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Lawn Pesticide Information

Introduction

For many of us, our lawns are an important part of our home. We want them to look well-groomed and cared for. Perhaps we enjoy the little bit of nature that our yards bring into our lives.

Lawn-care pesticides make it quicker and easier to create green pest-free lawns. As a nation we now spend over \$8.4 billion and use 80 million pounds of synthetic pesticides on lawn care each year,^{1,2} up to ten times as much pesticides per acre as farmers.^{3,4} But bypassing natural processes and resorting to a "quick fix" to achieve what we have come to see as the ideal lawn has troublesome consequences.

"Pesticide" is a general term for chemicals intended to kill living organisms like plants, fungi, rodents or insects. They are not "magic bullets." By their very nature they can harm other species including you, your family, your neighbors, and your pets.⁵ It is now clear that pesticides have significant risks alongside their benefits.

The information provided here gives factual findings that address many of these concerns. This information may seem surprising, even shocking, since the chemical pesticide industry makes an effort to keep this information from the public. The information that follows is a summary of numerous reports and is supported by the U.S. Federal Government, private agencies, and other experts.⁶

Health Risks of Lawn Pesticides

Children More at Risk

Children are more vulnerable to pesticides than adults because they are small and their central nervous system, immune system, and organs are still developing. Also, children are naturally curious, which leads them to touch and taste everything, including granules in the garden.

- In 1989 the National Cancer Institute reported children develop leukemia six times more often when pesticides are used around their homes.^{7,8}
- Case-control studies and case reports indicate that childhood cancers linked to pesticides include: leukemia, brain cancer, Wilm's tumor, soft-tissue sarcoma, Ewing's sarcoma, non-Hodgkin's lymphoma, and cancers of the colorectum and testes.⁹
- A study conducted by North Carolina researchers, found a four-fold increase in the risk of soft-tissue sarcoma in children whose yards were treated with pesticides, such as 2,4-D and Diazinon – both commonly used in many garden and lawn products.¹⁰
- The American Journal of Epidemiology found that more children with brain tumors and other cancers had been exposed to insecticides than children without.⁷

Adults Also at Risk

Of the 24 lawn care pesticides available off-the-shelf in Connecticut, 46% are classified as possible or probable carcinogens and an additional 17% have insufficient data to determine their cancer causing potential.¹¹

- Non-Hodgkin's Lymphoma (NHL) the second fastest-growing cancer in the U.S. has increased 50% over the past ten years. NHL has repeatedly been associated with exposure to the herbicide 2,4-D.

- A University of Iowa study of golf course superintendents found abnormally high rates of death due to cancer of the brain, large intestine, and prostate.¹² Other experts are beginning to link golfers and non-golfers who live near fairways with these same problems.¹²

What about drinking water?

Pesticides in groundwater wells are suspect for cancer clusters in many towns. In 1989, drinking water in at least 38 states was known to be contaminated with pesticides.⁷ A study of pesticide contamination of wells in Woodbridge, Connecticut by Environment and Human Health, Inc. found that of 53 residential wells tested, traces of pesticide were found in 11% of the tested wells.¹³

After the herbicide Dacthal was applied to Long Island golf courses, it was detected in drinking water wells at levels twenty times the State's safety limits. The water also contained a dioxin that is a highly toxic by-product of Dacthal.^{12 25} The New York State Attorney General sued the manufacturer in 1989 to investigate the contamination and develop a treatment program, since ground water is the main source of drinking water for Long Island. Twenty-two other pesticides have been found in the water so far. However, there is still no requirement or systematic program designed to test for drinking water contamination.^{12 14}

Did You Know About Hormone Disruption From Pesticides?

The endocrine system is responsible for producing hormones to regulate vital bodily functions – including reproductive, metabolic, thyroid systems, and sexual development. The EPA is just now starting the process to consider the “endocrine disrupting” effects of pesticides.

Endocrine disrupting pesticides mimic or block hormone function in humans and wildlife. They disrupt the internal chemical message system of the body and fool it into accepting incorrect instructions that distort normal development and cause disorders such as reproductive and developmental abnormalities, immune dysfunction, cognitive and behavioral problems, and cancer. Pesticides in very small amounts, as low as one part per billion can cause hormone disruption.

