

Chemical Factsheet

Mancozeb

General Information

- Product Names:
 - Ridomil** (Syngenta) formulated with [Metalaxy-M](#)
 - Maxim** (Syngenta) formulated with [Fludioxonil](#)
 - Acrobat** (BASF) formulated with [Dimethomorph](#)
 - Stature** (BASF) formulated with [Dimethomorph](#)
 - Grain Guard** (Chemtura)
 - Moncoat** (Gowan) formulated with [Flutolanil](#)
 - Gavel** (Gowan) formulated with [Zoxamide](#)
 - Dithane** (Dow)
 - Penncozeb** (United Phosphorus)
- Chemical Class: ethylene bisdithiocarbamate (EBDC) fungicide
- Uses: Fungicide used in agriculture, professional turf management, and horticulture, on a wide variety of food/feed crops, including tree fruits, vegetable crops, field crops and grapes, ornamental plants, and sod farms. Other uses include greenhouse grown flowers and ornamentals, and seed and seed piece treatment.
- Alternatives: [Organic agriculture](#)
- Beyond Pesticides rating: [Toxic](#)

Health and Environmental Effects

See citations at end of document.

- Cancer: Yes (1)
- Endocrine Disruption: Yes (2, 3)
- Reproductive Effects: Not documented
- Neurotoxicity: Not documented
- Kidney/Liver Damage: Not documented
- Sensitizer/ Irritant: Yes (4)
- Birth/Developmental: Yes (4)
- Detected in Groundwater: Not documented
- Potential Leacher: Not documented
- Toxic to Birds: Not documented
- Toxic to Fish/Aquatic Organisms: Yes (5)
- Toxic to Bees: Yes (6)

Residential Uses as Found in the ManageSafe™ Database

- [Mold](#)

Additional Information

- Regulatory Status:
 - [Beyond Pesticides' Comments \(October 2024\)](#)

- [EPA Reregistration Eligibility Decision \(RED\) signed \(9/2005\)](#)
- [EPA Factsheet \(9/2005\)](#)
- Supporting information:
 - [Extoxnet Mancozeb Factsheet](#) (Extension Toxicology Network)
 - [PAN Pesticides Database - Mancozeb](#) (Pesticide Action Network)
- Studies [compiled from the [Pesticide-Induced Diseases Database](#)]
 - [Top 15 Farmworker Poison](#)
 - [Adverse effects on sexual development in rat offspring after low dose exposure to a mixture of endocrine-disrupting pesticides.](#) Hass U, Boberg J, Christiansen S, Jacobsen PR, et al. 2012. *Reprod Toxicol*.34(2):261-74
 - [Autism: Transient in utero hypothyroxinemia related to maternal flavonoid ingestion during pregnancy and to other environmental antithyroid agents.](#) Román, G, C. 2007. *Journal of the Neurological Sciences*; 262(1-2), pp 15-26
 - [Pesticides expenditures by farming type and incidence of Parkinson disease in farmers: A French nationwide study.](#) Perrin, L., Spinosi, J., Chaperon, L., Kab, S., Moisan, F. and Ebaz, A. *Environmental Research*, 197, p.111161.
 - [Haematological and biochemical toxicity in freshwater fish Clarias gariepinus and Oreochromis niloticus following pulse exposure to atrazine, mancozeb, chlorpyrifos, lambda-cyhalothrin, and their combination.](#) Kanu, K.C., Okoboshi, A.C. and Otitoloju, A.A., 2023. *Comparative Biochemistry and Physiology Part C: Toxicology & Pharmacology*, 270, p.109643.
 - [Depressive symptoms and suicide attempts among farmers exposed to pesticides.](#) Zheng, R. et al. (2024) Depressive symptoms and suicide attempts among farmers exposed to pesticides, *Environmental Toxicology and Pharmacology*. Available at: <https://www.sciencedirect.com/science/article/pii/S1382668924001017?via%3Dihub>.
 - [Thyroid under Attack: The Adverse Impact of Plasticizers, Pesticides, and PFASs on Thyroid Function.](#) Rodrigues, V.G. et al. (2024) Thyroid under Attack: The Adverse Impact of Plasticizers, Pesticides, and PFASs on Thyroid Function, *Endocrines*. Available at: <https://www.mdpi.com/2673-396X/5/3/32>.
 - [Systemic effects of the pesticide mancozeb - A literature review.](#) Dall'Agnol, J. (2021) Systemic effects of the pesticide mancozeb - A literature review, *European Review for Medical and Pharmacological Sciences*. Available at: <https://pubmed.ncbi.nlm.nih.gov/34156691/>.
 - [Respiratory and allergic outcomes among 5-year-old children exposed to pesticides.](#) Islam, J.Y. et al. (2023) Respiratory and allergic outcomes among 5-year-old children exposed to pesticides, *Thorax*. Available at: <https://thorax.bmjjournals.org/content/78/1/41.abstract>.
 - [Pesticide exposure and neurodevelopment in children aged 6-9 years from Talamanca, Costa Rica.](#) Berna van Wendel de Joode, Ana M. Mora, Christian H. Lindh, David Hernández-Bonilla, Leonel Córdoba, Catharina Wesseling, Jane A. Hoppin, Donna Mergler, Pesticide exposure and neurodevelopment in children aged 6-9 years from Talamanca, Costa Rica, *Cortex*, Volume 85, 2016, Pages 137-150, ISSN 0010-9452, <https://doi.org/10.1016/j.cortex.2016.09.003>.
 - [Exposure to multiple pesticides and neurobehavioral outcomes among smallholder farmers in Uganda.](#) Samuel Fuhrmann, Andrea Farnham, Philipp Staudacher, Aggrey Atuhaire, Tiziana Manfioletti, Charles B. Niwagaba, Sarah Namirembe, Jonathan Mugweri, Mirko S. Winkler, Lutzen Portengen, Hans Kromhout, Ana M. Mora, Exposure to multiple pesticides and neurobehavioral outcomes among smallholder farmers in Uganda, *Environment International*, Volume 152, 2021, 106477, ISSN 0160-4120, <https://doi.org/10.1016/j.envint.2021.106477>.
 - [Impact of Endocrine Disrupting Pesticide Use on Obesity: A Systematic Review.](#) Pérez-

