

CHEM-TOX COMMENT:

The following report on lawn pesticides was written by Nathan Diegelman of the S.T.A.T.E Foundation. This report should be used by any person or organization wishing to make changes in pesticide use policies in schools, government buildings, or even neighborhood spray policies. It is well written and clearly documents how conventional pesticide applications can cause significant illnesses over time. All pesticide health effects statements have been clearly documented, making this a reputable tool for policy change and protection of public health. We highly recommend concerned citizens write "Letters to the Editor" to their local newspapers quoting important points from this report as a "first-step" in generating public concern and understanding.

Poison In The Grass: The Hazards And Consequences Of Lawn Pesticides

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As the use of lawn chemicals and pesticides has grown, questions have arisen regarding safety hazards and environmental consequences. This report gives factual findings to help answer many of these concerns. Some of them may seem shocking, since the chemical pesticide industry has made every effort to keep this information from the public. Everything that follows in this report is documented and supported by the U.S.Federal Government, private agencies, and other experts.

Contrary to what lawn "care" companies would like people to believe, herbicides (weed killers) and other pesticides are not "magic bullets". They are broad spectrum biocides, and by their very nature can harm organisms other than targeted species. This includes homeowners and their families, neighbors, pets, and all other forms of life. The pesticide industry downplays this by claiming their chemicals are heavily diluted, but doesn't mention the toxins are still extremely dangerous in small amounts. They also are unwilling to mention 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, such as benzene and xylene, are more toxic than listed chemicals.(1,2)

Listed chemicals can be just as dangerous. They include components of war-time defoliants like Agent Orange, nerve-gas type insecticides, and artificial hormones. Some the Federal Government has even prohibited from use on it's own property. Many pesticides are not safe when dry. Water

evaporates, but most pesticides remain and continue to release often odorless and invisible toxic vapors. In areas where lawn spraying is common, they accumulate in a toxic smog throughout the entire season. Some pesticides remain active for years after application. DDT is still showing up in higher rates in women's breast milk than the government permits in cow's milk.(4) 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 metabolised. A large portion of a woman's lifetime exposure to such pesticides is released in the breast milk for her firstborn child.(37)

It is a violation of U.S. Federal law to claim pesticides are "safe when used as directed" since nothing can assure safety.(2,3,5) (However, Agriculture Canada, the federal agency responsible until recently for licensing pesticides in Canada, routinely used this statement, adding for good measure that "most pesticides are safer than table salt". Fortunately, pesticides in Canada are now licensed by Health Canada.) Some pesticides labeled "bio-degradable" degrade into compounds more dangerous than the original. Examples include Mancozeb, which degrades into a substance that is an EPA-classified probable carcinogen.(6) The pesticide industry also implies that "organic" means safe and natural (for example, "Nature's Lawn"), 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.(5-14) Many applicators are just as conniving and deceitful, using statements like "absolutely cannot harm children or pets" and "perfectly safe for the environment" to mislead the public. 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".(15) 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. Now it is even being found that chlorpyrifos causes multiple sclerosis.(38)

Some companies have even made claims that their products better the environment. "Funk" lawn care of New York has coined the phrase "Growing A Better Environment" in order to fool consumers into believing lawn chemicals pose no ecological harm. Another states "a 50-by-50 foot lawn produces enough oxygen to sustain a family of four." But this is only true with a plot of land that has tall grass and no lawn care. Pesticides, lawnmower fumes and common lawn care practices actually create a net

destruction of oxygen.(16)

The United States General Accounting Office, the investigative arm of Congress, has also tried to alert the public to lawn chemical dangers. GAO's undercover team noted many fictitious claims by many in the lawn "care" industry.(35) Many included illegal claims of product safety. Others were just deceiving, such as the ChemLawn claim that a child would have to ingest ten cups of treated grass clippings to equal the toxicity of one baby aspirin. In fact, the real danger is not that people will be grazing the lawn but that most poisonings come from inhaling pesticide residues or absorbing them through the skin.(6,7,10)

Most do-it-yourselfers are just as ignorant when it comes to proper protection and safety precautions. Studies show most don't even look at the warnings on their toxins. They don't wear gloves, goggles, or protective clothing to decrease exposure. Worse, many don't keep people off the contaminated area after chemicals are applied. Homeowners commonly use up to ten times as much pesticides per acre as farmers.(7,17) A Virginia Tech study for the state legislature found that most homeowners have no idea how much nitrogen they use when fertilizing and that they apply chemicals in ways that damage water supplies.(18)

