Chemical Factsheet

Diazinon

General Information

- Fact Sheet: Diazinon.pdf
- Product Names:
  Scotts Turf Builder with Insect Control 28-4-6 (Scotts Company)
  Ortho Hornet & Wasp Killer 2 (Solaris Group), formulated with Pyrethrins, Petroleum distillates
  Real Kill Diazinon Soil/Turf Insect Control (Realex)
  Bug B Gon Insect Killer (Solaris Group)
  Diazinon 25E Lawn and Garden Insect Control (C.J. Martin Company), formulated with Petroleum distillates
- Chemical Class: Organophosphate insecticide
- Uses: Agriculture almonds, apples, apricots, bananas, beets (red, table), blackberries, blueberries, cabbage, carrots, cauliflower, celery, cherries, collards, sweet corn, cranberries, cucumbers, endive (escarole), figs, filberts, ginseng, grapes, hops, kale, lettuce, loganberries, melons, mushrooms, nectarines, onions, parsley, parsnips, peaches, pears, peas, peppers, pineapples, plums, Irish potatoes, prunes, radishes, radishes (Chinese), raspberries, rutabagas, squash, spinach, strawberries, sugar beets, sweet potatoes, Swiss chard, tomatoes, turnips, walnuts, and watercress, seed treatment on beans (except soybeans), field corn, sweet corn, lima beans, peas, and snap beans; non-lactating cattle.
- Alternatives: Organic agriculture
- Beyond Pesticides rating: Toxic

Health and Environmental Effects

See citations at end of document.

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

Residential Uses as Found in the ManageSafe™ Database

- Wasps and Yellowjackets
- Ticks

Additional Information

- Regulatory Status:
  - EPA Reregistration Eligibility Decision (RED) signed (7/2006)
  - Diazinon lawsuit filed against EPA by Beyond Pesticides et. al. (2008)
  - Beyond Pesticides' Revised Risk Assessment comments.
  - Most residential uses phased out 2002
  - Beyond Pesticides' phaseout press release
- Supporting information:
  - Daily News Blog entries (Beyond Pesticides)
  - Asthma, Children and Pesticides (Beyond Pesticides)
  - Children & Lawn Chemicals Don't Mix (Beyond Pesticides)
  - The Safer Choice (Beyond Pesticides)
  - Threatened Waters: Turning the Tide on Pesticide Contamination (Beyond Pesticides)
  - NCAP Diazinon Factsheet (Northwest Coalition for Alternatives to Pesticides)
  - Extoxnet Diazinon Factsheet (Extension Toxicology Network)
  - PAN Pesticides Database:Diazinon (Pesticide Action Network)
  - PAN-UK Diazinon Factsheet (Pesticide Action Network UK)
  - EWG Diazinon Report (Environmental Working Group)
  - NPTN Diazinon Factsheet (National Pesticide Telecommunications Network)
  - ABC Diazinon Factsheet (American Bird Conservancy)
- Studies [compiled from the Pesticide-Induced Diseases Database]
  - Prenatal and infant exposure to ambient pesticides and autism spectrum disorder in children: population based case-control study. von Ehrenstein, et al. 2019. BMJ 2019;364:l962
  - Cancer incidence among male pesticide applicators in the Agricultural Health Study cohort exposed to diazinon. Beane Freeman, L.E., et al. 2005. American Journal of Epidemiology 162(11):1070-1079
  - Cohort mortality and nested case-control study of lung cancer among structural pest control workers in Florida (United States). Pesatori, A.C., et al. 1994. Cancer Causes and Control 5:310-318.
  - Diazinon and parathion diverge in their effects on development of noradrenergic systems. Slotkin TA, Skavicus S, Seidler FJ. 2017. Brain Res Bull. 130:268-273.
  - Does early-life exposure to organophosphate insecticides lead to prediabetes and obesity. Slotkin, T.A. 2011. Reproductive Toxicology. 31: 297–301.
  - Evidence for diazinon-mediated inhibition of cis-permethrin metabolism and its effects on reproductive toxicity in adult male mice.. Wang D, Kamijima M, Okamura A, et al. 2012. Reprod Toxicol. 34(4):489-97
  - Genotoxicity studies on permethrin, DEET and diazinon in primary human nasal mucosal cells. Tisch, M., et al. 2002. Eur Arch Otorhinolaryngol 259:150-153.
  - 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.
  - Influence of Pesticides Contamination on Microbial Population of Selected Farmlands. Uneze, D.P., Kugbenu, G.J. and Obire, O. (2024) Influence of pesticides contamination on microbial population of selected farmlands, British Journal of Environmental Sciences. Available at: https://eajournals.org/bjes/vol12-issue-5-2024/influence-of-pesticides-contamination-on-microbial-population-of-selected-farmlands/.
  - Organophosphate pesticide levels in blood and urine of women and newborns living in an

