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Pesticides *and* You

The Threat to Scientific Integrity at EPA

The “revolving door” and collusion between the regulated chemical industry and U.S. Environmental Protection Agency regulators has reached new heights in the first year of the Trump Administration.

Fertilizers Compatible with Organic Landscape Management

The market for soil health management grows

Lawn & Garden Pesticides

Facts & Figures

Got Organic?

Grown in nature with soil or factories in water solution?

Trump Administration Bows to Chemical Industry, Increasing Pressure for Local Action

We have entered an era of outsized chemical industry influence over the federal regulatory process. This means we can expect lax or no federal regulation of pesticides that have known adverse effects. As companies mislead the public, regulators, and scientific journals, the disclosures of their behavior are overlooked or deemed “fake news.” This is a period when more responsibility falls to state and local governments to intervene with measures that protect their residents. It is now a time when the public plays a critical role in demanding corporate responsibility to meet standards of public health and environmental protection that are being ignored by the regulators.

EPA Ignores Science

If there was any sense that the Trump Administration would work to protect public health, workers, and the environment from pesticides, the decision to reverse EPA’s proposal to stop remaining agricultural uses of the insecticide chlorpyrifos dashed those hopes in March. That’s when EPA Administrator Scott Pruitt announced that EPA was reversing an EPA decision in 2015 to revoke food residue tolerances of chlorpyrifos, due to the chemical’s neurotoxic impacts, especially brain damage in children exposed. This action would have effectively banned chlorpyrifos from agriculture, after all residential uses were withdrawn from the market in 2000.

The Associated Press reported in July that, “Records show the Trump administration’s top environmental official met briefly with the chief executive of Dow Chemical [Andrew Liveris] shortly before reversing his agency’s push to ban a widely-used pesticide after health studies showed it can harm children’s brains.” Dow is reported to have donated \$1 million to the President’s inauguration. Mr. Liveris showed up in a June newspaper photo of President Trump handing him the pen he used to sign an executive order. Meanwhile, Dow asked the administration to set aside previous findings of federal scientists across multiple agencies that confirm the risks that organophosphate pesticides pose to about 1,800 critically threatened or endangered species. The administration is asking a federal court to delay an Endangered Species Act decision. And, the chemical industry has been given key positions at EPA that oversee pesticides and toxic chemical regulations, including the appointment of Nancy Beck, Ph.D. from the American Chemistry Council. Our piece in this issue on industry influence and the revolving door provides more details.

Corporate Corruption

Meanwhile, the public has learned that sound science is being undermined by the chemical industry with the release of internal Monsanto documents, raising questions about the company’s efforts to hide information about adverse effects of

its popular glyphosate herbicide, Roundup. This follows on the heels of the March 2017 unsealing, by a federal judge, of internal Monsanto documents—the “Monsanto Papers.” The documents raise questionable research practices by the company, inappropriate ties to a top EPA official, and the “ghostwriting” of “independent” research published in a scientific journal. This latest release, more than 700 documents, was disclosed by one of many law firms representing thousands of families who tie exposure to Roundup to non-Hodgkin lymphoma (NHL), a blood cancer, in their family. Lawsuits against Monsanto have been triggered, in part, by the 2015 finding of the World Health Organization’s International Agency for Research on Cancer (IARC) that glyphosate is “probably carcinogenic to humans.” These findings have been challenged by industry and members of Congress, as IARC scientists fired back with a defense of the scientific integrity of their work.

Facilitating the Transition to Organic

As the debate on the credibility of EPA’s oversight, and chemical industry efforts to undermine sound science escalate with the disclosures cited in this issue of *PAY*, Beyond Pesticides continues to elevate the transition to organic practices with the publication of our new *Fertilizers Compatible with Organic Landscape Management* list. We have compiled this list to identify sources of inputs that supplement practices essential to supporting soil biology and the natural cycling of nutrients in the management of healthy lawns and parks, landscapes, and gardens. The list complements our list of *Products Compatible with Organic Landscape Management*, which identifies organic compatible insecticides, herbicides, and fungicides.

The Importance of Local Action

Meanwhile, the dire situation of EPA’s dismantling calls for a dramatic increase in corporate accountability in the marketplace. We are seeing an attack on organic emerging, most recently with USDA allowing hydroponic food production to carry the organic seal. This is happening at a time when there is increasing awareness of the need to advance production systems that regenerate the earth, sequester carbon, and protect and enhance biodiversity—while hydroponics meet none of these critical needs. We need to ask those who produce and sell the food we buy whether it is hydroponically grown.