The insecticide Malathion and the lawn herbicide 2,4-D, widely used by homeowners, are insistently claimed to be safe by the pesticide industry. Many people use these chemicals on their lawns and around the house where children and pets play. *Both Malathion and 2,4-D are endocrine disrupters.* Further, the EPA notes that Malathion depresses levels of the important nerve enzyme cholinesterase and classifies the chemical as a probable carcinogen.¹⁵ A study also found that use of 2,4-D on lawns tripled the risk of a dog at the residence contracting some types of cancer.¹⁶

Acute Poisoning May be More Common than You Think

Catherine Karr, a toxicologist for the National Coalition Against the Misuse of Pesticides, notes that people around the country are “beginning to link feeling terrible with the fact the neighbors had the lawn sprayed the day before”³

Symptoms of pesticide poisoning are often deceptively simple and commonly misdiagnosed as flu or allergies. They include, but are not limited to, headaches, nausea, fever, breathing difficulties, seizures, eye pains, vomiting, cramps, diarrhea, sore nose, tongue, or throat; burning skin, rashes, coughing, muscle pain, tissue swelling, blurred vision, numbness and tingling in hands or feet, incontinence, anxiety, irritability, sleep disorders, hyperactivity, fatigue, dizziness, irregular heartbeat, high blood pressure, spontaneous bleeding, and temporary paralysis.¹⁷

Unfortunately, routine blood tests do not detect pesticide poisoning. One has to suspect pesticides and perform a special test to detect them. This test is rarely performed, partially because it is expensive, and partially because doctors rarely suspect pesticide poisoning. Doctors often attribute these symptoms to stress, allergies, influenza, or an overactive imagination.⁷

How We Get Exposed to Lawn Pesticides

Have you ever gone to a garden store in the spring and experienced the acrid smell of chemicals. That smell is lawn pesticides evaporating into the air. Some pesticides release odorless and invisible toxic

vapors. In areas where lawn spraying is frequent, they can form an invisible toxic smog throughout the entire season.

Pesticides do harm by being absorbed on the skin, where they are able to attack the central nervous system and other essential organs. In addition to skin penetration from pesticide drift and vapor or from direct contact, pesticides can be absorbed by humans and wildlife by inhalation of pesticide drift and vapor; ingestion of contaminated drinking water; ingestion by children from mouthing contaminated objects or fingers; and ingestion by pets and wildlife from grooming or licking.

In addition to being a danger to people and pets, some portion of an applied pesticide always finds its way via rainwater runoff into local streams, rivers, lakes, and groundwater. The amount of contamination from your individual yard may not be much, but when you add it up across all the pesticide-treated lawns in a given area, it's a significant problem to the environment.

A Few Quick Facts

When the label says...

When a pesticide is labeled "biodegradable" the natural assumption that it breaks down into a harmless substance, but this is not always so. Some pesticides can persist in the soil, water, or air for extended periods. They can even last longer when tracked into your house on your shoes or by pets. Some pesticides degrade into compounds more dangerous than the original. For example, the pesticide Mancozeb degrades into a substance that the U.S. Environmental Protection Agency (EPA) has classified as a probable carcinogen.¹⁸

Pesticide manufacturers do not reveal all of what is in their mixtures. Many components are classified as "inert", which allows them to be kept hidden from the public and not listed on product labels. These are more than just fillers or solvents. "Inert" does not mean "inactive" – some inert ingredients, such as benzene and xylene, are more toxic than listed chemicals.^{19 20}

The pesticide industry also implies that "organic" means safe and natural, knowing that the term legally may be applied to any compound containing carbon and hydrogen. ChemLawn® and other lawn "care" companies and manufacturers have often been sued for fictitious claims.^{21 22 23}

Pesticides can combine or react with other chemicals in the air, water, or soil forming compounds that are not subject to testing. Further the EPA has not considered the health effects of exposures to combinations of multiple pesticides and other toxic chemicals, or their additive, synergistic or cumulative effects. The EPA has not even considered combinations of closely related pesticides, such as atrazine and simazine in setting standards or granting registration.

Does Testing and Registration Mean a Pesticide is Safe?

