Chemical Factsheet

Carbofuran

General Information

- Chemical Class: Carbamate
- Uses: as a broad-spectrum carbamate insecticide and nematicide used to control a variety of soil and foliar pests on various agricultural crops, including field, fruit, and vegetable crops
- Alternatives: Organic Agriculture
- Beyond Pesticides rating:

Health and Environmental Effects

See citations at end of document.

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

Additional Information

- Regulatory Status:
  - EPA Carbofuran Cancellation Process (2011)
  - EPA Archive Carbofuran I.R.E.D. FACTS (2016)
- Supporting information:
  - PAN Pesticides Database: Carbofuran (Pesticide Action Network)
- Studies [compiled from the Pesticide-Induced Diseases Database]
  - Evaluation of hepatotoxicity and clastogenicity of carbofuran in male Wistar rats. Gbadegesin MA, Owumi SE, Akinseye V, Odunola OA. 2014. Food Chem Toxicol. 65:115-9.
  - Occupational Exposure to Carbofuran and the Incidence of Cancer in the Agricultural Health Study. Wesseling, C., et al. 1999. International Journal of Epidemiology 28: 365-374
  - Reproductive Toxicity of Carbofuran to the Female Mice: Effects on Estrous Cycle and Follicles. BALIGAR, PN, KALIWAL, BB. 2002. Industrial Health. 40(4):345-352
  - Sleep apnea and pesticide exposure in a study of US farmers. Baumert, B. et al. (2017) Sleep apnea and pesticide exposure in a study of US Farmers, Sleep Health: Journal of the National Sleep Foundation. Available at: https://www.sleephealthjournal.org/article/S2352-7218(17)30174-2/abstract.
  - Carbamate Insecticides Target Human Melatonin Receptors. Popovska-Gorevski, M.,

Dubocovich, M. and Rajnarayanan, R. (2016) Carbamate Insecticides Target Human Melatonin Receptors, Chemical Research in Toxicology. Available at: https://pubs.acs.org/doi/10.1021/acs.chemrestox.6b00301#.
- Pharmacological Actions of Carbamate Insecticides at Mammalian Melatonin Receptors. Glatfelter, G. et al. (2021) Pharmacological Actions of Carbamate Insecticides at Mammalian Melatonin Receptors, The Journal of Pharmacology and Experimental Therapeutics. Available at: https://jpet.aspetjournals.org/article/S0022-3565(24)25757-8/fulltext.
- 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.
- Influence of pesticides on respiratory pathology – a literature review. Tarmure, S., Alexescu, T.G., Orasan, O., Negrean, V., Sitar-Taut, A.V., Coste, S.C. and Todea, D.A., 2020. Annals of Agricultural and Environmental Medicine: AAEM, 27(2), pp.194-200.
- Pesticide exposure and lung cancer risk: A case-control study in Nakhon Sawan, Thailand. Kangkhetkron, T. and Juntarawijit, C., 2020. F1000Research, 9(492), p.492.
- Currently used and legacy pesticides in the marine atmosphere from Patagonia to Europe. Debler, F., Gandrass, J., Paul Ramacher, M. O., Koenig, A. M., Zimmermann, S., & Joerss, H. (2025). Currently used and legacy pesticides in the marine atmosphere from Patagonia to Europe. Environmental pollution (Barking, Essex : 1987), 373, 126175. Advance online publication. https://doi.org/10.1016/j.envpol.2025.126175
- 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.
- Associations of specific pesticides and incident rheumatoid arthritis among female spouses in the Agricultural Health Study. Parks, C. et al. (2025) Associations of specific pesticides and incident rheumatoid arthritis among female spouses in the Agricultural Health Study, Arthritis & Rheumatology. Available at: https://acrjournals.onlinelibrary.wiley.com/doi/10.1002/art.43318.
- Metabolome disruption of pregnant rats and their offspring resulting from repeated exposure to a pesticide mixture representative of environmental contamination in Brittany. Bonvallot N, Canlet C, Blas-Y-Estrada F, Gautier R, Tremblay-Franco M, Chevolleau S, et al. (2018) Metabolome disruption of pregnant rats and their offspring resulting from repeated exposure to a pesticide mixture representative of environmental contamination in Brittany. PLoS ONE 13(6): e0198448. https://doi.org/10.1371/journal.pone.0198448

Gateway Health and Environmental Effects Citations

1. Pesticide Action Network Pesticide Database. http://www.pesticideinfo.org/Search_Chemicals.jsp.

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.

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

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