ENVIRONMENTALLY SPEAKING

Peter Schwartzman

Must we poison ourselves again this spring?

Did the title grab your attention? Well, the following article is more polemical than most I author. However, our collective behavior deserves a gut check every once in a while. So here it is.

Spring brings many things. A host of these are very desirable, especially for those of us who have been cooped up in our homes for the past three months. How many of us have feverishly wished for a favorable weather forecast so that we can plant flowers, ride bikes, walk dogs, orchestrate lawns, and listen to chirping birds? Yet, spring also brings us a medley of a different sort—a toxic soup of chemicals. Much of this soup isn't thrust upon us from the outside; disturbingly, we choose to expose ourselves, our children, our neighbors, and our pets to these harmful chemicals. In the late 1980s, Americans were spending over $700,000,000 on pesticides (cumulatively weighing over sixty-five million pounds) for use on their lawns alone (1). One would think that properly informed humans wouldn't make such unhealthy and selfish decisions.

Before we can change our ways, we need to consider the reasons why so many of us willingly volunteer to poison our communities each and every growing season. The reasons why we choose to spray, pour, or sift noxious chemicals on our lawns and gardens are varied and complex. Some of us have adopted a weed-free lawn as a cultural imperative. Most of the commercials advertising chemicals and chemical treatments speak of evil weeds that must be eliminated in order for a uniform lawn to be achieved. Others of us just want our roses or irises to produce spectacular blooms this summer, and, once again, we are told that pesticides are a prerequisite for this to happen. Others of us innocently assume that our government or neighborhood stores wouldn't allow the sale of chemicals that might be harmful to us when they are used in recommended ways. And, others, most peculiarly, seem to enjoy filling up their garages with "chemicals of mass destruction."

Whatever the reasons chosen to use the hoards of chemicals available in our local hardware stores, they are ill-conceived at best, and unknowingly pernicious at worst. You see, most of the chemicals that we use on our lawns and gardens are neurotoxins, endocrine disrupters, immune inhibitors, teratogens, or carcinogens—in other words, they interfere with our brains, our hormone and antibody production, and/or cause birth defects or cancer. Shockingly, many of them haven't even been tested to determine exactly what impact they do have on us. According to U.S. Environmental Protection Agency (EPA), "most pesticides have not been adequately tested to determine their effects on people or the environment" (2). How is this possible? Simply put, when it comes to thousands of chemicals, the U.S. government largely puts the onus on us (the citizens) to show that they are *too* dangerous rather than asking companies that manufacture them to show that they are safe. In the area of pesticide production, chemicals do not need to (and therefore generally don't) undergo a battery of safety tests. Unfortunately, an increasing body of evidence suggests that these chemicals would fail such tests.

We should be suspicious of the chemicals recommended for lawns and gardens for three reasons. First, key elements of the chemical industry have violated public trust in the past. Second, many chemicals that were once considered "safe" have been subsequently been banned or restricted in use. And third, as a general principle we should avoid introducing toxic chemicals into the environment. The web of life is complicated and as we tear it at our peril.

We live in an industrialized society. Nearly everything we consume (e.g., water, food, paper, etc.) has been produced rather than simply gathered. The chemical industry plays a key role in modern production but documents recently obtained under the Freedom of Information Act reveal that it has not always fulfilled that role with concern for the public interest. Since the 1950s, many chemicals were produced and sold to the public despite awareness by the chemical companies of their hazardous qualities, including, but not limited to, carcinogenicity. Indications are that consumers continue to be misled into buying products that expose themselves and their neighbors to present (and future) danger.

Past indiscretions do not by themselves say anything about current practices, but they should makes us wary. Reinforcing this fear are accusations from a recent meeting of the New York Academy of Sciences, where pesticide makers were attacked for attempting to avoid greater restrictions on their products by funding research on adults rather than children; due to the former's lower susceptibility to harm.

Lawn "care" and garden products may produce the intended results—monocultural lawns and untarnished blooms. Yet they do so at great human and ecological cost. A quick look at a few of the more commonly used chemicals should indicate how serious a problem exists.

Diazinon is an organophosphate insecticide that was widely used until a phaseout began in December 2000. According to the EPA, it is "very highly toxic" to birds and is considered one of the chief causes of bird kills. Diazinon (also marketed under the names Ortho, Spectracide, and Real-Kill) is known to attack the nervous system and is thought to pose a special threat to children (3). Over 13,000,000 pounds of Diazinon were applied before the phaseout; eighty percent of which was done by homeowners. In 1999, Diazinon was the 5th most widely used active ingredient in the pesticides used by the public.

The phaseout of Diazinon is the product of a "compromise" reached between the EPA and the chemical company manufacturing it. Interestingly, the EPA previously banned the use of Diazinon on golf courses in 1988, yet allowed it to be sold to homeowners till 2000. (If something is found to be dangerous, why must we allow companies to continue to sell it? We don't let fast food restaurants phase out the sale of burgers that are suspected to contain *E-coli*, do we?) In a classic example of spin reporting, one of the primary makers of Diazinon, Syngenta, recently claimed that declining profit margins were the reason for the withdrawal of this chemical from the marketplace, noting that all tests had shown it to be safe.

The chemical **2,4-D** is found in over 1,500 lawn care products. One of the two major components of Agent Orange, a toxic defoliant used by the U.S. Military during the Vietnam War, 2,4-D is strongly linked to the development of non-Hodgkin's lymphoma and breast cancer. These links were recognized by the EPA as far back as 1989, yet, unexplainably, it is still available and used extensively. In fact, it is currently the most widely used active ingredient among pesticides. Scary.

