



# BACKGROUND

To the **DECLARATION ON THE USE OF TOXIC LAWN PESTICIDES**

**National Coalition for Pesticide-Free Lawns**

April 2005

*What is a Pesticide? "Though often misunderstood to refer only to insecticides, the term pesticide also applies to herbicides, fungicides, and various other substances used to control pests." -U.S. Environmental Protection Agency*

**1. WHEREAS**, millions of pounds of pesticides are applied on lawns and landscapes each year by homeowners and landscape companies and this use is continuing to rise; and,

The latest figures from the U.S. Environmental Protection Agency (EPA) show the use of pesticides for the non-agricultural sector to be around 213 million pounds. That is roughly twenty-five percent of all pesticide use in the United States.<sup>1</sup> Homeowners alone use at least 90 million pounds of pesticides per year on lawns and gardens (Table 1.) And the trend is increasing. From 1998 to 2001, home usage of pesticides jumped by 42 percent. These figures are underestimations since they only measure the actual chemical, not the entire pesticide product formulation, which typically includes more than one chemical. Suburban lawns and gardens receive far heavier pesticide applications per acre than agricultural areas.<sup>2</sup> Homeowners apply between 3.2 to 9.8 lbs per acre of pesticides on lawns.<sup>3</sup> On average 2.7 lbs per acre of pesticides are applied on agricultural land.<sup>4</sup>

**2. WHEREAS**, scientific studies associate exposure to lawn pesticides with asthma, cancer, developmental and learning disabilities, nerve and immune system damage, liver or kidney damage, reproductive impairment, birth defects, and disruption of the endocrine system; and

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<sup>1</sup> EPA Pesticide Sales and Usage Report for 2000/2001.

<sup>2</sup> National Research Council, National Academy of Sciences, Urban Pest Management, 1980.

<sup>3</sup> Abrams, R., Attorney General of NY. "Toxic Fairways: Risking Groundwater Contamination From Pesticides on Long Island Golf Courses," Environmental Protection Bureau. 1991, p.8.

<sup>4</sup> Pimentel, D., "Environmental and economic impacts of reducing U.S. agricultural pesticide use," Handbook of Pest Management in Agriculture, 2nd ed., CRC Press, FL. 1991, p. 679.

Of 30 commonly used pesticides identified by EPA and other sources, 19 are linked to cancer or carcinogenicity, which means either animal studies or human epidemiological studies or both have associated exposure with cancer. 13 are associated with birth defects, 21 with reproductive effects such as reduced sperm counts or infertility, and 26 with liver or kidney damage. 15 can cause neurotoxicity, which impairs the central and/or peripheral nervous system and can affect a range of things from the ability to learn to chronic fatigue. And 11 are suspected, probable, or known endocrine (hormonal) disruptors. Endocrine disruptors affect the development and function of cells and tissues and are associated with neurological, developmental and reproductive health problems in both humans and animals. Extremely small doses can cause problems depending on the timing of exposure such as during critical stages of fetal and newborn development, puberty, adolescence and other growth stages. Almost all of the commonly used pesticides, 27, are considered sensitizers and/or irritants, which means exposure may cause inflammation on contact or cause a person or animal to develop an allergic reaction to various chemicals, a condition also known as chemical sensitivities.<sup>5</sup>

In 1993, the National Academy of Sciences determined exposure to toxic substances before or after birth is one of several risk factors that appear to make certain children vulnerable to one or more psychological disorders.<sup>6</sup> Animal studies link pesticides to hyperactivity and developmental delays, behavioral disorders and motor dysfunction.<sup>7</sup> Studies also show that mixtures of insecticides, herbicides and fertilizers commonly used on lawns are capable of suppressing immune parameters, changing hormone levels, and altering behavior patterns, particularly in children. Links have also been drawn between miscarriages and exposure to low levels of lawn chemicals.<sup>8</sup> Asthma, the number one chronic illness among children in the U.S., strikes 1 in 12 children and 14.3 million adults.<sup>9</sup> Pesticides are known triggers for asthma. A recent peer-reviewed study found that a child exposed to herbicides (weed killers) used on lawns within their

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<sup>5</sup> *Health Effects of 30 Commonly Used Lawn Pesticides*, Beyond Pesticides/NCAMP Factsheet, March 2005.

