



Pesticide
Fact Sheet

Name of Chemical: Copper Octanoate
Reason for Issuance: New Chemical Registration
Date Issued:

DESCRIPTION OF CHEMICAL

Generic Name: Octanoic acid, copper salt
Common Name: Copper octanoate
Trade Names: NEU1140F Copper Soap
NEU1140F RTU Copper Soap
EPA Chemical Code: 23306
Chemical Abstracts
Service (CAS)
Number: 20543-04-8
Year of Initial
Registration: 1997
Pesticide Type: Fungicide
Chemical Family: Copper compounds (copper salt of fatty acid)
U.S. and Foreign
Producers: W. Neudorff GmbH KG

USE PATTERNS AND FORMULATIONS

Copper Octanoate is a fungicide and bactericide used to control a wide range of plant diseases. Copper octanoate will be formulated for two products: NEU1140F RTU Copper Soap, Liquid Copper Fungicide Ready-To-Use and NEU1140F Copper Soap, Flowable Liquid Copper Fungicide. The copper soaps are made by combining a soluble copper fertilizer with a naturally-occurring fatty acid. The copper and the fatty acid combine to form a copper salt of the fatty acid, known technically as soap. NEU1140F RTU Copper Soap is for house hold use and NEU1140F Copper Soap is for commercial agricultural and household use. The formulation for domestic use will be applied by spraying all plant surfaces 2 weeks before disease normally appears. The formulation for agricultural use may be tank mixed with other pesticides and applied by ground equipment or aircraft.

SCIENCE FINDINGS

Summary Science Statements

Adequate chemistry, toxicological, ecological effects, and environmental fate data have been submitted and reviewed to support registration as a new active ingredient and the regulation that establishes an exemption from the requirement of a tolerance for copper octanoate.

Toxicological Characteristics

Copper octanoate is classified category III [CAUTION] for acute oral, dermal and inhalation toxicity; and category IV for eye and skin irritation. The dermal sensitization studies were negative.

There is adequate information available to characterize the toxicity of the copper ion. Copper is ubiquitous in nature and is a necessary nutritional element for both animals and plants. It is one of 26 elements found essential to life. The copper ion is present in the adult human body at levels of 80-150 milligram. Oral ingestion of excessive amounts of the copper ion from pesticidal uses is unlikely; copper compounds are irritating to the gastric mucosa and emesis usually occurs promptly, thereby reducing the amount of copper ion available for absorption into the human body. Only a small percentage of copper ingested is absorbed, and most the absorbed copper is excreted. In view of the facts that the copper ion occurs naturally in most foods and the metabolism of copper is well understood, there is no reason to expect that long-term exposure to copper ion in the diet is likely to pose the risk of chronic or sub-chronic adverse effects.

As part of the hazard assessment process, the Agency reviews the available toxicological database to determine the endpoints of concern for acute and chronic dietary exposure; and short, intermediate and chronic term occupational and residential exposure. In the case of copper octanoate the Agency only reviewed acute toxicity data on the end-use product formulations, since information currently available to the Agency indicates that there is no significant toxicity from exposure to copper octanoate that lasts from one day to several months. The Agency has exempted from the requirement of a tolerance other similar compounds to copper octanoate, such as the, copper salts of fatty acids that include: copper oleate, copper lineolate and copper acetate which are listed in 40 CFR 1011 (b) (1). Therefore, no risk assessments are required for any exposure scenarios.

After taking into account the factors set forth in section 408(b) (2) (D), EPA concludes that copper does not present a dietary risk under reasonably foreseeable circumstances.

Accordingly, EPA concludes that there is a reasonable certainty that no harm will result to consumers, including infants and children, from aggregate exposure to copper. Because copper has no significant toxicity EPA has not assessed its risk using a margin of safety approach and, therefore, the requirement pertaining to an additional safety factor for infants and children is not applicable to EPA's safety determination for this exemption.

Environmental Fate

Copper octanoate degrades to form free copper and the organic ligand octanoic acid. The free copper and native copper are indistinguishable and behave similarly in the natural copper cycle. The organic ligand, octanoic acid, is expected to degrade through microbially mediated processes. Background copper concentrations can range from 1 to 10 ppb in non-polluted natural water, 10-60 ppb in soil pore water and 2-100 ppm in soils. Since copper does not degrade, repeated use of copper pesticides will increase the total copper concentration in soil. Environmental availability of copper is predominantly controlled by sorption to soil and sediments. Partitioning coefficients of copper range from 100 to 100,000 L/Kg in soil and sediment, indicating very high binding affinities.

Ecological Effects

It is unlikely that copper octanoate would cause significantly different fish and wildlife effects than the numerous other copper compounds which are already exempted from the requirement of a tolerance.

OCCUPATIONAL EXPOSURE

It is unlikely that the occupational exposure risk for Copper Octanoate would differ significantly from the numerous other copper compounds which are already exempted from the requirement of a tolerance.

Chemical Characteristics

- (1) NEU1140F Copper Soap
- (2) NEU1140F RTU Copper Soap

Physical

State: (1) Liquid
(2) Liquid

Density/

Bulk Density: (1) 1.048 g/ml
(2) 0.9978 g/ml

pH: (1) 5.37+/-0.04
 (2) 5.74

Storage
 Stability: (1) No change after
 15 months storage
 (2) No change after
 13 months storage

Viscosity: (1) 287+/-75 cps
 (2) 2.16 +/- 0.86 cps

Corrosiveness: (1) None noted
 (2) None noted

Toxicology Characteristics

NEU1140F RTU Copper Soap
 NEU1140F Copper Soap

Acute Oral
 Toxicity
 (rats): LD50 > 2,000 mg/kg (combined sexes)
 Toxicity
 Category: III

Acute Dermal
 Toxicity
 (rats): LD50 > 2,000 mg/kg (combined sexes)
 Toxicity
 Category: III

Acute Inhalation
 Toxicity
 (rats): LC50 > 0.38 mg/L (both sexes)
 Toxicity
 Category: III

Primary Eye
 Irritation
 (rabbits): NEI 1140 F produces transient ocular
 irritation to rabbits
 Toxicity
 Category: IV

Primary Skin
 Irritation
 (rabbits): Non-irritating to the rabbit skin
 Toxicity
 Category: IV

Dermal
Sensitization
(guinea pigs): Negative

CONTACT PERSON AT EPA

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