Chemical Factsheet

Copper Sulfate

(Basic, anhydrous and pentahydrate)

General Information

- Product Names:
  Copper Dragon Tomato & Vegetable Dust (Bonide Products)
  Lilly/Miller Microcop Fungicide (Lilly Miller)
  Drexel Basic Copper Sulfate (Drexel Chemical)
  Clean Crop C-O-C-S Copodust (Loveland Products)
  Cuproxat Flowable Copper Fungicide (Nufarm)
  Cop-O-Zinc (Albaugh)
  Cuprofix (United Phosphorus)
- Chemical Class: Inorganic, Fungicide/Antimicrobial
- Uses: Copper compounds are used for food/feed crops, including orchard, row, field, and aquatic crops, flowering/non-flowering plants and trees. Also as a wood preservative, mildewcide, water treatment, bactericide, and as an anti-foulant in many products including paint, glue, building materials and construction materials.
- Alternatives: Organic Agriculture, Lawns/broadleaf plants
- Beyond Pesticides rating: Toxic

Health and Environmental Effects

See citations at end of document.

- Cancer: Not documented
- Endocrine Disruption: Not documented
- Reproductive Effects: Yes (**1**)
- Neurotoxicity: Not documented
- Kidney/Liver Damage: Yes (**1**)
- Sensitizer/ Irritant: Yes (**2**)
- Birth/Developmental: Not documented
- Detected in Groundwater: Not documented
- Potential Leacher: Not documented
- Toxic to Birds: Moderately toxic (**2**, **1**)
- Toxic to Fish/Aquatic Organisms: Yes (**1**)
- Toxic to Bees: Not documented

Residential Uses as Found in the ManageSafe™ Database

- Snails and Slugs

Additional Information

- Regulatory Status:
  - EPA Reregistration Eligibility Decision (RED) for Coppers signed (7/2006)

    - Registration Review- pending
- Supporting information:
    - Extoxnet Factsheet (Extension Toxicology Network)
    - PAN Pesticides Database: (Pesticide Action Network)
- Studies [compiled from the Pesticide-Induced Diseases Database]
    - *Neurotoxic Effects of Copper Salts in Rats. Plech, A. , Klimkiewicz T. and Jakrzewska H. 2000. P*olish Journal of Environmental Studies*
    - *Copper neurotoxicity is dependent on dopamine-mediated copper uptake and one-electron reduction of aminochrome in a rat substantia nigra neuronal cell line. Paris, I et al. 2001. *J Neurochem.*
    - Hypospadias and residential proximity to pesticide applications.. Carmichael SL, Yang W, Roberts EM, et al. 2013. Pediatrics. 132(5):e1216-26
    - Modeling pesticides and ecotoxicological risk assessment in an intermittent river using SWAT. Centanni, M. et al. (2024) Modeling pesticides and ecotoxicological risk assessment in an intermittent river using Swat, Scientific Reports. Available at: https://www.nature.com/articles/s41598-024-56991-6#Sec14.
    - Proximity to residential and workplace pesticides application and the risk of progression of Parkinson's diseases in Central California. Li, S. et al. (2022) Proximity to residential and workplace pesticides application and the risk of progression of parkinson’s diseases in Central California, Science of The Total Environment. Available at: https://www.sciencedirect.com/science/article/pii/S0048969722079542.
    - Pesticide exposure and sleep disorder: A cross-sectional study among Thai farmers. Juntarawijit, C. et al. (2025) Pesticide exposure and sleep disorder: A cross-sectional study among Thai farmers, Heliyon. Available at: https://www.cell.com/heliyon/fulltext/S2405-8440(24)17154-X.

Gateway Health and Environmental Effects Citations

1. National Library of Medicine. PubChem Hazardous Substances Database. PubChem (nih.gov)

2. US EPA, Office of Prevention, Pesticides and Toxic Substances, Reregistration Eligibility Decisions (REDs), Interim REDS (iREDs) and RED Factsheets. https://archive.epa.gov/pesticides/reregistration/web/html/status.html.

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