<sup>6</sup> National Research Council, National Academy of Sciences, *Pesticides in the Diets of Infants and Children*, National Academy Press, Washington, DC, 1993.

<sup>7</sup> Shettler, T., et al., "Known and suspected developmental neurotoxicants," *In Harms Way: Toxic Threats to Child Development*, Greater Boston Physicians for Social Responsibility: Cambridge, MA, 2000.

<sup>8</sup> Porter, Warren. "Do Pesticides Affect Learning and Behavior? The neuro-endocrine-immune connection," *Pesticides And You*. Beyond Pesticides. Vol. 21, No. 4. (Spring 2004), p. 11-15. (Overview of Dr. Porter's findings published in *Environ Health Perspectives* and *Toxicology and Industrial Health*.) <http://www.beyondpesticides.org/lawn/activist/index.htm#studies>.

<sup>9</sup> 2000. U.S. Census Bureau Special Reports. Children and the Households They Live In. <http://www.census.gov/prod/2004pubs/censr-14.pdf> (accessed 3/14/05). Stanford Hospital & Clinics. Stanford School of Medicine. Lucile Packard Foundation for Children's Health. <http://www.lpch.org/DiseaseHealthInfo/HealthLibrary/respire/abtasth.html> (accessed 3/14/05).

first year of life is nearly five times more likely to develop asthma by age five than those not exposed.<sup>10</sup>

**3. WHEREAS**, infants, children, pregnant women, the elderly, people with compromised immune systems and chemical sensitivities are especially vulnerable to pesticide effects and exposure; and

Children are more susceptible to the effects of chemicals not just because they take in more pesticides relative to their body weight than adults, but because their developing organ systems are more vulnerable and less able to detoxify toxic chemicals. Basic observation backed by EPA studies have shown that children's behavioral characteristics, such as playing on floors, rolling on the ground and frequently putting their hands and other objects in their mouths, add to their susceptibility over average adults.<sup>11</sup>

Pesticide exposure can increase vulnerability to certain cancers by breaking down the immune system's surveillance against cancer cells. Infants and children, the aged and the chronically ill are at greatest risk from chemically induced immune-suppression.<sup>12</sup> The probability of an effect such as cancer, which requires a period of time to develop after exposure, is enhanced if exposure occurs early in life. According to EPA, children receive 50 percent of their lifetime cancer risks in the first two years of life.<sup>13</sup> A study published in the *Journal of the National Cancer Institute* found that pesticides used in the home and garden increases the risk of childhood leukemia by seven-fold.<sup>14</sup>

EPA studies have confirmed that aging individuals are at heightened risk of chronic diseases and disabling conditions that may be caused or exacerbated by pesticide exposure. The elderly suffer disproportionately from the health effects of certain pollutants like pesticides than other age groups.<sup>15</sup> A study conducted by

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<sup>10</sup> Salam, MT, et al. 2004. "Early Life Environmental Risk Factors for Asthma: Findings from the Children's Health Study." *Environmental Health Perspectives*. 112(6): 760.

<sup>11</sup> National Research Council, National Academy of Sciences, *Pesticides in the Diets of Infants and Children*, National Academy Press, Washington, DC, 1993: 184-185. US EPA, Office of the Administrator, *Environmental Health Threats to Children*, EPA 175-F-96-001, September 1996.

<sup>12</sup> Repetto, R., et al., *Pesticides and Immune System: The Public Health Risk*, World Resources Institute, Washington, DC, March 1996.

<sup>13</sup> U.S. EPA. 2003. Draft Final Guidelines for Carcinogen Risk Assessment. EPA/630/P-03/001A Washington, DC. <http://epa.gov/ncea/raf/cancer2003.htm>. (accessed July 9,2004).

<sup>14</sup> Lowengart, R. et al., "Childhood Leukemia and Parent's Occupational and Home Exposures," *Journal of the National Cancer Institute* 79:39, 1987.