Pesticides drift and settle during application. In the Antarctic ice pack alone there are 2.4 million pounds of DDT and its metabolites from years past.(26) Pesticides engulf the home and are easily tracked inside, readily inhaled and absorbed through the skin. They do harm by attacking the central nervous system and other essential organs. Symptoms of pesticide poisoning are often deceptively simple, commonly mis-diagnosed 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. Long-term consequences include lowered fertility, birth defects, miscarriages, blindness, liver and kidney dysfunction, neurological damage, heart trouble, stroke, immune system disorders, menstrual problems, memory loss, suicidal depression, cancer, and death. The National Academy of Sciences reports that at least one out of seven people are significantly harmed by pesticide exposure each year.(3) Increasingly, reports from many people around the country are "beginning to link feeling terrible with the fact the neighbors had the lawn sprayed the day before", notes Catherine Karr, a toxicologist for the National Coalition Against The Misuse Of Pesticides.(7) Unfortunately, except for industrial accidents, tests for pesticide poisoning are rarely

performed, partially because they are expensive. Doctors also attribute them to stress, allergies, influenza, or an overactive imagination.(3)

Many Americans are developing Multiple Chemical Sensitivity (MCS), a bizarre and extremely disabling condition. In 1979, the Surgeon General issued a report stating "There is virtually no major chronic disease to which environmental factors do not contribute, directly or indirectly." Indeed, people today are exposed to synthetic chemicals at levels unmatched at any time throughout human history. Washington Post staff writer Michael Weiskopf noted in a February 10, 1990 article that "hypersensitivity to low levels of toxic chemicals (MCS) is a serious and growing medical problem, threatening to cause significant economic consequences by disabling large numbers of otherwise healthy people." MCS is a result of the destruction of the body's ability to tolerate and synthesize chemicals after exposure to toxic substances. Victims develop extreme reactions now not only to lawn pesticides but also hair sprays, perfumes, soaps, formaldehyde, and many other common household products.(5,36) Many victims include former lawn pesticide applicators and users, their families, and children.

Sharon Malhorta, a registered nurse from Pittsburgh, would get so sick from lawn and tree spraying that she had to leave her home every spring. Otherwise she would suffer headaches, paralysis in her hands and feet, and muscle seizures. Repeated exposure caused blurred vision, speech difficulties, and severe stomach cramps. Her husband, a doctor, suspected early on her symptoms were the result of nerve damage from organophosphates, which are widely used nerve-gas type insecticides, like Diazinon. After questioning lawn companies about their products he was told they were "practically nontoxic", registered by the EPA, and not harmful to people or pets. He later discovered that the chemicals his wife was exposed to were in fact neurotoxins, and was shocked to discover there were surprisingly few EPA studies on their health effects.(19)

Karen James, a Michigan postal worker, successfully sued ChemLawn in 1988. While walking past one of their trucks, a hose ruptured and she was drenched with chemicals. The employee told her not to worry, that only fertilizers were in the spray. But soon after she became seriously ill, and her eyes and skin burned. When her symptoms of fatigue, vomiting, diarrhea, and reduced vision didn't clear up, her doctor called ChemLawn to find out what chemicals she had been exposed to. He was told no pesticides had been involved, but after tests on Karen's body tissue detected high levels of Dursban, ChemLawn admitted the truck contained pesticides. Many other suits against lawn companies are settled out of court. Frequently the settlement restrains the victim from talking about the incident, so the public is not informed.(19)

For the price of green lawns, children are also being poisoned. In 1985 a married couple in Sarasota, Florida, felt pressured by their neighbors to get their lawn treated. They hired a company, never thinking their 2-year-old daughter would be jeopardized. The company declared the yard would be safe about an hour after the chemicals were applied. However, soon after playing barefoot on the grass, the couple's daughter developed a rash all over her body, her urine turned dark brown, and she ran a high fever. Her doctor prescribed antibiotics, but her condition grew steadily worse. Her hands and feet swelled to twice normal size, blistered, and peeled. Her lips turned black and bled. Years later she is still permanently prone to headaches and has 40% hearing loss in her right ear.(19)

Barry and Jackie Veysey believe lawn chemicals were responsible for the death of their baby son. Barry was a professional turf master, and the chemicals he worked with may have mutated his sperm or poisoned the infant in utero. Every time Jackie washed her husband's uniforms, the chemicals may have been absorbed through her skin and permeated the placenta. The child was born with a severe and fatal type of dwarfism. Jackie held her son only once before he died due to massive failure of his underdeveloped organs.(19)

