

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. *Polish 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](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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