

Chemical Factsheet

Carbendazim

General Information

- Product Names:
 - Troy Ex-2108**
 - Mergal BCM Technical**
 - Preventol BCM**
 - Mergal BCM**
- Chemical Class: Benzimidazoles
- Uses: In agriculture on various crops like cereals, fruits, vegetables, and ornamentals, as well as for post-harvest treatment.
- Alternatives: [Organic Agriculture](#)
- Beyond Pesticides rating: [Toxic](#)

Health and Environmental Effects

See citations at end of document.

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

Additional Information

- Regulatory Status:
 - [EPA Thiophanate-methyl and Carbendazim Interim Registration Review Decision](#) (2024)
 - [EPA Thiophanate-Methyl and Carbendazim: Draft Human Health Risk Assessment for Registration Review](#) (2020)
- Supporting information:
 - [PAN Pesticides Database: Carbendazim](#) (Pesticide Action Network)
 - [Daily News Archive](#)
- Studies [compiled from the [Pesticide-Induced Diseases Database](#)]
 - [Transport and interaction mechanism of four pesticide residues from Chaenomeles speciosa across Caco-2 cells](#). Xiao, J., Li, M., Zhang, M., Dai, K., Ju, X., Liu, Y., Liu, Z., Cao, H., & Shi, Y. (2024). Transport and interaction mechanism of four pesticide residues from Chaenomeles speciosa across Caco-2 cells. Food chemistry, 431, 137156. <https://doi.org/10.1016/j.foodchem.2023.137156>

- [Behavioral Effects of the Mixture and the Single Compounds Carbendazim, Fipronil, and Sulfentrazone on Zebrafish \(Danio rerio\) Larvae](#). Gomes, S. da S. et al. (2024) Behavioral effects of the mixture and the single compounds carbendazim, fipronil, and sulfentrazone on zebrafish (danio rerio) larvae, *Biomedicines*. Available at: <https://www.mdpi.com/2227-9059/12/6/1176>.
- [Transport mechanisms of pesticide mixtures impairing intestinal barrier function in mice](#). Liu, Z. et al. (2025) Transport mechanisms of pesticide mixtures impairing intestinal barrier function in mice, *Pesticide Biochemistry and Physiology*. Available at: <https://www.sciencedirect.com/science/article/abs/pii/S0048357525000690>.
- [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).
- [Antagonistic effects and mechanisms of carbendazim and chlorpyrifos on the neurobehavior of larval zebrafish](#). Zhang, W. et al. (2022) Antagonistic effects and mechanisms of Carbendazim and chlorpyrifos on the neurobehavior of larval zebrafish, *Chemosphere*. Available at: <https://www.sciencedirect.com/science/article/abs/pii/S004565352200011X>.
- [Combined effects of polyethylene microplastics and carbendazim on Eisenia fetida: A comprehensive ecotoxicological study](#). Gautam, K., Dwivedi, S., Verma, R., Vamadevan, B., Patnaik, S., & Anbumani, S. (2024). Combined effects of polyethylene microplastics and carbendazim on *Eisenia fetida*: A comprehensive ecotoxicological study. *Environmental pollution (Barking, Essex : 1987)*, 348, 123854. <https://doi.org/10.1016/j.envpol.2024.123854>
- [Pesticide residues in fresh fruits imported into the United Arab Emirates](#). Osaili, Tareq & Sallagi, Maryam & Kumar, Dinesh & Odeh, Wael & Ali, Hajer & Ali, Ahmed & Cheikh Ismail, Leila & Mehri, Khadija & Pisharath, Vijayan & Holley, Richard & Shaker Obaid, Reyad. (2022). Pesticide residues in fresh fruits imported into the United Arab Emirates. *Heliyon*. 8. e11946. [10.1016/j.heliyon.2022.e11946](https://doi.org/10.1016/j.heliyon.2022.e11946).
- [Pesticides residues in pet food: A market-based study on prevalence and toxicological implications](#). Macías-Montes, A. et al. (2025) Pesticides residues in pet food: A market-based study on prevalence and toxicological implications, *Environmental Pollution*. Available at: <https://www.sciencedirect.com/science/article/pii/S0269749125007729>.
- [Toxicity, monitoring and biodegradation of the fungicide carbendazim](#). Singh, S., Singh, N., Kumar, V. et al. Toxicity, monitoring and biodegradation of the fungicide carbendazim. *Environ Chem Lett* 14, 317–329 (2016). <https://doi.org/10.1007/s10311-016-0566-2>
- [Occurrence of Current-Use Pesticides in Paired Indoor Dust, Drinking Water, and Urine Samples from the United States: Risk Prioritization and Health Implications](#). Xie, Y., Li, J., Salamova, A., & Zheng, G. (2025). Occurrence of Current-Use Pesticides in Paired Indoor Dust, Drinking Water, and Urine Samples from the United States: Risk Prioritization and Health Implications. *Environmental science & technology*, 59(25), 12507–12519. <https://doi.org/10.1021/acs.est.5c00961>
- [Adsorption behavior and mechanism of five pesticides on microplastics from agricultural polyethylene films](#). Wang, Ting & Yu, Congcong & Chu, Qiao & Wang, Fenghe & Lan, Tao & Wang, Jingfeng. (2019). Adsorption behavior and mechanism of five pesticides on microplastics from agricultural polyethylene films. *Chemosphere*. 244. 125491. [10.1016/j.chemosphere.2019.125491](https://doi.org/10.1016/j.chemosphere.2019.125491).
- [Adsorption mechanism of two pesticides on polyethylene and polypropylene microplastics: DFT calculations and particle size effects](#). Mo Q, Yang X, Wang J, Xu H, Li W, Fan Q, Gao S, Yang W, Gao C, Liao D, Li Y, Zhang Y. Adsorption mechanism of two pesticides on polyethylene and polypropylene microplastics: DFT calculations and particle