<sup>15</sup> U.S. EPA. 2003. Tackling a Suspected Hazard of Aging. Last reviewed 5/4/04 <http://www.epa.gov/ord/archives/2003/september/htm/article1.htm> (accessed 3/4/05). U.S. EPA. 2002. "EPA Announces New Aging Initiative to Protect Older Persons From Environmental Health Threats." EPA Pesticide Program Update 10/31/02. Office of Pesticide Programs.

the National Research Council found that pregnant women, infants, and children have a greater risk of getting sick from pesticides.<sup>16</sup>

According to a workshop of the National Academy of Sciences, 15 percent of the population has some type of allergic reaction, or sensitivity, to chemicals. A person with multiple chemical sensitivities (MCS) is hypersensitive to an unknown array of chemicals and will show symptoms from exposure levels usually tolerated by the general population.<sup>17</sup> Though not well understood by the medical establishment, MCS is recognized by The Americans with Disabilities Act of 1990. Pesticides are among the major classes of chemicals most frequently cited for causing MCS symptoms.<sup>18</sup> People with compromised immune systems have proven especially vulnerable to developing MCS following pesticide exposure. Common symptoms of MCS include headaches, blurred vision, memory loss, mental confusion, chronic fatigue, depression, intestinal problems, respiratory reactions, and multiple organ system dysfunctions.<sup>19</sup> People with MCS can easily become incapacitated or hospitalized for days or weeks as a result of a single exposure to a small amount of a chemical substance such as that caused by pesticide drift. People with MCS are constantly on the run from communities that regularly use pesticides – most notably lawn care chemicals.

**4. WHEREAS**, lawn pesticides are harmful to pets, wildlife including threatened and endangered species, soil microbiology, plants, and natural ecosystems; and,

A recent 2004 study found that certain types of dogs exposed to pesticide-treated lawns and gardens increases their risk of bladder cancer by four to seven times.<sup>20</sup> The study adds to earlier research published by the National Cancer Institute that found elevated rates of canine malignant lymphoma in dogs exposed to lawn pesticides such as 2,4-D, which is the most popular pesticide used by homeowners and the main ingredient found in “weed and feed” products.<sup>21</sup> The latest EPA assessment of 2,4-D acknowledges the susceptibility of dogs to poisoning by 2,4-D and other similarly structured lawn pesticides but does not propose any label

<sup>16</sup> National Research Council. 1993. *Pesticides in the Diets of Infants and Children*. National Academy Press. Washington, DC.

<sup>17</sup> National Academy of Sciences. “Workshop on Multiple Chemical Sensitivities, Working Group on Research Protocol for Clinical Evaluation,” National Research Council. July 1, 1987.

<sup>18</sup> The Interagency Workgroup on Multiple Chemical Sensitivity. “A Report on Multiple Chemical Sensitivity,” August 24, 1998. <http://web.health.gov/environment/mcs/VIII.htm> (accessed 4/1/05).

<sup>19</sup> American Council on Education. Health Resource Center. Modified October 1, 2001. <http://www.acenet.edu/programs/health/MCS.cfm> (accessed 3/14/05).

<sup>20</sup> Glickman, L., et al. 2004. “Herbicide exposure and the risk of transitional cell carcinoma of the urinary bladder in Scottish Terriers,” *J of the Am Veterinary Medical Assoc.* 224(8): 1290-1297.

<sup>21</sup> Hayes, T. et al. 1991. Case-control study of canine malignant lymphoma: positive association with dog owner's use of 2,4-dichlorophenoxyacetic acid herbicides. *J National Cancer Inst.* 83(17): 1226-31.

warnings to users.<sup>22</sup> Pets, especially dogs, are highly susceptible and attracted to slug and snail baits containing a neurotoxicant, metaldehyde, that at very small doses can cause tremors, seizure, and death.<sup>23</sup>