agricultural community. Huen, K. et al. (2012) Organophosphate pesticide levels in blood and urine of women and newborns living in an agricultural community, Environmental Research. Available at: https://www.sciencedirect.com/science/article/abs/pii/S0013935112001740.
- Exposures of 129 Preschool Children to Organochlorines, Organophosphates, Pyrethroids, and Acid Herbicides at Their Homes and Daycares in North Carolina. Morgan, M.K., Wilson, N.K. and Chuang, J.C. (2014) Exposures of 129 Preschool Children to Organochlorines, Organophosphates, Pyrethroids, and Acid Herbicides at Their Homes and Daycares in North Carolina, International Journal of Environmental Research and Public Health. Available at: https://pmc.ncbi.nlm.nih.gov/articles/PMC4025031/.
- Persistent diazinon induced neurotoxicity: The effect on inhibitory avoidance memory performance, amyloid precursor proteins, and TNF-α levels in the prefrontal cortex of rats. Afshari S, Sarailoo M, Asghariazar V, Safarzadeh E, Dadkhah M. Persistent diazinon induced neurotoxicity: The effect on inhibitory avoidance memory performance, amyloid precursor proteins, and TNF-α levels in the prefrontal cortex of rats. Human & Experimental Toxicology. 2024;43. doi:10.1177/09603271241235408
- Persistent neurobehavioral and neurochemical anomalies in middle-aged rats after maternal diazinon exposure. Andrew B. Hawkey, Erica Pippen, Bruny Kenou, Zade Holloway, Theodore A. Slotkin, Frederic J. Seidler, Edward D. Levin, Persistent neurobehavioral and neurochemical anomalies in middle-aged rats after maternal diazinon exposure, Toxicology, Volume 472, 2022, 153189, ISSN 0300-483X, https://doi.org/10.1016/j.tox.2022.153189.
- Child and adolescent mortality associated with pesticide toxicity in Cape Town, South Africa, 2010–2019: a retrospective case review. Davies, B., Hlela, M.B.K.M. and Rother, H.-A. (2023) Child and adolescent mortality associated with pesticide toxicity in Cape Town, South Africa, 2010–2019: a retrospective case review, BMC Public Health. Available at: https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-023-15652-5.
- Pesticide residues in honey bee (Apis mellifera) pollen collected in two ornamental plant nurseries in Connecticut: Implications for bee health and risk assessment. K.P. Hester, K.A. Stoner, B.D. Eitzer, R.W. Koethe, D.M. Lehmann, Pesticide residues in honey bee (Apis mellifera) pollen collected in two ornamental plant nurseries in Connecticut: Implications for bee health and risk assessment, Environmental Pollution, Volume 333, 2023, 122037, ISSN 0269-7491, https://doi.org/10.1016/j.envpol.2023.122037.
- A cocktail of contaminants: how mixtures of pesticides at low concentrations affect aquatic communities. Relyea R. A. (2009). A cocktail of contaminants: how mixtures of pesticides at low concentrations affect aquatic communities. Oecologia, 159(2), 363–376. https://doi.org/10.1007/s00442-008-1213-9
- 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.
- 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.
- Effects of the insecticides malathion and diazinon on the early oogenesis in mice in vitro. Bonilla, E., Hernández, F., Cortés, L., Mendoza, M., Mejía, J., Carrillo, E., Casas, E. and Betancourt, M. (2008), Effects of the insecticides malathion and diazinon on the early oogenesis in mice in vitro. Environ. Toxicol., 23: 240-245.

