Chemical Factsheet

Triclosan

Updated February 2019

General Information

- Fact Sheet: triclosan-factsheet-3-09.pdf
- Product Names:
  Vinyzene (Rohm and Haas)
  Microbanish R (Troy Chemical)
  Vikol (Vikon Chemical)
  Ultra Fresh NM (Kroy Chemicals)
  Bac - Tex (Ecolab)
- Chemical Class: Chlorinated phenol biocide
- Uses: Synthetic broad-spectrum antimicrobial agent in Consumer products, soaps, deodorants, plastics, toothpastes, etc.
- Beyond Pesticides rating: Toxic

Health and Environmental Effects

See citations at end of document.

- Cancer: Suggestive Evidence (**1**, **2**)
- Endocrine Disruption: Yes (**3**)
- Reproductive Effects: Suggestive Evidence (**4**, **5**)
- Neurotoxicity: Suggestive Evidence (**6**)
- Kidney/Liver Damage: Not documented
- Sensitizer/ Irritant: Yes (**3**)
- Birth/Developmental: Suggestive Evidence (**6**, **7**)
- Detected in Groundwater: Yes (**8**, **9**)
- Potential Leacher: Not documented
- Toxic to Birds: Not documented
- Toxic to Fish/Aquatic Organisms: Yes (**3**, **10**)
- Toxic to Bees: Not documented

Additional Information

- Regulatory Status:
  - FDA Ban for Medical Use in Hospitals (12/2017)
  - FDA Ban in Soap Products (9/2016)
  - EU Ban for Hygienic Uses (6/2015)
  - Regulatory History (2005-2010)
- Supporting information:
  - Antibacterials Program Page (Beyond Pesticides)
  - Threatened Waters (Beyond Pesticides)
  - PAN Pesticides Database: Triclosan (Pesticide Action Network)
  - Scorecard Triclosan Factsheet (The Pollution Information Site)

- Studies [compiled from the Pesticide-Induced Diseases Database]
    - Antibiotics and common antibacterial biocides stimulate horizontal transfer of resistance at low concentrations.. Jutkina, J., Marathe, N.P., Flach, C.F. and Larsson, D.G.J., 2018. Science of the total Environment, 616, pp.172-178.
    - Association between urinary triclosan with bone mass density and osteoporosis in the US adult women, 2005-2010.. Cai, S., Zhu, J., Sun, L., Fan, C., Zhong, Y., Shen, Q. and Li, Y., 2019. The Journal of Clinical Endocrinology & Metabolism.
    - Diamondback terrapins as indicator species of persistent organic pollutants: Using Barnegat Bay, New Jersey as a case study. Basile ER, Avery HW, Bien WF, Keller JM. 2011. Chemosphere. 82(1):137-44
    - Environmental concentrations of triclosan activate cellular defence mechanism and generate cytotoxicity on zebrafish (Danio rerio) embryos.. Parenti, CC et al. 2018. Science of the Total Environment 650 (2019): 1752-1758.
    - Environmental levels of triclosan and male fertility.. Jurewicz, J et al. 2017. Environmental Science and Pollution Research 25(6), 5484-5490.
    - Microbial enzymes induce colitis by reactivating triclosan in the mouse gastrointestinal tract. Zhang, J., Walker, M.E., Sanidad, K.Z., Zhang, H., Liang, Y., Zhao, E., Chacon-Vargas, K., Yeliseyev, V., Parsonnet, J., Haggerty, T.D. and Wang, G. Nature communications, 13(1), pp.1-14.
    - Anthropogenic Contaminants and Histopathological Findings in Stranded Cetaceans in the Southeastern United States, 2012–2018. Page-Karjian, A., Lo, C.F., Ritchie, B., Harms, C.A., Rotstein, D.S., Han, S., Hassan, S.M., Lehner, A.F., Buchweitz, J.P., Thayer, V.G. and Sullivan, J.M., 2020. Frontiers in Marine Science, 7, p.630.
    - Cetaceans as bio-indicators revealed the increased risks of triclosan exposure and associated thyroid hormone disruption during the COVID-19 pandemic.. Guo, Y., Shi, W., Liu, Z., Sun, X. and Wu, Y., 2023. Journal of Hazardous Materials, 459, p.132289.
    - Thyroid under Attack: The Adverse Impact of Plasticizers, Pesticides, and PFASs on Thyroid Function. Rodrigues, V.G. et al. (2024) Thyroid under Attack: The Adverse Impact of Plasticizers, Pesticides, and PFASs on Thyroid Function, Endocrines. Available at: https://www.mdpi.com/2673-396X/5/3/32.

Gateway Health and Environmental Effects Citations

1. Yueh, MF et al. 2014. The commonly used antimicrobial additive triclosan is a liver tumor promoter. *PNAS* doi: 10.1073/pnas.141911911. *Triclosan promotes liver cancer cell development and proliferation in mice through pathways common to humans.*

2. Lee, HR et al. 2014. Progression of Breast Cancer Cells Was Enhanced by Endocrine-Disrupting Chemicals, Triclosan and Octylphenol, via an Estrogen Receptor-Dependent Signaling Pathway in Cellular and Mouse Xenograft Models. *Chemical Research in Toxicology* doi: 10.1021/tx5000156.

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

4. Riad, M et al. 2017. Reproductive toxic impact of subchronic treatment with combined butylparaben and triclosan in weanling male rats. *J Biochem Mol Toxicol* doi: 10.1002/jbt.22037. *Treatment with triclosan alone causes testicular oxidative stress and DNA damage, leading to a marked reduction in sperm count and sperm motility.*

5. Jurewicz, J et al. 2017. Environmental levels of triclosan and male fertility. *Environmental Science and Pollution Research 25*(6), 5484-5490. *Men with higher urinary concentrations of triclosan have*

poorer semen quality, exhibiting a greater percentage of sperm with abnormal morphology as compared to men with lower triclosan levels.

6. Kim, J et al. 2017. Triclosan affects axon formation in the neural development stages of zebrafish embryos (*Danio rerio*). *Environmental Pollution* doi: 10.1016/j.enjvpol.2017.12.110.

7. Lassen et al. 2016. Prenatal Triclosan Exposure and Anthropometric Measures Including Anogenital Distance in Danish Infants. *Environmental Health Perspectives* doi: 10.1289/ehp.1409637. *Prenatal triclosan exposure associated with reduced head circumference, a trait linked to cognitive impairment.*

8. Stuart, M et al. 2012. Review of risk from potential emerging contaminants in UK groundwater. *Science of the Total Environment 416*, 1-21. *UK Environment Agency detected triclosan in groundwater 22 times in 22 sites over the period 1992-2009, at a maximum concentration of 2.11 µg/L.*

9. Karnjanapiboonwong, A et al. 2011. Occurrence of PPCPs at a Wastewater Treatment Plant and in Soil and Groundwater at a Land Application Site. *Water, Air, & Soil Pollution 216(1-4)*, 257-273. *Triclosan detected in 5 out of 7 groundwater samples from a West Texas Land Application Site, at concentrations ranging 12-53 ng/L.*

10. Parenti, CC et al. 2018. Environmental concentrations of triclosan activate cellular defence mechanism and generate cytotoxicity on zebrafish (*Danio rerio*) embryos. *Science of the Total Environment 650*, 1752-1758. *Triclosan levels commonly found in the environment invoke oxidative stress immune responses and cause high levels of cell death in zebrafish embryos.*

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