Of 30 commonly used pesticides used on lawns and landscapes, 16 are toxic to birds, 24 are toxic to fish and other aquatic organisms, 11 are toxic to bees, and 11 have the potential to disrupt the endocrine (hormonal) system in wildlife and humans. Lawn and garden pesticides are also deadly to beneficial insects and soil life vital to a naturally healthy lawn.<sup>24</sup> Most pesticides are broad spectrum, meaning the chemical kills both “pests” and harmless or beneficial species. For example, carbaryl, the sixth most widely used pesticide in the home and garden sector, is highly toxic to honey bees and especially dangerous because it can be carried back to the hive and kill newly emerged worker bees.”<sup>25</sup> Other studies show pesticides reduce earthworm populations and activity.<sup>26</sup> Pesticides that run off lawns into local waterways can kill or contaminate fish or other aquatic species that contribute to ecosystem health and serve as food for other fish. Harmful effects can occur at concentrations far below those that cause death or obvious signs of toxicity. For example, salmon are extremely sensitive to certain types of lawn pesticides (such as diazinon, carbaryl, and malathion) that can affect their ability to feed and avoid predators.<sup>27</sup>

**5. WHEREAS**, toxic runoff from chemical fertilizers and pesticides pollute streams and lakes and drinking water sources; and,

Consumer and professional landscape pesticide use both contribute to levels of pesticides found in streams and other surface water.<sup>28</sup> According to the U.S. Geological Survey (USGS), “Information now available from the first phase of the National Water Quality Assessment (NAWQA) program shows that pesticides are widespread in streams and groundwater, occurring in geographic and seasonal

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<sup>22</sup> EPA 2,4-D Risk Assessment. “2,4-D Second Report of the Hazard Identification Assessment Review Committee,” Health Effects Division. OPP-2004-1967-0023. January 15, 2005. p. 31.

<sup>23</sup> Dolder, L. 2000. Metaldehyde toxicosis. *Veterinary Med* (March 2000): 213-216.

<sup>24</sup> Environmental Effects of 30 Commonly Used Lawn Pesticides, Beyond Pesticides Factsheet, March 2005.

<sup>25</sup> Mayer, D.F. and C.A. Johansen. 1990. How to reduce bee poisoning from pesticides. Washington State University, WREP 15.

<sup>26</sup> Potter, D.A., et al. 1990. Toxicity of pesticides to earthworms (*Oligochaeta: Lumbricidae*) and effect on thatch degradation in Kentucky bluegrass turf. *J. Econ. Entomol.* 83: 2362-2369.

<sup>27</sup> Scholz, N.L., et al. 2000. Diazinon disrupts antipredator and homing behaviors in Chinook salmon (*Oncorhynchus tshawytscha*). *Can J Fisheries Aq Sciences* 57: 1911-1918.

<sup>28</sup> Voss, F.D. et al. 1999. Pesticides detected in urban streams during rainstorms and relations to retail sales of pesticides in King County, Washington. US Geological Survey report 097-99.

patterns that follow land use and related pesticide use.”<sup>29</sup> Results from the NAWQA Program also indicate that several pesticide mixtures found in urban area streams approach or exceed water quality criteria, especially in streams that experience seasonal periods.”<sup>30</sup> Studies by the USGS also show 2,4-D to be the herbicide most frequently detected in streams and shallow ground water throughout the country from home and garden use.<sup>31</sup>

Each year, approximately 11,000 tons of inorganic nitrogen and 2,100 tons of total phosphorus are transported by rivers and streams to Puget Sound and its adjacent waters in the state of Washington. Nearly 1/3 of the nitrogen and 1/4 of the phosphorus come from fertilizers. Nutrient runoff is three times higher from urban and agricultural lands than from forest land.<sup>32</sup> Transport of fertilizers and pesticides in urban areas is greatly increased by paved surfaces and storm drains.

**6. WHEREAS**, the use of hazardous pesticides is not necessary to create and maintain green lawns and landscapes given the availability of viable alternative practices and products; and,

A rapidly growing organic landscaping service industry demonstrates that there is demand for pesticide-free services and that such services can provide customer satisfaction. Accreditation and certification programs are emerging across the United States and Canada to identify trained professionals and assure quality services. Canada’s Organic Landscape Alliance, a non-profit trade association committed to the development of organic horticulture, reports a 30% increase in business by members in one year.<sup>33</sup>

Beyond Pesticides has a database of service providers that includes businesses that offer organic care. The database is primarily a tool for residents to find service providers in their state who have agreed to disclose what chemicals they use. The database is available at [www.safetysource.org](http://www.safetysource.org). The Northeast Organic Farming Association (NOFA) has an Organic Land Care Program, a joint project of the Massachusetts and Connecticut chapters that created a manual of organic landscape management standards as rigorous as the standards created for the certification of organic food by the U.S. Department of Agriculture. The NOFA program also offers an accreditation course on organic land care for landscape

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<sup>29</sup> Gilliom R.J. et al. 1999. Testing water quality for pesticide pollution. *Environ Science and Technology/News*, April 1, 1999.