https://doi.org/10.1002/tox.20332
- Differential effects of herbicides atrazine and fenoxaprop-ethyl, and insecticides diazinon and malathion, on viability and maturation of porcine oocytes in vitro. Casas, E., Bonilla, E., Ducolomb, Y., & Betancourt, M. (2010). Differential effects of herbicides atrazine and fenoxaprop-ethyl, and insecticides diazinon and malathion, on viability and maturation of porcine oocytes in vitro. Toxicology in vitro : an international journal published in association with BIBRA, 24(1), 224–230. https://doi.org/10.1016/j.tiv.2009.09.004
- 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
- In vitro effect of malathion and diazinon on oocytes fertilization and embryo development in porcine. Ducolomb, Y., Casas, E., Valdez, A. et al. In vitro effect of malathion and diazinon on oocytes fertilization and embryo development in porcine. Cell Biol Toxicol 25, 623–633 (2009). https://doi.org/10.1007/s10565-008-9117-3
- Pesticide Use and Relative Leukocyte Telomere Length in the Agricultural Health Study. Andreotti G, Hoppin JA, Hou L, Koutros S, Gadalla SM, et al. (2015) Pesticide Use and Relative Leukocyte Telomere Length in the Agricultural Health Study. PLOS ONE 10(7): e0133382. https://doi.org/10.1371/journal.pone.0133382
- Pesticide residue in cucumber-exposed plants, and its associated effects on soil nematode population. Imonikebe, P. et al. (2025) Pesticide residue in cucumber-exposed plants, and its associated effects on soil nematode population, Advances in Modern Agriculture. Available at: https://www.researchgate.net/publication/390847748_Pesticide_residue_in_cucumber-exposed_plants_and_its_associated_effects_on_soil_nematode_population.
- An assessment of exposure to several classes of pesticides in pet dogs and cats from New York, United States. Li, Z. M., Robinson, M., & Kannan, K. (2022). An assessment of exposure to several classes of pesticides in pet dogs and cats from New York, United States. Environment international, 169, 107526. https://doi.org/10.1016/j.envint.2022.107526
- Mapping pesticide-induced metabolic alterations in human gut bacteria. Chen, L. et al. (2025) Mapping pesticide-induced metabolic alterations in human gut bacteria, Nature Communications. Available at: https://www.nature.com/articles/s41467-025-59747-6.
- Complex chemical cocktail, containing insecticides diazinon and permethrin, drives acute toxicity to crustaceans in mountain lakes. Machate, O., Schmeller, D. S., Loyau, A., Paschke, A., Krauss, M., Carmona, E., Schulze, T., Moyer, A., Lutz, K., & Brack, W. (2022). Complex chemical cocktail, containing insecticides diazinon and permethrin, drives acute toxicity to crustaceans in mountain lakes. The Science of the total environment, 828, 154456. https://doi.org/10.1016/j.scitotenv.2022.154456
- Occurrence of Current-Use Pesticides in Paired Indoor Dust, Drinking Water, and Urine Samples from the United States: Risk Prioritization and Health Implications. Xie, Y., Li, J., Salamova, A., & Zheng, G. (2025). Occurrence of Current-Use Pesticides in Paired Indoor Dust, Drinking Water, and Urine Samples from the United States: Risk Prioritization and Health Implications. Environmental science & technology, 59(25), 12507–12519. https://doi.org/10.1021/acs.est.5c00961
- Urinary pesticide biomarkers from adolescence to young adulthood in an agricultural setting in Ecuador: Study of secondary exposure to pesticides among children, adolescents, and adults (ESPINA) 2016 and 2022 examination data. Parajuli, R. et al.

(2025) Urinary pesticide biomarkers from adolescence to young adulthood in an agricultural setting in Ecuador: Study of secondary exposure to pesticides among children, adolescents, and adults (ESPINA) 2016 and 2022 examination data, Data in Brief. Available at: https://www.sciencedirect.com/science/article/pii/S2352340925006067.