Kevin Ryan from Arlington Heights, Illinois, feels like a prisoner in his home. "I can't even play in my own yard because the neighbors spray their lawns and trees", he says. Kevin suffered routine chemical exposure as a toddler from lawn spraying, and now suffers nausea, irritability, fatigue, and loss of memory whenever pesticides are nearby. His family moves to Colorado every spring and fall, the peak spraying times of the year, to keep him safe.(19,20)

In 1986, Robin Dudek of Hamburg, New York pulled the garden hose off her lawn and used it to fill a wading pool for her daughters Amanda, 3, and Kristen, 2. Earlier her lawn had been sprayed with chemicals. When Amanda started drinking from the hose, she began to scream that the water was burning her. Then Kristen began crying and screaming as well. Robin took the children inside and noticed burn marks on both of them, as well as the smell of chemicals on Amanda's breath. The girls later suffered from fevers, swollen eyes, and blisters the size of grape clusters around their necks.(19)

Christina Locek was a professional ice skater and pianist before her health was destroyed in 1985, when her neighbor's lawn was sprayed with pesticides. Her cat and dog died that same day, and she suffers headaches, partial paralysis, vision loss, and blood disorders.(21) Former Navy Lieutenant George Prior developed a fever, headache, and nausea after

playing on a golf course treated with Daconil. It was later discovered he was suffering from toxic epidermal necrolysis, which causes skin to fall off in sheets and massive organ failure. Prior died soon after.(6,8)

According to the EPA, 95% of the pesticides used on residential lawns are possible or probable carcinogens.(3,22) In 1989 the National Cancer Institute reported children develop leukemia six times more often when pesticides are used around their homes.(3,22) The American Journal of Epidemiology found that more children with brain tumors and other cancers had been exposed to insecticides than children without.(3) Studies by the National Cancer Society and other medical researchers have discovered a definite link between fatal non-Hodgkins Lymphoma (NHL) and exposure to triazine herbicides (like Atrazine), phenoxyacetic herbicides (2,4-D), organophosphate insecticides (Diazinon), fungicides, and fumigants; all of which have uses as lawn chemicals. This may be an important contributing factor to the 50% rise in NHL over the past ten years in the American population. Studies of farmers who once used these pesticides found alarmingly high numbers of NHL, especially in those who didn't wear protective clothing. This latest finding also proves the theory that most danger from pesticides comes through dermal absorption, not ingestion.(23) 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.(4) Other experts are beginning to link golfers, and non-golfers who live near fairways, with these same problems.(8,24)

Documented cases of pesticides in groundwater wells are suspect for cancer clusters showing in many towns. In 1989, drinking water in at least 38 states was known to be contaminated.(3) 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(8,19). 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.(3,25) 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. That's got to change".(4)

Pesticides and chemical fertilizers are becoming some of the worst water pollutants in America. Discharges into San Francisco Bay from the central

valley of California are estimated at almost two tons per year.(26)
Phosphorous levels in some Maryland streams have doubled since 1986. And
an

EPA study found potentially harmful levels of nitrate from chemical fertilizers in drinking water wells nationwide. This can cause blue-baby syndrome , an oxygen-depriving condition in infants that can be fatal.(18)
Environmental impacts are also devastating. Ward Stone, a DEC 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 like Canadian geese, mallards, wood ducks, and others have suffered even worse. In 1984 there were 700 brant found dead on a Long Island country club after it was sprayed with Diazinon.(8,27)
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.(28)

Most people seriously overestimate the amount of protection given them by governments regarding pesticide safety. Congress found that 90% of the pesticides on the market lack even minimal required safety screening.(3) Of the 34 most used lawn pesticides, 33 have not been fully tested for human health hazards.(4) If any tests are done, they are performed by the chemical manufacturers, not the EPA. "If a chemical company wanted to, they could start with a desired conclusion, and skew the data, and the EPA would never know", notes David Welch, an entomologist with the EPA's Office of Pesticide Programs. Welch did a random sampling of 15 pesticide files and found 13 without proper reviews.(19) 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.(3) Shortages in funding, personnel, and interference from business has slowed re-evaluation of these chemicals.(25) Even when the EPA does refuse a pesticide registration, the manufacturer often files a lawsuit, which keeps the chemical on the market.(19) 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. The chemical industry is extremely powerful, and wraps the EPA in red tape. It is also essential to understand that by law pesticide registration in the U.S.A. is not a consumer safety program.(9) 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.(1-5,7-9,15,22) Most lawn pesticides were registered before 1972,

when more stringent restrictions took effect under the revised Federal Rodenticide and Fungicide Act. They were never tested for many human health hazards like carcinogenicity, neurotoxicity, and environmental dangers. Most, as previously stated, have yet to be re-evaluated, yet remain on the market.

