Chemical Factsheet

Lindane

General Information

- Fact Sheet: Lindane.pdf
- Product Names:
  Gustafson (Chemtura USA), formulated with Captan, Thiram, Carboxin (some formulations)
  Db-Green L (Agsco), formulated with Maneb
  Isotox (Scotts Company), formulated with Captan (some formulations)
  Dog Dip (Purina Mills)
  Prentox (Prentiss), formulated with Captan (some formulations)
- Chemical Class: Organochlorine insecticide
- Uses: Head Lice and Scabies, may be found in imported meat
- Alternatives: Least-toxic head lice products
- Beyond Pesticides rating: Toxic

Health and Environmental Effects

See citations at end of document.

- Cancer: Suggestive evidence (**1**, **2**), Yes (**3**)
- Endocrine Disruption: Known (**4**), Likely (**5**)
- Reproductive Effects: Yes (**6**)
- Neurotoxicity: Yes (**7**)
- Kidney/Liver Damage: Yes (**7**)
- Sensitizer/ Irritant: Not documented
- Birth/Developmental: Not documented
- Detected in Groundwater: Yes (**8**)
- Potential Leacher: Yes (**7**)
- Toxic to Birds: Yes (**7**)
- Toxic to Fish/Aquatic Organisms: Yes (**7**)
- Toxic to Bees: Yes (**7**)

Residential Uses as Found in the ManageSafe™ Database

- Tree-boring Caterpillars
- Head Lice
- Mosquitoes
- Termites

Additional Information

- Regulatory Status:
  - EPA Reregistration Eligibility Decision (RED) signed (7/2002) and RED addendum (signed 7/2006)
  - NGOs' RED comments
- Supporting information:

