Chemical Factsheet

Acephate

General Information

- Fact Sheet: Acephate.pdf
- Product Names:
  Dexol Systemic (Value Garden Supply)
  Paylor (AMVAC)
  Arbor X Thene (Florida Silvics)
  Lancer (United Phosphorus)
  Excel Systemic (Excel)
  Borer-Stop (Agscitech)
  Orthene (Valent)
- Chemical Class: Organophosphate Insecticide
- Uses: Field, fruit, and vegetable crops (e.g., cotton, tobacco, cranberries, mint); in food handling establishments; on ornamental plants both in greenhouses and outdoors (e.g., nonbearing fruit trees, Christmas trees, and cut flowers); and on fleas and cockroaches in and around the home.
- Alternatives: Organic agriculture
- Beyond Pesticides rating: Toxic

Health and Environmental Effects

See citations at end of document.

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

Residential Uses as Found in the ManageSafe™ Database

- Bagworms
- Tree-boring Caterpillars
- Wasps and Yellowjackets
- Ants
- Cockroaches
- Gypsy Moths
- Chinch Bugs
- Thrips

- Aphids
- Fire Ants

Additional Information

- Regulatory Status:
  - Beyond Pesticides Comments (July 2024)
  - EPA Reregistration Eligibility Decision (RED) signed (7/2006)
  - Beyond Pesticides' OP cumulative risk RED comments
- Supporting information:
  - Daily News Blog entries (Beyond Pesticides)
  - Extoxnet Acephate Factsheet (Extension Toxicology Network)
  - PAN Pesticides Database: Acephate (Pesticide Action Network)
- Studies [compiled from the Pesticide-Induced Diseases Database]
  - Prenatal proximity to agricultural use of endocrine-disrupting pesticides and risk of testicular germ cell tumor (TGCT) among Latino and non-Latino adolescents in California. Swartz, S.J., Morimoto, L., Whitehead, T., Gunier, R., Wiemels, J., Ma, X. and Metayer, C., 2020. Conference: Abstracts: AACR Virtual Conference: Thirteenth AACR Conference on the Science of Cancer Health Disparities in Racial/Ethnic Minorities and the Medically Underserved.
  - Hypospadias and residential proximity to pesticide applications.. Carmichael SL, Yang W, Roberts EM, et al. 2013. Pediatrics. 132(5):e1216-26
  - Prenatal ambient pesticide exposure and childhood retinoblastoma. Thompson, S., Ritz, B., Cockburn, M. and Heck, J.E., 2022. International Journal of Hygiene and Environmental Health, 245, p.114025.
  - Pre-Conception And First Trimester Exposure To Pesticides And Associations With Stillbirth. Furlong, M. et al. (2024) Pre-conception and first trimester exposure to pesticides and associations with stillbirth, American Journal of Epidemiology. Available at: https://academic.oup.com/aje/advance-article-abstract/doi/10.1093/aje/kwae198/7714541 .
  - Pesticides and prostate cancer incidence and mortality: An environment-wide association study. Soerensen, S. et al. (2024) Pesticides and prostate cancer incidence and mortality: An environment-wide association study, Cancer. Available at: https://acsjournals.onlinelibrary.wiley.com/doi/10.1002/cncr.35572.
  - Lethal and sublethal effects of seven insecticides on three beneficial insects in laboratory assays and field trials. Fernandes, M. et al. (2016) Lethal and sublethal effects of seven insecticides on three beneficial insects in laboratory assays and field trials, Chemosphere. Available at: https://www.sciencedirect.com/science/article/abs/pii/S0045653516306051.
  - Pesticide Residues on Three Cut Flower Species and Potential Exposure of Florists in Belgium. Toumi, K., Vleminckx, C., Van Loco, J., & Schiffers, B. (2016). Pesticide Residues on Three Cut Flower Species and Potential Exposure of Florists in Belgium. International Journal of Environmental Research and Public Health, 13(10), 943. https://doi.org/10.3390/ijerph13100943
  - 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.
  - Cytotoxicity and DNA damage of five organophosphorus pesticides mediated by oxidative stress in PC12 cells and protection by vitamin E. Lu, X. T. et al. (2012) 'Cytotoxicity and

DNA damage of five organophosphorus pesticides mediated by oxidative stress in PC12 cells and protection by vitamin E', Journal of Environmental Science and Health, Part B, 47(5), pp. 445–454. doi: 10.1080/03601234.2012.663312.
- Temporal trends of agricultural organophosphate pesticide use in California and proximity to pregnant people in 2021. Rotkin-Ellman, M., Carpenter, C., Richardson, M.J. et al. Temporal trends of agricultural organophosphate pesticide use in California and proximity to pregnant people in 2021. BMC Public Health 25, 3121 (2025). https://doi.org/10.1186/s12889-025-23939-y
- Preconception and first trimester exposure to pesticides and associations with stillbirth. Furlong, M. A., Paul, K. C., Parra, K. L., Fournier, A. J., Ellsworth, P. C., Cockburn, M. G., Arellano, A. F., Bedrick, E. J., Beamer, P. I., & Ritz, B. (2025). Preconception and first trimester exposure to pesticides and associations with stillbirth. American journal of epidemiology, 194(1), 44–55. https://doi.org/10.1093/aje/kwae198

Gateway Health and Environmental Effects Citations

1. EPA weight-of-evidence category, "possible human carcinogen." US EPA, 2004. Office of Pesticide Programs. List of Chemicals Evaluated for Carcinogenic Potential. July 29, 2004. http://www.epa.gov/pesticides/carlist/

2. Extension Toxicology Network (EXTOXNET) Pesticide Information Profiles. http://extoxnet.orst.edu/pips/ghindex.html

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

4. 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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