And last, on the short list of poisons presented here, is MCPP, a common lawn herbicide. Currently the third most widely applied active pesticide ingredient among homeowners, MCPP has been designated a teratogen (birth defect generator) by the EPA. Other studies have linked MCPP to learning disabilities, vomiting and nausea, as well as cancer, particularly of soft tissues and non-Hodgkin's lymphoma. Despite this, roughly four millions pounds of MCPP were applied to our yards (and therefore, our soils, our waterways, and our atmosphere) last year.

While the dangers these chemicals pose to us all should be enough to grab everyone's attention, things get even more troubling when one realizes that unborn and young children are the most vulnerable to them. How so? Well, the fetus isn't fully protected by the defenses available to the mother and several chemicals have even been shown to traverse the umbilical cord. Young children are more at risk for several reasons. They are more likely to frolic and roll in the grass or on the indoor floors and carpets where residues of chemicals brought from the outside are found. According to Dr. Landrigan, a director of the Mount Sinai Center for Children's Health and the Environment, children "pound for pound of body weight ... drink more, eat more and breathe in more than adults" (2). Thus, their bodies are exposed to more pollutants than the rest of us. Children are also more vulnerable, according to Landrigan, because their organs are still growing and developing. When we pollute our neighborhoods, we should do knowing that we are largely hurting those that have most to lose and the least to gain from our behaviors.

Another characteristic of many pesticides is that they are bioaccumulative—that is, they build up in concentration in the body with time. The more insecticides, rodenticides, and herbicides we use, the more concentrated they become in the fatty tissues of breasts, liver, and bone. Unfortunately, the mantra "the dose is the poison" (i.e., the dangerous consequences of chemicals become visible only at high concentrations) that dominated the public health approach to exposure to toxins appears to be wrong in many cases. Scientists have shown that even a one time exposure, at an inopportune moment of fetal or childhood development can cause permanent and irreversible damage (4).

Independent of human health considerations, which should be strong enough to move us in a different direction, ecological concerns also speak strongly against pesticide use. When we use these chemicals we make our lawns "addicted" to them. Most pesticides are not super-selective in those they kill. As such, not only do they destroy the "weeds" that are their enemies, they also kill many microbes in the soil that significantly reduce its health. Many of these microorganisms provide natural pest control, keeping intruders to a minimum. So, eliminating them only necessitates the use of more pesticides. Once a lawn becomes hooked on the pesticide, it can be properly described as an addiction. The loss of these organisms also reduce the habitat for other larger animals, who rely on "weeds" for sustenance. For those that cherish a lawn that has only one species and hordes of chemicals, they have the toughest road to walk.

A look at a few common myths might also help establish the seriousness of our lawn behaviors. *Myth 1: Farms use heavier doses of pesticides than do suburban home owners.* Nationally, about half of families use yard and garden weed killers. A study in nearby Missouri suggests that 98% of families apply pesticides as least once per year and a disheartening ~66% apply them at least five times a year (5). In the U.S., more pesticides are applied per acre in the suburbs than on agricultural land (6). Why might this be? Farmers are generally more knowledgeable and selective about what they use, in part because pesticides are a significant portion of their production costs.

Myth 2: The most commonly used pesticides for lawn care are safe; it is only the unusual and hard to find ones that should concern you. Many of the most commonly sold over-the-counter pesticides contain some of the more dangerous or potentially dangerous (i.e., poorly understood but suspected to be problematic based on molecular structure) chemicals—the three pesticides highlighted earlier serve as examples. This is not surprising. Consider that consumers are often more interested in knowing whether the treatment works (i.e., kills the intended pest) than whether it is safe for themselves and/or other wildlife. Because chemical research has produced pesticides that are selective for particularly pests, they are indeed quite effective at eliminating them. Hence, the user will see the effects of the slaughtered enemy more readily than they will see other environmental damage associated with the use of the chemicals—which normally is more subtle and delayed. When the need arises, a satisfied customer will purchase the same product again and again.

Myth 3: As long as one follows the instructions on the container carefully, a pesticide is absolutely safe. Absolutely not! According to a recent statement by New York State Attorney General Eliot Spitzer, "pesticides pose health risks, even when applied in full compliance with manufacturer's recommendations and legal requirements" (2). Worse yet, a U.S. Senate investigation found that 50% of pesticide users do not even read the safety information contained on the labels (1).

At this point you have either been convinced there is a problem or skeptical about the presentation. Either way, you may be wondering if alternatives exist. Let's take a quick look at some that do. Options exist for those that are ready to make a change to a cleaner, healthier, and more considerate way of living. Unfortunately, if you have been using chemicals for a while, it will take longer for you to bring things back to a healthy state. Don't let that discourage you. The first place to start is in the soil which needs rebuilding. A contaminated soil has likely lost many of the critters that are required for a sustained, natural, healthy existence. Applying organic fertilizer a few times should do the trick. If you are dealing with a lawn, you want to be careful to mow (if you must) only when grass has reached three inches or so. Mowing too often and before grass has been able to grow sufficiently delays a lawn's recovery. If you can learn to tolerate a few "weeds," and are able to diversify your lawn with plants that are indigenous to an area, you will have a healthier and more natural lawn as a result. If you must get rid of "pests," there are many non-chemical ways to accomplish this feat. Interested readers are recommended to visit either of these websites for further information: http://home.attbi.com/~s-little or http://www.beyondspesticides.org. In the end, you will decide what works for you. But I ask you, respectfully and earnestly, to consider alternatives to pesticides. If you choose to reduce or eliminate their usage, you have taken a major step to creating a healthier environment for your family and your neighbors, be they humans, vines, critters or fowl. May we all have a wonderful, chemical-free spring.

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