<sup>30</sup> *ibid.*

<sup>31</sup> U.S. Geological Survey (USGS). 1998. Pesticides in Surface and Ground Water of the United States: Summary of Results of the National Water Quality Assessment Program.

<sup>32</sup> Inkpen, E. L. and S.S. Embrey. 1998. Nutrient Transport in the Major Rivers and Streams of the Puget Sound Basin, Washington. USGS Fact Sheet FS-009-98.

<sup>33</sup> Organic Landscape Alliance. <http://www.organiclandscape.org/>



professionals.<sup>34</sup> Washington's Coalition of Organic Landscapers is growing rapidly,<sup>35</sup> and three landscaping companies have earned King County EnviroStars highest, five-star, rating.<sup>36</sup>

**7. WHEREAS**, people have a right not to be involuntarily exposed to pesticides in the air, water or soil that inevitably result from chemical drift and contaminated runoff; and

Pesticides can drift thousands of miles in the air from the application area, into people's homes and bloodstreams, exposing them to pesticides without their knowledge or consent.<sup>37</sup> Alarming levels of pesticides are found in the indoor air and dust of people's homes. In a 2003 study, a majority of the homes sampled contained current, old and newly banned pesticides in the dust, such as pentachlorophenol (86%), DDT (65%), chlordane (53%), chlorpyrifos (18%).<sup>38</sup> Many of the pesticides found are suspected endocrine disruptors that mimic cells and can lead to several cancers and other problems. In a study of pesticides and their metabolites in urine, the Centers for Disease Control found that children ages 6-11 had six metabolites of organophosphate insecticides, three chlorinated phenols and the herbicide 2,4-D.<sup>39</sup>

Even low levels of pesticides can be dangerous. According to the American Medical Association's Council on Scientific Affairs, "Particular uncertainty exists regarding the long-term health effects of low dose pesticide exposure.... Considering these data gaps, it is prudent for homeowners, farmers and workers to limit pesticides exposures to themselves and others, and to use the least toxic chemical pesticide or non chemical alternative."<sup>40</sup>

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<sup>34</sup> Organic Land Care Committee of Connecticut and Massachusetts. Accredited Organic Land Care Professionals. <http://www.organiclandcare.net/index.php>

<sup>35</sup> Coalition of Organic Landscapers. <http://www.organiclandscapers.org/>; Ecological Landscaping Association. <http://www.ela-ecolandscapingassn.org/index.htm>

<sup>36</sup> King County Government. EnviroStars. <http://www.envirostars.com/>

<sup>37</sup> U.S. EPA. 2003. Tackling a Suspected Hazard of Aging. Last reviewed 5/4/04 <http://www.epa.gov/ord/archives/2003/september/htm/article1.htm> (accessed March 2005).

<sup>38</sup> Rudel, Ruthann, et al. "Phthalates, Alkylphenols, Pesticides, Polybrominated Diphenyl Ethers, and Other Endocrine-Disrupting Compounds in Indoor Air and Dust." *Environmental Science and Technology* 37(20): 4543-4553.

<sup>39</sup> Centers for Disease Control and Prevention. Jan 2003. Second National Report on Human Exposure to Environmental Chemicals.

<sup>40</sup> American Medical Association, Council on Scientific Affairs. 1997. "Educational and Informational Strategies to Reduce Pesticide Risks." *Prevention Magazine*. 26:191-200.

**8. WHEREAS,** numerous communities and municipalities are embracing a precautionary approach to the use of toxic pesticides and are recognizing the limitations of regulatory agencies to adequately protect people and the environment from pesticides' harmful effects.