- size effects. Environ Pollut. 2021 Dec 15;291:118120. doi: 10.1016/j.envpol.2021.118120. Epub 2021 Sep 6. PMID: 34520951.
- [Occurrence and ecological risk of typical pesticides in a river-lake system](#). Qin, Y. et al. (2025) Occurrence and ecological risk of typical pesticides in a river-lake system, Water Science and Engineering. Available at: <https://www.sciencedirect.com/science/article/pii/S1674237025000833>.
 - [Multigenerational effects of carbendazim in Daphnia magna](#). Ana Rita R. Silva, Diogo N. Cardoso, Andreia Cruz, João L.T. Pestana, Sónia Mendo, Amadeu M.V.M. Soares, Susana Loureiro, Multigenerational effects of carbendazim in Daphnia magna, Environmental Toxicology and Chemistry, Volume 36, Issue 2, 1 February 2017, Pages 383–394, <https://doi.org/10.1002/etc.3541>
 - [Pesticides in rainwater: A two-year occurrence study in an unexplored environmental compartment in regions with different land use in the State of São Paulo – Brazil](#). Dias, Mariana A et al. “Pesticides in rainwater: A two-year occurrence study in an unexplored environmental compartment in regions with different land use in the State of São Paulo - Brazil.” Chemosphere vol. 372 (2025): 144093. doi:10.1016/j.chemosphere.2025.144093
 - [Characterization of aggregated exposure to multiple pesticides near agricultural fields: an application of silicone wristbands](#). Ottenbros, Ilse & Vermeulen, R & Krop, E & Beeltje, Henry & Fuhrmann, Samuel & Figueiredo, Daniel. (2025). Characterization of aggregated exposure to multiple pesticides near agricultural fields: an application of silicone wristbands. Environmental Research Communications. 7. 10.1088/2515-7620/adc547.
 - [Exposure risk to rural Residents: Insights into particulate and gas phase pesticides in the Indoor-Outdoor nexus](#). Mu, Hongyu et al. “Exposure risk to rural Residents: Insights into particulate and gas phase pesticides in the Indoor-Outdoor nexus.” Environment international vol. 184 (2024): 108457. doi:10.1016/j.envint.2024.108457
 - [Personal exposure assessment of pesticides in residents: The association between hand wipes and urinary biomarkers](#). Oerlemans, A. & Figueiredo, Daniel & Mol, J.G.J. & Nijssen, R. & Anzion, R.B.M. & Dael, M.F.P. & Duyzer, J. & Roeleveld, Nel & Russel, Frans & Vermeulen, R.C.H. & Scheepers, P.T.J.. (2021). Personal exposure assessment of pesticides in residents: The association between hand wipes and urinary biomarkers. Environmental Research. 199. 111282. 10.1016/j.envres.2021.111282.
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 - [Low dose carbendazim disrupts mouse spermatogenesis might Be through estrogen receptor related histone and DNA methylation](#). Liu, J., Zhang, P., Zhao, Y., & Zhang, H. (2019). Low dose carbendazim disrupts mouse spermatogenesis might Be through estrogen receptor related histone and DNA methylation. Ecotoxicology and environmental safety, 176, 242–249. <https://doi.org/10.1016/j.ecoenv.2019.03.103>

Gateway Health and Environmental Effects Citations

1. Pesticide Action Network Pesticide Database. http://www.pesticideinfo.org/Search_Chemicals.jsp.
2. National Library of Medicine. PubChem Hazardous Substances Database. [PubChem \(nih.gov\)](https://pubchem.ncbi.nlm.nih.gov/)