Most people seriously overestimate the amount of government protection regarding pesticide safety. Of the 34 most used lawn pesticides, 33 have not been fully tested for human health hazards.²⁴ If any tests are done, they are performed by the chemical manufacturers, not the EPA. David Welch, an entomologist with the EPA's Office of Pesticide Programs noted that "If a chemical company wanted to they could start with a desired conclusion, and skew the data, and the EPA would never know." Welch did a random sampling of 15 pesticide files and found 13 without proper reviews.²⁵ One third of the most commonly used lawn pesticides were illegally registered for use. Despite the fact executives of Industrial Bio-Test labs were given jail terms for faking pesticides tests, the chemicals are still on the market.⁷

Most pesticides were registered before 1972, before more stringent restrictions took effect under the revised Federal Rodenticide and Fungicide Act. Many have not gone through the revised registration process and remain to be re-evaluated. Yet these same pesticides are still on the market. Shortages in EPA funding, personnel, and interference from the pesticide industry have slowed re-evaluation of these chemicals.¹⁴

The chemical industry is extremely powerful. Even when the EPA refuses a pesticide registration, the manufacturer often files a lawsuit, which keeps the chemical on the market and wraps the EPA in red

tape.²⁵ Jay Feldman, coordinator of the National Coalition Against the Misuse of Pesticides, is well aware of this. "The EPA should be called the IPA - the Industry Protection Agency", he charges.⁵

It is also essential to understand that by law pesticide registration in the U.S.A. is not a consumer safety program.^{21 23} According to Congress, the EPA does not have testing and assessment guidelines specifically for lawn use.²⁵ EPA has admitted in court that pesticide registration does not ensure product safety. Rather, it is a balancing act of costs and risks.^{23 26 27}

For health assessment, lawn care pesticides are tested in high doses to determine the "LD-50" which is the lethal dose needed to kill 50% of the animals in the laboratory such as rabbits, dogs, guinea pigs, mice, rats, chickens, etc. Testing is also done to determine carcinogenic effects, reproductive effects and teratogenic effects. Hundreds of animals are killed for these tests and yet these tests do not give an accurate and complete picture of the health effects of pesticides. Laboratory conditions do not duplicate the conditions under which the pesticide is actually used. Further, a chemical may ultimately prove much more harmful in humans than in these animal models. It often takes decades to discover how dangerous some pesticides truly are.

Don't Be Misled

Sometimes pesticide applicators may make statements like "absolutely cannot harm children or pets" or "perfectly safe for the environment", know that these kinds of statements are misleading or simply not true.

The New York State Attorney General's Office sued Dow Elanco chemical company when they claimed that Dursban shows "no evidence of significant risk to the environment" when right on the label is stated "this pesticide is toxic to birds and extremely toxic to fish and aquatic organisms".²⁶ A few years later on May 2, 1995, the EPA fined Dow Elanco for "failing to report to the Agency information on adverse health effects (to humans) over the past decade involving a number of pesticides, including chlorpyrifos (brand name Dursban)". Most of the information came from personal injury claims against Dow Elanco which the company had hidden from the EPA. In 1993 exposure to chlorpyrifos was linked to multiple sclerosis, a degenerative disease of the nervous system.²⁸

Pesticide industries make misleading claims by stating that their chemicals are heavily diluted, failing to mention that toxins are still extremely dangerous in small amounts. Another claim states that a child would have to ingest ten cups of treated grass clippings to equal the toxicity of one aspirin. In fact, the real danger is not from eating the lawn. Most poisonings come from inhaling pesticide residues or absorbing them through the skin.¹⁸ Studies of farmers who used pesticides found alarmingly high numbers of non-Hodgkin's lymphoma, especially in those who didn't wear protective clothing. This finding supports the theory that most danger from pesticides comes through dermal absorption, not ingestion.²⁹

In some instances, pesticides similar to DDT remain active for many years, accumulate in our bodies and are released at potentially toxic levels. DDT is still showing up in higher rates in women's breast milk than the government permits in cow's milk.²⁴ Fat soluble pesticides accumulate over time in our bodies, then are released at potentially toxic levels when illness or stress results in our fat reserves being metabolized. A large portion of a woman's lifetime exposure to such pesticides is released in the breast milk for her firstborn child.³⁰

Environmental Risks of Lawn Pesticides

Are You On The Toxic Treadmill?

Using pesticides and inorganic fertilizers to create a quick fix for lawns just brings about additional problems and greater dependency on pesticides. Below are some of the reasons.

