

# Chemical Factsheet

## Abamectin/Avermectin B1

### General Information

- Fact Sheet: [Abamectin.pdf](#)
- Product Names:
  - Avid** (Valent)
  - Agrimek** (Syngenta)
  - Vertimek** (Syngenta)
  - Zephyr** (Novartis Crop Protection)
  - Prevamite** (Chemtura) formulated with [Bifenazate](#)
- Chemical Class: Macrocylic lactone compounds
- Uses: Insecticide, miticide, nematicide for use on various agrucultural uses: fruits, vegetables, legumes, herbs, cotton, tree nuts; and non-agricultural uses: forestry, ornamentals, lawns, turf, transportation facilities, food/feed processing,distribution facilities, dairy cattle,
- Alternatives: Organic Agriculture
- 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, 2)
- Neurotoxicity: Yes (1)
- Kidney/Liver Damage: Not documented
- Sensitizer/ Irritant: Yes (2)
- Birth/Developmental: Yes (3, 4, 2)
- Detected in Groundwater: Not documented
- Potential Leacher: Not documented
- Toxic to Birds: Not documented
- Toxic to Fish/Aquatic Organisms: Yes (1, 5, 2)
- Toxic to Bees: Yes (1, 5)

### Residential Uses as Found in the ManageSafe™ Database

- [Ants](#)
- [Tree-boring Caterpillars](#)
- [Cockroaches](#)

### Additional Information

- Regulatory Status:
  - [EPA Registration Documents](#)
  - [Ecological Risk Assessment](#) (2010)
- Supporting information:

- [Exttoxnet Abamectin Factsheet](#) (Extension Toxicology Network)
- [PAN Pesticides Database: Abamectin](#) (Pesticide Action Network)
- Studies [compiled from the [Pesticide-Induced Diseases Database](#)]
  - [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.
  - [A Th2-type immune response and low-grade systemic inflammatory reaction as potential immunotoxic effects in intensive agriculture farmers exposed to pesticides](#). Lozano-Paniagua, D. et al. (2024) 'A th2-type immune response and low-grade systemic inflammatory reaction as potential immunotoxic effects in intensive agriculture farmers exposed to pesticides', *Science of The Total Environment*, 938, p. 173545. doi:10.1016/j.scitotenv.2024.173545.
  - [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>.
  - [ROS generation and DNA damage contribute to abamectin-induced cytotoxicity in mouse macrophage cells](#). Liang, Y., Dong, B., Pang, N., & Hu, J. (2019). ROS generation and DNA damage contribute to abamectin-induced cytotoxicity in mouse macrophage cells. *Chemosphere*, 234, 328-337. <https://doi.org/10.1016/j.chemosphere.2019.06.031>
  - [Assessment of genetic damage levels in agricultural workers exposed to pesticides in Paraíba, Brazil](#). Carvalho-Gonçalves, L. et al. (2025) Assessment of genetic damage levels in agricultural workers exposed to pesticides in Paraíba, Brazil, *Environmental Toxicology and Pharmacology*. Available at: <https://www.sciencedirect.com/science/article/abs/pii/S1382668925000900>.
  - [Assessment of Avermectins-Induced Toxicity in Animals](#). Salman, Muhammad, Rao Zahid Abbas, Khalid Mehmood, Riaz Hussain, Sehar Shah, Mehwish Faheem, Tean Zaheer, Asghar Abbas, Bernardo Morales, Ina Aneva, and et al. 2022. "Assessment of Avermectins-Induced Toxicity in Animals" *Pharmaceuticals* 15, no. 3: 332. <https://doi.org/10.3390/ph15030332>
  - [The effect of abamectin exposure on gametogenesis in zebrafish](#). Bağdatli, S., Yön Ertuğ, N.D. The effect of abamectin exposure on gametogenesis in zebrafish. *Sci Rep* 15, 9038 (2025). <https://doi.org/10.1038/s41598-025-93638-6>
  - [Effects of Avermectins on the Environment Based on Its Toxicity to Plants and Soil Invertebrates—a Review](#). de Souza, R.B., Guimarães, J.R. Effects of Avermectins on the Environment Based on Its Toxicity to Plants and Soil Invertebrates—a Review. *Water Air Soil Pollut* 233, 259 (2022). <https://doi.org/10.1007/s11270-022-05744-0>
  - [Negative effects of abamectin on soil microbial communities in the short term](#). Qiu D, Xu N, Zhang Q, Zhou W, Wang Y, Zhang Z, Yu Y, Lu T, Sun L, Zhou N-Y, Peijnenburg WJGM and Qian H (2022) Negative effects of abamectin on soil microbial communities in the short term. *Front. Microbiol.* 13:1053153. doi: 10.3389/fmicb.2022.1053153
  - [Forecasting of Dangerous Influence of Avermectin Insecticides to Human Organism Using Surface and Groundwater for Drinking](#). Antonenko, Anna & Vavrinevych, O. & Shpak, Bohdan & Omelchuk, Sergii. (2021). Forecasting of Dangerous Influence of Avermectin Insecticides to Human Organism Using Surface and Groundwater for Drinking. *Environmental Research, Engineering and Management*. 77. 59-66. 10.5755/j01.erem.77.1.23706.
  - [Abamectin causes cardiac dysfunction in carp via inhibiting redox equilibrium and resulting in immune inflammatory response and programmed cell death](#). Zhao, P., Wang, Y., Yang, Q. et al. Abamectin causes cardiac dysfunction in carp via inhibiting redox

equilibrium and resulting in immune inflammatory response and programmed cell death. Environ Sci Pollut Res 30, 29494–29509 (2023).

<https://doi.org/10.1007/s11356-022-24004-6>

- [Abamectin promotes behavior changes and liver injury in zebrafish](#). Santos, Keiza Priscila Enes Dos et al. “Abamectin promotes behavior changes and liver injury in zebrafish.” Chemosphere vol. 311,Pt 1 (2023): 136941. doi:10.1016/j.chemosphere.2022.136941
- [Avermectin induces carp neurotoxicity by mediating blood-brain barrier dysfunction, oxidative stress, inflammation, and apoptosis through PI3K/Akt and NF-κB pathways](#). Zhang, Tianmeng et al. “Avermectin induces carp neurotoxicity by mediating blood-brain barrier dysfunction, oxidative stress, inflammation, and apoptosis through PI3K/Akt and NF-κB pathways.” Ecotoxicology and environmental safety vol. 243 (2022): 113961. doi:10.1016/j.ecoenv.2022.113961

## Gateway Health and Environmental Effects Citations

1. Extension Toxicology Network (EXTOXNET) Pesticide Information Profiles.

<http://extoxnet.orst.edu/pips/ghindex.html>

2. National Library of Medicine. PubChem Hazardous Substances Database. [PubChem \(nih.gov\)](#)

3. US EPA, 2000. Table 1: Toxicity Data by Category for Chemicals Listed under EPCRA Section 313. Toxic Release Inventory (TRI) Program.

[https://www.epa.gov/sites/production/files/documents/hazard\\_categories.pdf](https://www.epa.gov/sites/production/files/documents/hazard_categories.pdf)

4. 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//p65chemicalslistsingletable2021p.pdf>

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>.

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