- Suspect and non-targeted screening-based human biomonitoring identified 74 biomarkers of exposure in urine of Slovenian children. Tkalec, Ž., Codling, G., Tratnik, J. S., Mazej, D., Klánová, J., Horvat, M., & Kosjek, T. (2022). Suspect and non-targeted screening-based human biomonitoring identified 74 biomarkers of exposure in urine of Slovenian children. Environmental pollution (Barking, Essex : 1987), 313, 120091. https://doi.org/10.1016/j.envpol.2022.120091
- 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
- Pesticide Prioritization by Potential Biological Effects in Tributaries of the Laurentian Great Lakes. Oliver, S.K., Corsi, S.R., Baldwin, A.K., Nott, M.A., Ankley, G.T., Blackwell, B.R., Villeneuve, D.L., Hladik, M.L., Kolpin, D.W., Loken, L., DeCicco, L.A., Meyer, M.T. and Loftin, K.A. (2023), Pesticide Prioritization by Potential Biological Effects in Tributaries of the Laurentian Great Lakes. Environ Toxicol Chem, 42: 367-384. https://doi.org/10.1002/etc.5522
- Pre-conceptional and prenatal exposure to pesticides and pediatric neuroblastoma. A meta-analysis of nine studies. Khan, A., Feulefack, J., & Sergi, C. M. (2022). Pre-conceptional and prenatal exposure to pesticides and pediatric neuroblastoma. A meta-analysis of nine studies. Environmental toxicology and pharmacology, 90, 103790. https://doi.org/10.1016/j.etap.2021.103790
- Parental Pesticide Exposure and Childhood Brain Cancer: A Systematic Review and Meta-Analysis Confirming the IARC/WHO Monographs on Some Organophosphate Insecticides and Herbicides. Feulefack, J., Khan, A., Forastiere, F., & Sergi, C. M. (2021). Parental Pesticide Exposure and Childhood Brain Cancer: A Systematic Review and Meta-Analysis Confirming the IARC/WHO Monographs on Some Organophosphate Insecticides and Herbicides. Children (Basel, Switzerland), 8(12), 1096. https://doi.org/10.3390/children8121096
- Residential proximity to agricultural pesticide exposures during preconception and pregnancy and associations with Apgar scores in the Az-PEAR study (2006–2020). Yang, A. et al. (2026) Residential proximity to agricultural pesticide exposures during preconception and pregnancy and associations with Apgar scores in the Az-PEAR study (2006–2020), Journal of Exposure Science & Environmental Epidemiology. Available at: https://www.nature.com/articles/s41370-026-00849-8.
- Contributions of nearby agricultural insecticide applications to indoor residential exposures. Madrigal, J. M., Gunier, R. B., Jones, R. R., Flory, A., Metayer, C., Nuckols, J. R., & Ward, M. H. (2023). Contributions of nearby agricultural insecticide applications to indoor residential exposures. Environment international, 171, 107657. https://doi.org/10.1016/j.envint.2022.107657
- Pesticide exposure among organic and conventional smallholder farmers in Costa Rica and Uganda: biomarker evidence on exposure determinants. Petitpierre. A. et al. (2026). Pesticide exposure among organic and conventional smallholder farmers in Costa Rica and Uganda: biomarker evidence on exposure determinants, The Lancet Planetary Health. Available at: https://www.thelancet.com/journals/lanplh/article/PIIS2542-5196(25)00294-3/fulltext

Gateway Health and Environmental Effects Citations

1. European Commission. Endocrine Disruptors: Study on Gathering Information on 435 Substances with Insufficient Data. Final Report. EU DG Environment: B4-3040/2001/325850/MAR/C2. BKH Consulting Engineers: M0355037. November 2002. http://ec.europa.eu/environment/chemicals/endocrine/pdf/bkh_report.pdf#page=76.

2. 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.

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

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

6. 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.

Factsheet generated on May 24, 2026