

Flammability Limits: Not determined

Extinguishing Media: Recommended for large fires: foam or water spray. Recommended for small fires: dry chemical or carbon dioxide.

Special Fire Fighting Procedures: Firefighters should wear NIOSH/MSHA approved self-contained breathing apparatus and full fire-fighting turn out gear. Dike area to prevent runoff and contamination of water sources. Dispose of fire control water later.

Unusual Fire and Explosion Hazards: If water is used to fight fire, contain runoff, using dikes to prevent contamination of water supplies. Dispose of fire control water later.

Hazardous Decomposition Materials (Under Fire Conditions): Decomposes to CuO and water above 140° F (60° C)

National Fire Protection Association (NFPA) Hazard Rating:
Rating for this product: Health: 1 Flammability: 1 Reactivity: 0
Hazards Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Wear appropriate protective gear for the situation. See Personal Protection information in Section 8.

Environmental Precautions: Prevent material from entering public sewer systems or any waterways. Do not flush to drain. Large spills to soil or similar surfaces may necessitate removal of topsoil. The affected area should be removed and placed in an appropriate container for disposal.

Methods for Containment: Dike spill using absorbent or impervious materials such as earth, sand or clay. Collect and contain contaminated absorbent and dike material for disposal.
Methods for Cleanup and Disposal: Avoid creation of dusty conditions. If dry, sweep or scoop up material and place into container for disposal. If wet, pump any free liquid into an appropriate closed container. Decontaminate tools and equipment following cleanup. See Section 13: DISPOSAL CONSIDERATIONS for more information.

Other Information: Large spills may be reportable to the National Response Center (800-424-8802) and to state and/or local agencies.

7. HANDLING AND STORAGE

Handling:
Avoid contact with eyes or clothing. Avoid breathing dust. Remove and wash contaminated clothing before reuse. Users should wash hands with soap and water before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove clothing/Personal Protective Equipment (PPE) immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

Storage:
Store in a cool dry place. Do not contaminate water, food, or feed by storage and disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls:
Where engineering controls are indicated by specific use conditions or a potential for excessive exposure, use local exhaust ventilation at the point of generation.

Personal Protective Equipment:
Eye/Face Protection: To avoid contact with eyes, wear chemical goggles or shielded safety glasses. An emergency eyewash or water supply should be readily accessible to the work area.

Skin Protection: To avoid contact with skin wear long-sleeved shirt, long pants, shoes plus socks, and chemical resistant gloves such as natural rubber, Selection Category A. An emergency shower or water supply should be readily accessible to the work area.

Respiratory Protection: Not normally required. If vapors, mists or dusts exceed acceptable levels, wear NIOSH approved air-purifying respirator with cartridges/canisters approved for use against pesticides.

General Hygiene Considerations: Personal hygiene is an important work practice exposure control measure and the following general measures should be taken when working with or handling this material: 1) do not store, use and/or consume foods, beverages, tobacco products, or cosmetics in areas where this material is stored; 2) wash hands and face carefully before eating, drinking, using tobacco, applying cosmetics or using the toilet.

Exposure Guidelines:

<table>
<thead>
<tr>
<th>Component</th>
<th>OSHA</th>
<th>ACGIH</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TWA</td>
<td>STEL</td>
</tr>
<tr>
<td>Copper Hydroxide</td>
<td>1*</td>
<td>NE</td>
</tr>
<tr>
<td>Crystalline Silica, Quartz</td>
<td>10 (R)</td>
<td>NE</td>
</tr>
</tbody>
</table>

*As copper dusts or mists (CAS No. 7440-50-8)
R = Respirable Fraction
NE = Not Established
9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance and Odor:** Blue-green granular solid with a mild odor.

**Boiling Point:** Not applicable

**Density:** 73.5 pounds per cubic feet

**Evaporation Rate:** Not applicable

**Freezing Point:** Not applicable

**pH:** 9.0 - 10.5 (1% Dilution)

**Solubility in Water:** Dispersible

**Specific Gravity:** 1.18 g/cm³

**Vapor Pressure:** Not applicable

**Vapor Density:** Not applicable

**Viscosity:** Not applicable

**Stability:** This material is stable under normal handling and storage conditions.

**Conditions to Avoid:** Excessive heat.

**Incompatible Materials:** Acids and sulfur.

**Hazardous Decomposition Products:** Decomposes to CuO and water above 140° F (60° C).

**Hazardous Reactions:** Hazardous polymerization will not occur.

10. STABILITY AND REACTIVITY

11. TOXICOLOGICAL INFORMATION

**Toxicological Data:**
Except as noted below, data from laboratory studies conducted on a similar, but not identical, formulation:

- **Oral:** Rat LD₅₀: 1,098 mg/kg (female)
- **Dermal:** Rat LD₅₀: > 5,000 mg/kg
- **Inhalation:** Rat 4-hr LC₅₀: > 0.52 mg/L
- **Eye Irritation:** Rabbit: Mildly irritating (this product)
- **Skin Irritation:** Rabbit: Slightly irritating
- **Skin Sensitization:** Not a contact sensitizer in guinea pigs following repeated skin exposure.