Municipalities across the country are moving toward managing lawns and landscapes without the use of pesticides. Policies on integrated pest management abound as do policies that create pesticide-free parks, rights-of-way, and school properties. (For more details on these policies, contact Beyond Pesticides or visit the schools and lawns issue webpages.) Some, finding that such progressive changes on public lands only go so far, are setting their sights on tougher regulations for the use of pesticides on private land. A number of cities or counties are engaging in wide scale campaigns to educate the public on the plethora of alternatives available to create pesticide-free lawns.

In March 2005, EPA received over 1000 letters calling for the cancellation of “weed and feed” products during the reregistration process for 2,4-D due to the product’s contribution to environmental pollution and public health concerns. Among the letters were some from local governments and state and local agencies, such as Seattle Public Utilities, the California Regional Water Quality Board, Clark County (Washington), and King County (Washington).<sup>41</sup>

States and localities across the country are beginning to follow Canada’s lead where seventy municipalities, including Toronto, Quebec, and Halifax, have banned or severely restricted the aesthetic use of lawn pesticides on private lawns. In the U.S. at least six states – Wisconsin, Montana, New York, Vermont, Rhode Island, and Connecticut – have legislation pending that challenges state laws that prohibit local governments from passing ordinances that regulate the aesthetic use of fertilizers and pesticides on private lawns.

A 2004 national survey by the National Gardening Association and *Organic Gardening Magazine* found 5 million homeowners are currently using only organic lawn practices and products, while some 35 million people use both toxic and non-toxic materials.<sup>42</sup> A local survey in Connecticut in March 2005 showed that 68 percent of respondents were likely to change the way they care for their lawn after reading about risks or alternatives to lawn pesticides, and 62 percent said they think it is important if their neighbors may not want them to use harmful pesticides.<sup>43</sup> These surveys provide a window into the rising demand for organic/natural lawn care products and services.

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<sup>41</sup> US EPA. 2005. Risk Assessment on 2,4-D Phase 5 of 6. OPP-2004-0167.

<sup>42</sup> The National Gardening Association and *Organic Gardening Magazine*. Environmental Lawn and Garden Survey. July 2004.

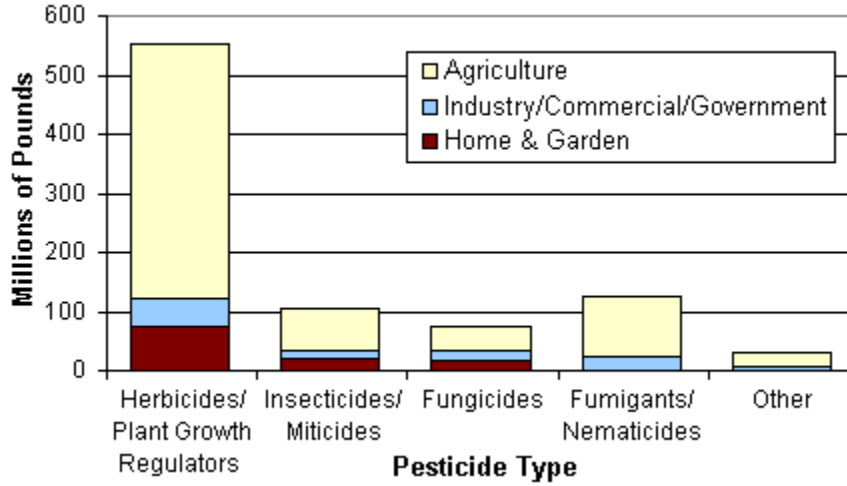
<sup>43</sup> University of Connecticut, “Freedom Lawn Survey, Town of Cheshire,” Center for Survey Research & Analysis. Sept 2004 and Mar 2005.



Table 1.

### Amount of Conventional Pesticide Active Ingredient Used in the U.S.

By Pesticide Type and Market Sector, 2001 Estimates, Figure 3.3





*The National Coalition for Pesticide-Free Lawns advocates safe, healthy, LIVING lawns and landscapes with the use of organic and least toxic practices and products that nurture lawns and landscapes and protect the health of children, families, pets, wildlife and the environment from unnecessary exposure to toxic pesticides.*

Coordination of the Coalition is a project of:

