



BEYOND PESTICIDES

701 E Street, SE ■ Washington DC 20003
202-543-5450 phone ■ 202-543-4791 fax
info@beyondpesticides.org ■ www.beyondpesticides.org

LAWN PESTICIDE FACTS AND FIGURES

A Beyond Pesticides Factsheet

PESTICIDE USAGE

- 78 million households in the U.S. use home and garden pesticides.ⁱ
- Herbicides account for the highest usage of pesticides in the home and garden sector with over 90 million pounds applied on lawns and gardens per year.ⁱⁱ
- Suburban lawns and gardens receive more pesticide applications per acre (3.2-9.8 lbs) than agriculture (2.7 lbs per acre on average).ⁱⁱⁱ
- Pesticide sales by the chemical industry average \$9.3 billion. Annual sales of the landscape industry are over \$35 billion.^{iv}
- Included in the most commonly used pesticides per pounds per year are: 2,4-D (8-11 million), Glyphosate (5-8 million), MCPP (Mecoprop) (4-6 million), Pendimethalin (3-6 million), Dicamba (2-4 million).^v
- A 2004 national survey reveals that 5 million homeowners use only organic lawn practices and products and 35 million people use both toxic and non-toxic materials.^{vi}

HEALTH & EXPOSURE RISKS

- Of 30 commonly used lawn pesticides 13 are probable or possible carcinogens, 13 are linked with birth defects, 21 with reproductive effects, 15 with neurotoxicity, 26 with liver or kidney damage, 27 are sensitizers and/or irritants, and 11 have the potential to disrupt the endocrine (hormonal) system.^{vii}
- Pregnant women, infants and children, the aged and the chronically ill are at greatest risk from pesticide exposure and chemically induced immune-suppression, which can increase susceptibility to cancer.^{viii}
- Scientific studies find pesticide residues such as the weedkiller 2,4-D and the insecticide carbaryl inside homes, due to drift and track-in, where they contaminate air, dust, surfaces and carpets and expose children at levels ten times higher than preapplication levels.^{ix}

CHILDREN & PESTICIDES

- Children take in more pesticides relative to body weight than adults and have developing organ systems that make them more vulnerable and less able to detoxify toxins.^x
- The National Academy of Sciences estimates 50% of lifetime pesticide exposure occurs during the first 5 years of life.^{xi}
- A study published in the *Journal of the National Cancer Institute* finds home and garden pesticide use can increase the risk of childhood leukemia by almost seven times.^{xii}
- Studies show low levels of exposure to actual lawn pesticide products are linked to increased rates of miscarriage, and suppression of the nervous, endocrine, and immune systems.^{xiii}
- Exposure to home and garden pesticides can increase a child's likelihood of developing asthma.^{xiv}

- Studies link pesticides with hyperactivity, developmental delays, behavioral disorders, and motor dysfunction.^{xv}
- Children ages 6-11 have higher levels of lawn chemicals in their blood than all other age categories. Biomonitoring studies find that pesticides pass from mother to child through umbilical cord blood and breast milk.^{xvi}

WILDLIFE, PETS & PESTICIDES

- Studies find that dogs exposed to herbicide-treated lawns and gardens can double their chance of developing canine lymphoma and may increase the risk of bladder cancer in certain breeds by four to seven times.^{xvii}
- Of 30 commonly used lawn pesticides: 16 are toxic to birds, 24 are toxic to fish and aquatic organisms, and 11 are deadly to bees.^{xviii}
- Pesticides can be toxic to wildlife and cause food source contamination, behavioral abnormalities that interfere with survival, and death.^{xix}
- Lawn and garden pesticides are deadly to non-target species and can harm beneficial insects and soil microorganisms essential to a naturally healthy lawn.^{xx}

PESTICIDES IN THE WATER

- Of 30 commonly used lawn pesticides, 17 are detected in groundwater, and 23 have the potential to leach.^{xxi}
- Runoff has resulted in a widespread presence of pesticides in streams and groundwater. 2,4-D, found in weed and feed and other lawn products, is the herbicide most frequently detected in streams and shallow ground water from urban lawns.^{xxii}
- Of the 50 chemicals on EPA's list of unregulated drinking water contaminants, several are lawn chemicals including herbicides diazinon, diuron, naphthalene, and various triazines such as atrazine.^{xxiii}
- Runoff from synthetic chemical fertilizers pollutes streams and lakes and causes algae blooms, depleted oxygen and damage to aquatic life.