Read the labels on many lawn pesticide products, sprayed by lawn companies or sold in stores, and you will find one or more of the following: 2,4-D, Captan, Diazinon, Dursban, Dacthal, Dicamba, and Mecocrop. Each was registered without full safety screening. 2,4-D is an artificial hormone that has become a synonym for "dangerous pesticide", but dermal absorption of mecoprop is far more dangerous, and dicamba is much more persistent in the environment - a mixture of these three is usually used, not 2,4-D alone. Diazinon has been banned for use on golf courses and sod farms due to massive waterfowl deaths but is still widely used on lawns and gardens. It is an organophosphate which disables the nervous system by blocking enzymes essential for nerve impulse transmission.

People can protect themselves and their families by knowing the facts. If having grass that looks more like Astroturf than living plants still seems essential, it doesn't have to come with pesticides but is possible with products or programs that are organic and natural. This list of alternatives continues to grow, and they are safer, cheaper, and often work better than pesticides.(3,5) Ringer Corporation vice president Fred Hunt markets natural fertilizers and microbes that kill pests. "We just don't think a lot of these chemicals are necessary for aesthetic use on homeowners' lawns", he reveals.(7) Chemicals add salt to the soil and kill beneficial nitrogen-fixing microorganisms that provide necessary nutrients for grass, turning a lawn into a junkie.(29) Each quick fix of green creates a dependence for the next. Synthetic fertilizers kill earthworms and other organisms that aerate soil, causing it to compact and kill grass plants. Inorganic nitrogen-based fertilizers also promote the sprouting of weeds.(30) Compounds in chemical fertilizers also acidify the soil and aid in breeding of some insects. Lawns need a soil pH between 5.6 and 7 or else they turn pale and thin out. Additional doses of chemicals will only make matters worse.(31,32) Recycling grass clippings saves money, reduces waste, and according to Lawn Institute Director Eliot C. Roberts is equivalent to three applications of fertilizer a year without unhealthy chemicals and their side-effects. Natural fertilizers are also better because they are time released, allowing grass to grow slower and tougher, requiring much less care.

Insects have been best controlled by other insects for millions of years, and the lawn is no exception. Insecticides often kill more beneficial insects than problem ones. Once the natural balance is destroyed, continued

reliance on insecticides will occur. This is also true of weed killers. When a crabgrass stand is killed with an herbicide, there will still be thousands of seeds ready to start anew.(31) In the long run, pesticides can actually help the very pests they target by also killing their predators, and their use becomes self-perpetuating. Until a natural balance is restored, more and more will have to be spent each year on chemicals, and resistant pests may also invade. Using alternative strategies will bring better results and be kinder to the environment. Integrated Pest Management gives simple, long-lasting solutions which require no chemicals, much less money, and much less time and effort. Many alternatives not explored here can be found in the books and articles listed at the end of this report.

What makes a plant a "weed" is often only a matter of opinion. For instance, it was once a sign of prestige to have clover in a lawn. Their flowers and silky green leaves were once prized by homeowners, as was their natural production of nitrogen fertiliser, and clover seed was sold by the bushels, alone or mixed with grass seed. It wasn't until a chemical company discovered a pesticide that killed clover but not always grass and launched an enormous advertising campaign that clover became no longer fashionable. As a result, people today ignore its fine qualities, even though throughout the 1950s it was "common as bluegrass".(33)

A growing list of over 9,000 Americans are participating in the National Wildlife Federation Backyard Wildlife Habitat program. By growing tall grasses, they attract a dazzling array of wildflowers, butterflies, and birds, creating habitats that are the aesthetic match of any manicured lawn. Suggestions on what to plant to best attract wildlife can be obtained from the Fish & Game Department of any state in the country.(34)

The lawn pesticide industry is a very recent creation by chemical firms to expand the market for aging farm chemicals. These products are not necessary for use on lawns and pose serious ecological and human health risks that outweigh any benefits they offer. Integrated Pest Management strategies offer alternatives that work better and have less harmful effects. Proper legislation to protect the public regarding pesticide use is still seriously insufficient.(35) Therefore, the responsibility rests on the public to be the ultimate judge of what the acceptable levels of risk will be for their families and environment.(4)

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