**Subchronic (Target Organ) Effects:** Repeated ingestion of copper salts may result in anemia, liver, and kidney damage. Chronic inhalation exposure may cause a metallic taste in the mouth, irritation of the upper respiratory tract such as the nasal mucosa that may progress to perforation of the nasal septum. Chronic cough may also occur. Copper Hydroxide, which comprises 46.1% of this product, governs the toxicity of the product. The remaining components have low to negligible toxicity.

**Carcinogenicity/Chronic Health Effects:** Low chronic toxicity unless excessive exposure is encountered. Excessive exposure to copper by inhalation may result in irritation of the upper respiratory tract which, if severe, may lead to perforation of the nasal septum after long periods of exposure. This product contains clay. Crystalline silica (e.g. quartz) is a naturally occurring component of clay. Inhalation of crystalline silica may cause pulmonary fibrosis (silicosis). Crystalline silica has been classified by IARC as carcinogenic to humans (Group 1), but the U.S. National Toxicology Program as a known human carcinogen and by ACGIH as a suspected human carcinogen (A2).

**Reproductive Toxicity:** No information available.

**Developmental Toxicity:** No information available.

**Genotoxicity:** No information available.
Assessment of Carcinogenicity:
This product contains substances that are considered to be probable or suspected human carcinogens as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Regulatory Agency Listing As Carcinogen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crystalline Silica, Quartz</td>
<td>A2</td>
</tr>
<tr>
<td></td>
<td>IARC</td>
</tr>
<tr>
<td></td>
<td>NTP</td>
</tr>
<tr>
<td></td>
<td>OSHA</td>
</tr>
</tbody>
</table>

See Section 2: HAZARDS IDENTIFICATION for more information.

12. ECOLOGICAL INFORMATION

Ecotoxicity:
Data on Copper Hydroxide:
- 96-hour LC₅₀ Bluegill: 180 mg/l
- 96-hour LC₅₀ Rainbow Trout: 0.023 mg/l
- 48-hour EC₅₀ Daphnia: 0.0065 mg/l

Bobwhite Quail Oral LC₅₀: >340 mg/kg
Mallard Duck 8-day Dietary LD₅₀: >10,000 ppm

Environmental Fate:
The degree of mobility of copper in the environment depends upon the pH of ambient soils and waters. The higher the acidity, the more soluble copper salts are and, hence, the more mobile. Partitioning of copper into the air is negligible due to the low vapor pressure of copper salts.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method:
Pesticide wastes may be acutely hazardous. Improper disposal of excess pesticide, spray mixture, 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.

Container Handling and Disposal:
Nonrefillable container. Do not reuse or refill this container. Completely empty bag into application equipment. Offer for recycling, if available, or dispose of empty bag in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay away from smoke.

14. TRANSPORTATION INFORMATION

Follow the precautions indicated in Section 7: HANDLING AND STORAGE of this MSDS.

DOT
Not regulated by DOT unless shipped by water. See IMO / IMDG description.

IMDG
UN3077, Environmentally hazardous substance, solid, n.o.s., 9, III, (Copper Hydroxide), Marine Pollutant

IATA
Not regulated
15. REGULATORY INFORMATION

U.S. Federal Regulations:

TSCA Inventory: This product is exempted from TSCA because it is solely for FIFRA regulated use.

SARA Hazard Notification/Reporting:

Hazard Categories under Criteria of SARA Title III Rules (40 CFR Part 370):
Immediate, Delayed

Section 313 Toxic Chemical(s):
Copper – (CAS No. 7440-50-8), 46.1% equivalent by weight in product

Reportable Quantity (RQ) under U.S. CERCLA:
Copper – (CAS No. 7440-50-8) 5,000 pounds

RCRA Waste Code:
None

State Information:
Other state regulations may apply. Check individual state requirements.

California Proposition 65: WARNING. This product contains chemicals known to the State of California to cause cancer or birth defects or other reproductive harm.

16. OTHER INFORMATION

This Material Safety Data Sheet (MSDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-ACCEPTED PRODUCT LABELING (attached to and accompanying the product container). This MSDS provides important health, safety and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course.

Use, storage and disposal of pesticide products are regulated by the EPA under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) through the product labeling, and all necessary and appropriate precautionary, use, storage, and disposal information is set forth on that labeling. It is a violation of Federal law to use a pesticide product in any manner not prescribed on the EPA-accepted label.

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