- Inorganic nitrogen-based fertilizers can kill off beneficial microorganisms that provide nutrients for grass and make the grass even more dependant on fertilizers.³¹ Inorganic fertilizers also add salt and acid to the soil. If your lawn gets too acid the grass will turn pale and thin out.

- Pesticides can also kill earthworms and other organisms that aerate soil, causing it to compact and kill grass plants. Additional doses of pesticides only make matters worse.^{32 33}
- Over time, pesticides can actually help the pests they target by also killing off their predators. Once the natural species balance is destroyed, pests proliferate, necessitating more toxic pesticides. The use of pesticides then becomes self-perpetuating.
- Insects have been best controlled by other insects for millions of years, and the lawn is no exception. Until a natural balance is restored, more and more will have to be spent each year on chemicals. This may be a good thing for the chemical companies and pesticide applicators but not so good for your health or the health of the environment.

What about broader environmental damage?

Pesticides also affect the natural balance of waterbodies. Nearly two-thirds of all streams sampled by the United States Geologic Survey (USGS) had at least one pesticide at a concentration exceeding a guideline for the protection of aquatic life. Frogs, toads, and salamanders are particularly sensitive as they absorb water and breath through their skin. Many kinds of developmental deformities have been found in amphibians and linked to pesticide exposure.³⁴ Diazinon, 2,4-D, and Mecoprop, the most frequently purchased pesticides for residential use, were detected from all study sites.³⁵

Environmental impacts on birds can be devastating. Ward Stone, a New York State Department of Environmental Conservation wildlife pathologist, has long studied bird kills from pesticides that were used according to regulation. Documented cases of owls, mourning doves, sparrows, blue birds, and many other songbirds killed by lawn chemicals are on the rise. Waterfowl that graze on grass like Canadian geese, and mallards have been poisoned in large numbers. In 1984 there were 700 wild geese found dead on a Long Island country club after it was sprayed with Diazinon.^{12 36} Pesticide exposure causes shivering, excessive salivating, grand mal seizures, wild flapping, and sometimes screaming according to U.S. Fish and Wildlife Service volunteer Diana Conger. Ward Stone likens these birds to miners' canaries, foreshadowing serious harm to humans from chemical build-up in the environment.³⁷

Fortunately, beginning January 1, 2005, Diazinon is no longer allowed for residential uses. It had been banned for use on golf courses and sod farms for years because it caused massive waterfowl deaths. Diazinon is an insecticide which has the ability to disable the nervous system by blocking enzymes essential for nerve impulse transmission.

Conclusions

The lawn care industry is a relatively recent creation of chemical corporations as a way to expand the pesticide market from agricultural uses to a whole new market - suburban lawns. Lawn care is now a multi-billion dollar industry. However, putting pesticides on lawns poses health risks that outweigh the benefits they might offer.

As Michael Sorgan, Ph.D., Chief Environmental Scientist for the New York State Attorney General, and an advocate for responsible pesticide use, puts it, "If you buy the notion that we have to accept a certain amount of risk from pesticides to safeguard the food supply, that's one thing, he notes. But with lawns, people are applying carcinogens simply for the sake of aesthetics."²⁴

Unfortunately, proper legislation and testing to protect the public regarding pesticide use is still seriously insufficient.³⁸ Therefore, the responsibility rests on you as the ultimate judge of what the acceptable levels of risk will be for their families and environment.²⁴

We are quite naturally concerned about our health and the health of our loved ones. There is ample evidence to question the safety of lawn care pesticides. This is a good reason to consider the "precautionary principle – "...that when an activity raises reasonable evidence of harm to human health or the environment, precautionary measures should be taken even if cause and effect relationships are not fully established."³⁹ Put simply, "Better safe than sorry."

There are Alternatives

Perhaps you have begun to wonder: Can I care for my land in ways that minimize its negative impact on health and the environment and yet create an environment that meets my aesthetic and recreational needs? The answer is yes.

There are alternatives that are better for both human health and the natural environment. These solutions are available, look good, are long lasting, and require less time. They include alternative landscaping and safe methods of fertilizing, and controlling pests. The Watershed Partnership is working on another report discussing alternatives to lawn pesticides.

Please consider these alternatives as a gift you can give yourself, your family, your pets, and your neighbors. Please leave a legacy as a good steward to that small piece of the earth entrusted to your care.

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