Bermejo, M. et al. (2024) Impact of Endocrine Disrupting Pesticide Use on Obesity: A Systematic Review, *Biomedicines*. Available at:
<https://www.mdpi.com/2227-9059/12/12/2677>.

- [Immune response of Brazilian farmers exposed to multiple pesticides](#) . Jacobsen-Pereira, C.H. et al. (2020) 'Immune response of Brazilian farmers exposed to multiple pesticides', *Ecotoxicology and Environmental Safety*, 202, p. 110912. doi:10.1016/j.ecoenv.2020.110912.
- [Pesticide-Induced Inflammation at a Glance](#) . Lopes-Ferreira, M. et al. (2023) 'Pesticide-induced inflammation at a glance', *Toxics*, 11(11), p. 896. doi:10.3390/toxics11110896.
- [Recent pesticide exposure affects sleep: A cross-sectional study among smallholder farmers in Uganda](#) . Samuel Fuhrmann, Iris van den Brenk, Aggrey Atuhaire, Ruth Mubeezi, Philipp Staudacher, Anke Huss, Hans Kromhout, Recent pesticide exposure affects sleep: A cross-sectional study among smallholder farmers in Uganda, *Environment International*, Volume 158, 2022, 106878, ISSN 0160-4120, <https://doi.org/10.1016/j.envint.2021.106878>. (<https://www.sciencedirect.com/science/article/pii/S0160412021005031>)
- [Pesticide exposure and risk of cardiovascular disease: A systematic review](#) . Zago, A. M., Faria, N. M. X., Fávero, J. L., Meucci, R. D., Woskie, S., & Fassa, A. G. (2022). Pesticide exposure and risk of cardiovascular disease: A systematic review. *Global public health*, 17(12), 3944–3966. <https://doi.org/10.1080/17441692.2020.1808693>
- [Prenatal residential proximity to endocrine disrupting agricultural pesticides and menstrual cycle characteristics among Latina adolescents in California](#) . Paul, J. et al. (2025) Prenatal residential proximity to endocrine disrupting agricultural pesticides and menstrual cycle characteristics among Latina adolescents in California, *American Journal of Epidemiology*. Available at: <https://academic.oup.com/aje/advance-article/doi/10.1093/aje/kwaf059/8083004>.
- [Adverse Effects of Pesticides on the Ovary: Evidence from Epidemiological and Toxicological Studies](#) . Wang, L., Ma, X. and Liu, J. (2025) Adverse Effects of Pesticides on the Ovary: Evidence from Epidemiological and Toxicological Studies, *Environment & Health*. Available at: <https://pubs.acs.org/doi/full/10.1021/envhealth.4c00243>.
- [Induction of gonadal toxicity to female rats after chronic exposure to mancozeb](#) . Baligar, P. N., & Kaliwal, B. B. (2001). Induction of gonadal toxicity to female rats after chronic exposure to mancozeb. *Industrial health*, 39(3), 235–243. <https://doi.org/10.2486/indhealth.39.235>
- [Mancozeb exposure during development and lactation periods results in decreased oocyte maturation, fertilization rates, and implantation in the first-generation mice pups: Protective effect of vitamins E and C](#) . Esmaiel S, Tahereh H, Noreddin N-MS, Massood E. Mancozeb exposure during development and lactation periods results in decreased oocyte maturation, fertilization rates, and implantation in the first-generation mice pups: Protective effect of vitamins E and C. *Toxicology and Industrial Health*. 2019;35(11-12):714-725. doi:10.1177/0748233719890965
- [Mancozeb-induced behavioral deficits precede structural neural degeneration](#) . Harrison Brody, A., Chou, E., Gray, J. M., Pokrywka, N. J., & Raley-Susman, K. M. (2013). Mancozeb-induced behavioral deficits precede structural neural degeneration. *Neurotoxicology*, 34, 74–81. <https://doi.org/10.1016/j.neuro.2012.10.007>
- [Urinary pesticide biomarkers from adolescence to young adulthood in an agricultural setting in Ecuador: Study of secondary exposure to pesticides among children, adolescents, and adults \(ESPINA\) 2016 and 2022 examination data](#) . Parajuli, R. et al. (2025) Urinary pesticide biomarkers from adolescence to young adulthood in an agricultural setting in Ecuador: Study of secondary exposure to pesticides among children, adolescents, and adults (ESPINA) 2016 and 2022 examination data, *Data in*