THE REGISTRATION SYSTEM & PESTICIDE REGULATION

- The health data assessed by EPA for the registration of pesticides comes from the manufacturer of the pesticide. EPA is not obligated under the *Federal Insecticide Fungicide and Rodenticide Act* (FIFRA) to review peer-reviewed scientific literature.
- The U.S. GAO has told Congress on several occasions that the public is misled on pesticide safety by statements characterizing pesticides as "safe" or "harmless." EPA states that no pesticide is 100 percent safe.^{xxiv}
- Pesticide testing protocol was developed before science fully understood the human immune and hormonal system. EPA still does not evaluate data for several neurological effects or disruption of the endocrine (hormonal) system.
- EPA does not evaluate the health and environmental effects of actual pesticide formulations sold on the shelf. Data submitted to the EPA also does not account for low-dose effects, synergistic effects with inerts or combined exposure to more than one pesticide at a time.
- Most states have preemption laws that prohibit localities from passing local pesticide-related ordinances that are stricter than the state policy.^{xxv}

"INERT" INGREDIENTS

- Pesticide products are made of an active ingredient and several inert, or other, ingredients. Inert ingredients are neither chemically, biologically nor toxicologically inert. Inerts are not disclosed to the public due to their status as "trade secrets".
- Active ingredients usually comprise only 5% of the actual product; the other ingredients make up the majority of a given pesticide product or formulation.^{xxvi}
- Inert ingredients can be more toxic to humans than the active ingredient. Ethylene chloride, a nerve poison, is an example of an inert ingredient linked with damage to the heart, eyes, liver, and adrenal glands.
- 800 out of 1200 inerts are classified as "of unknown toxicity," 57 as highly toxic due to known carcinogenicity, adverse reproductive effects, birth defects, neurotoxicity and/or other chronic effects, and 64 as potentially toxic.^{xxvii}
- 394 chemicals used as inert ingredients are listed as active ingredients in other pesticide products, and more than 200 inerts are considered hazardous pollutants and/or hazardous waste under federal environmental statutes.^{xxviii}

REFERENCES

ⁱ U.S. Environmental Protection Agency (EPA). 2004. Pesticides Industry Sales and Usage: 2000 and 2001 Market Estimates. EPA-733-R-04-001.

ⁱⁱ *ibid.*

ⁱⁱⁱ National Research Council. 1980. *Urban Pest Management*. National Academy of Sciences; Abrams, R., Attorney General of New York. 1991. "Toxic Fairways: Risking Groundwater Contamination from Pesticides on Long Island Golf Courses," Environmental Protection Bureau; Pimentel, D, et al. 1991. "Environmental and Economic Impacts of Reducing U.S. Agricultural Pesticide Use," *Handbook of Pest Management in Agriculture*, 2nd ed. CRC Press, Florida, p.679.

^{iv} EPA. 2004. Pesticides Industry Sales and Usage: 2000 and 2001 Market Estimates; U.S. Census Bureau. 2004. Services to Buildings and Dwellings: 2002 Economic Census. EC02-561-07.

^v EPA. 2004. Pesticides Industry Sales and Usage: 2000 and 2001 Market Estimates.

^{vi} The National Gardening Association and *Organic Gardening Magazine*. 2004 July. Environmental Lawn and Garden Survey.

^{vii} Beyond Pesticides Factsheet. 2005 April. *Health Effects of 30 Commonly Used Lawn Pesticides*. <http://www.beyondpesticides.org/lawn/factsheets/30health.pdf>

^{viii} EPA. 2003. Tackling a Suspected Hazard of Aging. <http://www.epa.gov/ord/archives/2003/september/htm/article1.htm> (accessed 3/4/05); U.S. EPA. 2002 Oct 31. "EPA Announces New Aging Initiative to Protect Older Persons From Environmental Health Threats." EPA Pesticide Program Update. Office of Pesticide Programs; National Research Council. 1993. "Pesticides in the Diets of Infants and Children," National Academy Press. Washington, DC.; Repetto, R., et al. 1996 March. Pesticides and Immune System: The Public Health Risk, World Resources Institute, Washington, DC.

^{ix} Rudel, Ruthann, et al. 2003. "Phthalates, Alkylphenols, Pesticides, Polybrominated Diphenyl Ethers, and Other Endocrine-Disrupting Compounds in Indoor Air and Dust," *Environmental Science and Technology* 37(20): 4543-4553; Nishioka, M., et al. 2001. "Distribution of 2,4-D in Air and on Surfaces Inside Residences After Lawn Applications: Comparing Exposure Estimates from Various Media for Young Children," *Environmental Health Perspectives* 109(11); Lewis, R., et al. 1991. "Determination of Routes of Exposure of Infants and Toddlers to Household Pesticides: A Pilot Study," EPA, Methods Research Branch.

^x EPA. 1996. Environmental Health Threats to Children. Office of the Administrator. 175-F-96-001.

