# Chemical Factsheet

## Phenothrin

## d-Phenothrin/Sumithrin

### General Information

- Fact Sheet: Synthetic Pyrethroids.pdf
- Product Names:
  **Anvil** (Clarke Mosquito Control Products), formulated with Piperonyl butoxide
  **Black Jack** (Safeguard Chemical), formulated with Tetramethrin
  **Chemi-Cap Wasp and Hornet Killer** (Chemical Packaging), formulated with Tetramethrin
  **Claire** (Claire Manufacturing), formulated with Tetramethrin, N-octyl bicycloheptene dicarboximide (some formulations)
  **Evercide Wasp & Hornet Killer** (McLaughlin Gormley King) Tetramethrin
  **Hot Shot** (Spectrum Group) Tetramethrin, D-trans Allethrin (some formulations)
  **Misty** (Amrep) Tetramethrin (some formulations)
  **Multicide** (McLaughlin Gormley King) Tetramethrin, N-octyl bicycloheptene dicarboximide, D-trans Allethrin, Imiprothrin (some formulations)
  **Nylar**
  **Enforcer Wasp & Yellow Jacket Foam** (Enforcer Products), formulated with Tetramethrin
  **Ortho Home Defense** (Flying & Crawling Insects), formulated with Solaris Group Bioallethrin
- Chemical Class: Synthetic pyrethroid
- Uses: Commercial and industrial settings, in animal kennels, medical institutions, and other institutional settings; greenhouses, homes, and gardens, and in recreational areas, vector control for mosquitoes (indoor and outdoor); targets ants, aphids, bed bugs, bees, beetles, billbugs, box elders, borers, cockroaches, cadelles, caterpillars, centipedes, crickets, daubers, earwigs, fleas, flies, gnats, hornets, crawling insects, flying insects, grain insects, lace bugs, leafhoppers, leaf miners, lice, moths, mites, mealy bugs, midges, millipedes, mosquitoes, rust, scab, scales, scorpions, silverfish, spiders, sow bugs, thrips, ticks, wasps, waterbugs, weevils, worms, and yellow jackets.
- Alternatives: Least-toxic insect control, Least-toxic mosquito control
- Beyond Pesticides rating: Toxic

### Health and Environmental Effects

*See citations at end of document.*

- Cancer: Likely (**1**, **2**, **3**, **4**)
- Endocrine Disruption: Suspected (**5**, **2**)
- Reproductive Effects: Suspected (**6**, **3**)
- Neurotoxicity: Yes (**7**, **3**)
- Kidney/Liver Damage: Yes (**8**, **3**)
- Sensitizer/ Irritant: No
- Birth/Developmental: Not Likely
- Detected in Groundwater: Not Likely
- Potential Leacher: Not Likely
- Toxic to Birds: Not Likely

- Toxic to Fish/Aquatic Organisms: Yes (**3**)
- Toxic to Bees: Yes (**9**, **3**)

## Residential Uses as Found in the ManageSafe™ Database

- Wasps and Yellowjackets
- Mosquitoes
- Head Lice

## Additional Information

- Regulatory Status:
  - EPA Reregistration Eligibility Decision (RED) signed (6/2008)
  - Beyond Pesticides' RED comments (2004)
- Supporting information:
  - NCAP Sumithrin Factsheet (Northwest Coalition for Alternatives to Pesticides)
  - PAN Pesticides Database: Phenothrin (Pesticide Action Network)
- Studies [compiled from the Pesticide-Induced Diseases Database]
  - Evaluation of the genotoxicity of the pyrethroid insecticide phenothrin. Nagy, K. (2014) Evaluation of the genotoxicity of the pyrethroid insecticide phenothrin, Mutation Research/Genetic Toxicology and Environmental Mutagenesis. Available at: https://www.sciencedirect.com/science/article/abs/pii/S138357181400134X.
  - Insecticidal Activity, Toxicity, Resistance and Metabolism of Pyrethroids: a Review. Singh, A. ., Singh, A. ., Singh, P. ., Chakravarty, A. ., Singh , A., Singh, P. ., Mishra, M. K. ., Singh, . V. ., Srivastava, A. K. ., Aggarwal, H. ., & Sagadevan, S. (2022). Insecticidal Activity, Toxicity, Resistance and Metabolism of Pyrethroids: a Review. Science and Technology Indonesia, 7(2), 238–250. https://doi.org/10.26554/sti.2022.7.2.238-250
  - Advances and future prospects of pyrethroids: Toxicity and microbial degradation. Singh, S. et al. (2022) Advances and future prospects of pyrethroids: Toxicity and microbial degradation, Science of The Total Environment. Available at: https://www.sciencedirect.com/science/article/abs/pii/S0048969722016540.
  - Monitoring the aquatic toxicity of mosquito vector control spray pesticides to freshwater receiving waters. Phillips, B. M., Anderson, B. S., Voorhees, J. P., Siegler, K., Denton, D., TenBrook, P., Larsen, K., Isorena, P., & Tjeerdema, R. S. (2014). Monitoring the aquatic toxicity of mosquito vector control spray pesticides to freshwater receiving waters. Integrated environmental assessment and management, 10(3), 449–455. https://doi.org/10.1002/ieam.1534
  - Exploring the binding mechanism and adverse toxic effects of chiral phenothrin to human serum albumin: Based on multi-spectroscopy, biochemical and computational approach. Gao, Y., Bian, C., Li, N., Yao, K., Xiao, L., Yang, Z., & Guan, T. (2022). Exploring the binding mechanism and adverse toxic effects of chiral phenothrin to human serum albumin: Based on multi-spectroscopy, biochemical and computational approach. Spectrochimica acta. Part A, Molecular and biomolecular spectroscopy, 282, 121659. https://doi.org/10.1016/j.saa.2022.121659
  - Acute Toxicity Study Of D-trans Allethrin And D-phenothrin To Zebrafish, Danio Rerio And Its Human Relevance. Hamid, Alif & Muhammad, Hussin & Lee, Siew Pien & Nik Hassan, Nik F. & Lokman, Isa. (2024). Acute Toxicity Study Of D-trans Allethrin And D-phenothrin To Zebrafish, Danio Rerio And Its Human Relevance. Community practitioner: the journal of the Community Practitioners' & Health Visitors' Association. 21. 243-250.
  - Occurrence of pyrethroids in the atmosphere of urban areas of Southeastern Brazil: Inhalation exposure and health risk assessment. Guida, Y., Pozo, K., Carvalho, G. O.,

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## Gateway Health and Environmental Effects Citations

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2. USEPA. 2010. Proposed Registration Review Final Decision for Nithiazine. Pesticide Re-evaluation Division. https://beta.regulations.gov/document/EPA-HQ-OPP-2008-0847-0010

3. USEPA. 2016. Flonicamid Human Health Risk Assessment. Office of Pesticide Programs. https://beta.regulations.gov/document/EPA-HQ-OPP-2016-0013-0009

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