    - PANNA Lindane Program Page (Pesticide Action Network North America)
    - Extoxnet Lindane Factsheet (Extension Toxicology Network)
    - PAN Pesticides Database:Lindane (Pesticide Action Network)
- Studies [compiled from the Pesticide-Induced Diseases Database]
    - Lindane (gamma-HCH) causes reproductive failure and fetotoxicity in mice. Sircar, S. 1989. *Toxicology.*
    - Agricultural risk factors for t(14;18) subtypes of non-Hodgkin's lymphoma.. Schroeder, J., et al. 2001. Epidemiology 12(6):701-709
    - Cancer incidence among farmers exposed to lindane while sheep dipping. Rafnsson V. 2006. Scand J Work Environ Health. 32(3):185-9.
    - Household exposure to pesticides and risk of childhood acute leukaemia. Menegaux, F., et al. 2006. Occup Environ Med 63(2):131-134
    - Human exposure and risk assessment to airborne pesticides in a rural French community.. Coscollà C, López A, Yahyaoui A, Colin P, et al. 2017. Sci Total Environ. 584-585:856-868
    - Associations between persistent organic pollutants and endometriosis: A multiblock approach integrating metabolic and cytokine profiling. Matta, K., Lefebvre, T., Vigneau, E., Cariou, V., Marchand, P., Guitton, Y., Royer, A.L., Ploteau, S., Le Bizec, B., Antignac, J.P. and Cano-Sancho, G. Environment International, 158, p.106926.
    - Genetic Polymorphisms of Pesticide-Metabolizing Enzymes and Transporters in Agricultural Workers and Thyroid Hormone Levels. Sirivarasai, J., Chanprasertyothin, S., Kongtip, P. and Woskie, S. Risk Management and Healthcare Policy, 14, p.3435.
    - Pesticide-Induced Inflammation at a Glance. Lopes-Ferreira, M. et al. (2023) 'Pesticide-induced inflammation at a glance', Toxics, 11(11), p. 896. doi:10.3390/toxics11110896.
    - High Pesticide Exposure Events and Dream-Enacting Behaviors Among US Farmers. Yuan, Y., Shrestha, S., Luo, Z., Li, C., Plassman, B.L., Parks, C.G., Hofmann, J.N., Beane Freeman, L.E., Sandler, D.P. and Chen, H. (2022), High Pesticide Exposure Events and Dream-Enacting Behaviors Among US Farmers. Mov Disord, 37: 962-971. https://doi.org/10.1002/mds.28960
    - Biochemical effects of some pesticides on lipid peroxidation and free-radical scavengers. B.D. Banerjee, V. Seth, A. Bhattacharya, S.T. Pasha, A.K. Chakraborty, Biochemical effects of some pesticides on lipid peroxidation and free-radical scavengers, Toxicology Letters, Volume 107, Issues 1–3, 1999, Pages 33-47, ISSN 0378-4274, https://doi.org/10.1016/S0378-4274(99)00029-6.
    - Adverse Effects of Pesticides on the Ovary: Evidence from Epidemiological and Toxicological Studies. Wang, L., Ma, X. and Liu, J. (2025) Adverse Effects of Pesticides on the Ovary: Evidence from Epidemiological and Toxicological Studies, Environment & Health. Available at: https://pubs.acs.org/doi/full/10.1021/envhealth.4c00243.
    - Proapoptotic Effects of Lindane on Mouse Primordial Germ Cells. Gina La Sala, Donatella Farini, Massimo De Felici, Proapoptotic Effects of Lindane on Mouse Primordial Germ Cells, Toxicological Sciences, Volume 108, Issue 2, April 2009, Pages 445–451, https://doi.org/10.1093/toxsci/kfp027
    - The effect of follicullar fluid pesticides and polychlorinated biphenyls concentrations on intracytoplasmic sperm injection (ICSI) embryological and clinical outcome. Al-Hussaini, T. K., Abdelaleem, A. A., Elnashar, I., Shabaan, O. M., Mostafa, R., El-Baz, M. A. H., El-Deek, S. E. M., & Farghaly, T. A. (2018). The effect of follicullar fluid pesticides and polychlorinated biphenyls concentrations on intracytoplasmic sperm injection (ICSI) embryological and clinical outcome. European journal of obstetrics, gynecology, and reproductive biology, 220, 39–43. https://doi.org/10.1016/j.ejogrb.2017.11.003
    - 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.
- Placental concentrations of xenoestrogenic organochlorine pesticides and polychlorinated biphenyls and assessment of their xenoestrogenicity in the PA-MAMI mother-child cohort. Iribarne-Durán, L. M., Castillero-Rosales, I., Peinado, F. M., Artacho-Cordón, F., Molina-Molina, J. M., Medianero, E., Nicolás-Delgado, S. I., Sánchez-Pinzón, L., Núñez-Samudio, V., Vela-Soria, F., Olea, N., & Alvarado-González, N. E. (2024). Placental concentrations of xenoestrogenic organochlorine pesticides and polychlorinated biphenyls and assessment of their xenoestrogenicity in the PA-MAMI mother-child cohort. Environmental research, 241, 117622. https://doi.org/10.1016/j.envres.2023.117622

Gateway Health and Environmental Effects Citations

1. US EPA Office of Pesticide Programs. List of Chemicals Evaluated for Carcinogenic Potential. October 30, 2023. http://npic.orst.edu/chemicals_evaluated.pdf

2. EPA weight-of-evidence category, "Suggestive evidence of carcinogenicity but not sufficient to assess human carcinogenic potential." US EPA, 2005. Office of Pesticide Programs. List of Chemicals Evaluated for Carcinogenic Potential. May 10, 2005. http://www.epa.gov/pesticides/carlist/

3. 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//p65chemicalslistsinglelisttable2021p.pdf

4. Illinois EPA, Endocrine Disruptors Strategy, February 1997. https://nepis.epa.gov/Exe/ZyNET.exe/910140ZK.txt

5. Lerro, C.C., Freeman, L.E.B., DellaValle, C.T., Andreotti, G., Hofmann, J.N., Koutros, S., Parks, C.G., Shrestha, S., Alavanja, M.C., Blair, A. and Lubin, J.H., 2021. Pesticide exposure and incident thyroid cancer among male pesticide applicators in agricultural health study. *Environment International*, *146*, p.106187.

6. Frazier, L. and M.L. Hage. 2001. Reproductive Hazards of the Workplace. Europe: Wiley. Table 10: Partial List of Reproductive Toxins. https://web.archive.org/web/20100624221623/http://www.biosci.osu.edu/safety/CHP/Tables2001/Table10-11-00.pdf.

7. Beyond Pesticides ChemWatch Factsheets. (Cited under factsheets on Beyond Pesticides Gateway; see top of individual chemical page)

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

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