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- ^{xi} National Research Council, National Academy of Sciences. 1993. *Pesticides in the Diets of Infants and Children*. Washington, DC: National Academy Press.
- ^{xii} Lowengart, R. et al., 1987. "Childhood Leukemia and Parent's Occupational and Home Exposures," *Journal of the National Cancer Institute* 79:39.
- ^{xiii} Greenlee, A. et al. 2004. "Low-Dose Agrochemicals and Lawn-Care Pesticides Induce Developmental Toxicity in Murine Preimplantation Embryos," *Environ Health Perspect* 112(6): 703-709; Cavieres, M., et al. 2002. "Developmental toxicity of a commercial herbicide mixture in mice: Effects on embryo implantation and litter size." *Environ Health Perspect* 110:1081-1085.
- ^{xiv} Salam, M.T., et al. 2004. "Early Life Environmental Risk Factors for Asthma: Findings from the Children's Health Study," *Environ Health Perspectives* 112(6): 760.
- ^{xv} Shettler, T., et al. 2000. "Known and Suspected Developmental Neurotoxicants," *In Harms Way: Toxic Threats to Child Development* Cambridge, MA: Greater Boston Physicians for Social Responsibility; Guillette, E.A., et al. 1998. "An Anthropological Approach to the Evaluation of Preschool Children Exposed to Pesticides in Mexico," *Environ Health Perspectives* 106(6); Porter, Warren. "Do Pesticides Affect Learning and Behavior? The neuro-endocrine-immune connection," *Pesticides And You* 21(4): 11-15. Beyond Pesticides, Washington, D.C. www.beyondpesticides.org/pesticidesandyou (Overview of Dr. Porter's findings published in *Environ Health Perspectives* and *Toxicology and Industrial Health*.)
- ^{xvi} Centers for Disease Control and Prevention. 2003 Jan. Second National Report on Human Exposure to Environmental Chemicals; Pohl, HR., et al. 2000. "Breast-feeding exposure of infants to selected pesticides," *Toxicol Ind Health* 16: 65-77; Sturtz, N., et al. 2000. "Detection of 2,4-Dichlorophenoxyacetic acid residues in neonates breast-fed by 2,4-D exposed dams," *Neurotoxicology* 21(1-2): 147-54; Houlihan, J., et al. 2005. *Body Burden, The Pollution in Newborns*. Environmental Working Group, Washington, D.C.
- ^{xvii} Glickman, L., et al. 2004. "Herbicide exposure and the risk of transitional cell carcinoma of the urinary bladder in Scottish Terriers," *Journal of the American Veterinary Medical Association* 224(8):1290-1297; Hayes, H. et al., 1991. "Case-control study of canine malignant lymphoma: positive association with dog owner's use of 2,4-D acid herbicides," *Journal of the National Cancer Institute*, 83(17):1226.
- ^{xviii} Beyond Pesticides Factsheet. 2005. *Environmental Effects of 30 Commonly Used Lawn Pesticides*. <http://www.beyondpesticides.org/lawn/factsheets/30enviro.pdf>
- ^{xix} Defenders of Wildlife. *The Dangers of Pesticides to Wildlife* [white paper]. 2005 April. www.pesticidefreelawns.org/resources.
- ^{xx} Restmeyer, S.J. 2003. *Ecological Pest Management: Embracing the Organic Approach to Landscape Management*. *Pesticides and You* 23(1): 11-12. Beyond Pesticides, Washington, D.C.
- ^{xxi} Beyond Pesticides Factsheet. 2005. *Environmental Effects of 30 Commonly Used Lawn Pesticides*. <http://www.beyondpesticides.org/lawn/factsheets/30enviro.pdf>
- ^{xxii} U.S. Geological Survey. 1998. *Pesticides in Surface and Ground Water of the United States: Summary of Results of the National Water Quality Assessment Program*; Gilliom R.J. et al. 1999 April. "Testing water quality for pesticide pollution," *Environ Science and Technology News*.
- ^{xxiii} EPA. "Unregulated Drinking Water Contaminants," Office of Ground Water and Drinking Water, http://www.epa.gov/safewater/dw_unregcontaminants.html (accessed 8/8/05).
- ^{xxiv} U.S. General Accounting Office. 1997. *Nonagricultural Pesticides: Risks and Regulations*. GAO/RCED-86-97; EPA. 2002. *Questions and Answers: Pesticides and Mosquito Control*. Department of Prevention, Pesticides and Toxic Substances. <http://www.epa.gov/pesticides/factsheets/pesticides4mosquitos.htm> (accessed 7/2/04).
- ^{xxv} Beyond Pesticides Factsheet. 2005. *State Preemption Laws*. <http://www.beyondpesticides.org/lawn/factsheets/Preemption Factsheet.pdf>
- ^{xxvi} Spitzer, E., Attorney General of NY. 2000. *The Secret Ingredients in Pesticides: Reducing Risk*. Abrams, R., 1991. Attorney General of NY. *"The Secret Hazards of Pesticides: Inert Ingredients."*
- ^{xxvii} EPA. *Inert Ingredients in Pesticide Products*. <http://www.epa.gov/opprd001/inerts/lists.html> (accessed 6/7/05).
- ^{xxviii} Spitzer, E., 2000.