Brief. Available at:

<https://www.sciencedirect.com/science/article/pii/S2352340925006067>.

- [Thyroid and reproductive hormones in relation to pesticide use in an agricultural population in Southern Brazil](#). Santos, R., Piccoli, C., Cremonese, C., & Freire, C. (2019). Thyroid and reproductive hormones in relation to pesticide use in an agricultural population in Southern Brazil. *Environmental research*, 173, 221–231.
<https://doi.org/10.1016/j.envres.2019.03.050>
- [Incident thyroid disease in female spouses of private pesticide applicators](#). Shrestha, S., Parks, C. G., Goldner, W. S., Kamel, F., Umbach, D. M., Ward, M. H., Lerro, C. C., Koutros, S., Hofmann, J. N., Beane Freeman, L. E., & Sandler, D. P. (2018). Incident thyroid disease in female spouses of private pesticide applicators. *Environment international*, 118, 282–292. <https://doi.org/10.1016/j.envint.2018.05.041>
- [Prenatal Mancozeb Exposure, Excess Manganese, and Neurodevelopment at 1 Year of Age in the Infants' Environmental Health \(ISA\) Study](#). Mora, A. M., Córdoba, L., Cano, J. C., Hernandez-Bonilla, D., Pardo, L., Schnaas, L., Smith, D. R., Menezes-Filho, J. A., Mergler, D., Lindh, C. H., Eskenazi, B., & van Wendel de Joode, B. (2018). Prenatal Mancozeb Exposure, Excess Manganese, and Neurodevelopment at 1 Year of Age in the Infants' Environmental Health (ISA) Study. *Environmental health perspectives*, 126(5), 057007. <https://doi.org/10.1289/EHP1955>

Gateway Health and Environmental Effects Citations

1. California Environmental Protection Agency. Proposition 65: Chemicals Known to the State to Cause Cancer or Reproductive Toxicity. Office of Environmental Health Hazard Assessment. February 25, 2022. <https://oehha.ca.gov/media/downloads/proposition-65//p65chemicalslistsinglelisttable2021p.pdf>
2. Colborn, T., D. Dumanoski, and J.P. Myers. 1996. Our Stolen Future: Are We Threatening Our Fertility, Intelligence, and Survival? New York: Dutton. <http://ourstolenfuture.org/Basics/chemlist.htm>
3. European Commission. Endocrine Disruptors: Study on Gathering Information on 435 Substances with Insufficient Data. Final Report. EU DG Environment: B4-3040/2001/325850/MAR/C2. BKH Consulting Engineers: M0355037. November 2002.
http://ec.europa.eu/environment/chemicals/endocrine/pdf/bkh_report.pdf#page=76.
4. Extension Toxicology Network (EXTOXNET) Pesticide Information Profiles.
<http://extoxnet.orst.edu/pips/ghindex.html>
5. 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>.
6. Tew, J.E. 1996. Protecting Honeybees from Pesticides. Ohio State University Cooperative Extension.
<http://web.archive.org/web/20031123075324/http://beelab.osu.edu/factsheets/sheets/2161.html>

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