

# Chemical Factsheet

## Rotenone

### General Information

- Fact Sheet: [Rotenone.pdf](#)
- Product Names:
  - Garden Dust** (Bonide Products), formulated with [Pyrethrum](#), Copper sulfate, [Sulfur](#)
  - Flys Off Lotion Insect Repellent for Dogs** (Farnam Companies), formulated with [Pyrethrum](#)
  - Ear Mite Control** (Unicorn Laboratories)
  - Prentox** (Prentiss), formulated with [Piperonyl butoxide](#) (some formulations)
  - Noxfish Fish Toxicant** (Prentiss), formulated with [Piperonyl butoxide](#) (some formulations)
- Chemical Class: Botanical insecticide
- Uses: Applied directly to water to manage fish populations in lakes, ponds, reservoirs, rivers, streams, and in aquaculture.
- Beyond Pesticides rating: [Toxic](#)

### Health and Environmental Effects

*See citations at end of document.*

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

### Additional Information

- Regulatory Status:
  - [EPA Reregistration Eligibility Decision \(RED\) signed](#) (3/2007)
- Supporting information:
  - [Extoxnet Rotenone Factsheet](#) (Extension Toxicology Network)
  - [PAN Pesticides Database:Rotenone](#) (Pesticide Action Network)
  - [PAN UK Rotenone Factsheet](#) (Pesticide Action Network UK)
  - [Scorecard Rotenone Factsheet](#) (The Pollution Information Site)
- Studies [compiled from the [Pesticide-Induced Diseases Database](#)]
  - [Rotenone Linked to Parkinson's Disease](#) (Beyond Pesticides Daily News Archive)
  - [Cerebellar neurochemical and histopathological changes in rat model of Parkinson's disease induced by intrastriatal injection of rotenone.](#) Khadrawy YA, Mourad IM,

- Mohammed HS, et al. 2017. Gen Physiol Biophys. 36(1):99-108.
- [Chronic exposure to rotenone, a dopaminergic toxin, results in peripheral neuropathy associated with dopaminergic damage.](#) Binienda ZK, Sarkar S, et al. 2013. Neurosci Lett. 541:233-7
  - [Environment-contact administration of rotenone: A new rodent model of Parkinson's disease.](#) Liu Y, Sun JD, Song LK, et al. 2015. Behav Brain Res.294:149-161
  - [Environmental Exposures and Parkinson's Disease.](#) Nandipati S, Litvan I. 2016. Int J Environ Res Public Health. 13(9).
  - [Environmental Neurotoxic Pesticide Exposure Induces Gut Inflammation and Enteric Neuronal Degeneration by Impairing Enteric Glial Mitochondrial Function in Pesticide Models of Parkinson's Disease: Potential Relevance to Gut-Brain Axis Inflammation in Parki.](#) Palanisamy, B.N., Sarkar, S., Malovic, E., Samidurai, M., Charli, A., Zenitsky, G., Jin, H., Anantharam, V., Kanthasamy, A. and Kanthasamy, A. The International Journal of Biochemistry & Cell Biology, p.106225.
  - [Paraquat Neurotoxicity is Distinct from that of MPTP and Rotenone.](#) Richardson, J. et al. (2005) Paraquat Neurotoxicity is Distinct from that of MPTP and Rotenone, Toxicological Sciences. Available at: <https://www.sciencedirect.com/science/article/pii/S0160412020322996?via%3Dihub>.
  - [Risk of Parkinson disease associated with pesticide exposure and protection by probiotics.](#) Rajawat, N. K., Bhardwaj, K., & Mathur, N. (2022). Risk of Parkinson disease associated with pesticide exposure and protection by probiotics. Materials Today: Proceedings, 69, A1-A11. <https://www.sciencedirect.com/science/article/pii/S2214785322075253>
  - [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.
  - [Intranasal Exposure to Low-Dose Rotenone Induced Alpha-Synuclein Accumulation and Parkinson's Like Symptoms Without Loss of Dopaminergic Neurons.](#) Sharma, M., Kaur, J., Rakshe, S., Sharma, N., Khunt, D., & Khairnar, A. (2022). Intranasal Exposure to Low-Dose Rotenone Induced Alpha-Synuclein Accumulation and Parkinson's Like Symptoms Without Loss of Dopaminergic Neurons. Neurotoxicity research, 40(1), 215–229. <https://doi.org/10.1007/s12640-021-00436-9>
  - [Effects of Commonly Used Pesticides in China on the Mitochondria and Ubiquitin-Proteasome System in Parkinson's Disease.](#) Chen, T., Tan, J., Wan, Z., Zou, Y., Kessete Afewerky, H., Zhang, Z., & Zhang, T. (2017). Effects of Commonly Used Pesticides in China on the Mitochondria and Ubiquitin-Proteasome System in Parkinson's Disease. International Journal of Molecular Sciences, 18(12), 2507. <https://doi.org/10.3390/ijms18122507>

## Gateway Health and Environmental Effects Citations

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

2. Yueh, MF et al. 2014. [The commonly used antimicrobial additive triclosan is a liver tumor promoter.](#) PNAS doi: 10.1073/pnas.1419119111. *Triclosan promotes liver cancer cell development and proliferation in mice through pathways common to humans.*