We look forward to collaborating with you and wish you all the best in the new year!



**Jay Feldman, executive
director of Beyond Pesticides**

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Moving Your HOA Off the Toxic Treadmill

Beyond Pesticides,

I've just received notice that they're going to be spraying pesticides in my homeowner association (HOA) next week. They said this is their "fall treatment time" and the chemicals they'll be using are the "safest on the market," but it looks like they contain glyphosate, and there's one that has three different active ingredients in it. Is there anything I can do to stop this?

Tina, San Diego, CA

Hi Tina,

We're sorry to hear about this planned spraying. First and foremost, pesticides should never be sprayed on a set schedule. Prophylactic "fall treatment" of pesticides is contrary to good land management practices that are specific to site needs and build soil health. Decisions in integrated and natural pest management are based on monitoring and threshold levels. Pest management should be conducted within a preventive system of organic practices that prevent pest problems with only organic compatible pesticides and soil fertility. This is the best method to ensure that local residents and wildlife are not exposed to toxic chemicals. Further, if the pesticides being used contain glyphosate or other synthetic pesticide mixtures, they are certainly not the "safest on the market." Glyphosate and the other herbicides you mention, usually used in a mixture of 2,4-D, MCPP, and dicamba, are linked to a range of serious adverse health effects in people. They have not been tested in combination with nondisclosed "inert" ("other") ingredients (which can be highly toxic), or the additional active ingredients in the products being used on the property.

Beyond Pesticides maintains a list of products compatible with organic landscape management. [See bp-dc.org/organic-compatible.] All product inputs, however, should only be used in the context of an organic soil management system. Even if next week's spraying cannot be stopped, you should voice your concerns and make suggestions for alternative practices and products, as you develop a base of supportive neighbors in the process of educating the community. Use Beyond Pesticides' website to research the chemicals your HOA is using, and write a letter or email to the HOA board about your concerns. Include factsheets on the hazards of the pesticides being used and the organic approach, as well as the alternative product list, to explain that there are other ways to maintain great looking, weed-free turf without toxic synthetic chemicals.

If the HOA board is receptive to hearing more about an organic approach, see whether you can find a local organic

SHARE WITH US!

Beyond Pesticides welcomes your questions, comments or concerns. Have something you'd like to share or ask us? We'd like to know! If we think something might be particularly useful for others, we will print your comments in this section. Mail will be edited for length and clarity, and we will not publish your contact information. There are many ways you can contact us: Send us an email at info@beyondpesticides.org, give us a call at 202-543-5450, or simply send questions and comments to: 701 E Street SE, Washington, DC 20003.

lawn care expert to speak with the board. Use Beyond Pesticides' Safety Source database [see bp-dc.org/safetysource], or search for one online. If the service provider you find is not in Safety Source, ask the company fill out our questionnaire so that we can review its practices and products. Arrange an opportunity for them to speak with the board about their services. If you have difficulty getting a positive response from your HOA board, begin organizing your neighbors. Express your concerns on the local listserv, and/or set up a petition online in favor of organic lawn care management in the community. It is also a good idea to speak with your neighbors face to face. Once you explain the hazards of pesticide use and benefits of the organic approach, you're likely to get a more positive response than you think. If you're still having trouble getting the HOA board to act, consider running for a seat on the board. Getting elected to your HOA board will show that the community is serious about this issue. Distribute Beyond Pesticides' safe lawn door hangers. As with all organizing effort, research, broad engagement with stakeholders, and perseverance will ultimately win out.

Healthy Hospitals, Inside and Out

Beyond Pesticides,

I was blown away during my last trip to visit my husband at our local hospital. I saw a pest control truck out front and asked some of the nurses, only to find out that they actually spray pesticides inside the hospital—around sick people! Not only that, on my way out, they were spraying the lawn! It seems like common sense not to use toxic chemicals around sick people, but now I'm thinking it is happening at hospitals across the country! What can be done to stop this?

Penny, Indianapolis, IN

Hi Penny,

We are in full agreement with your concern and outrage. Given the range of non-toxic pest management techniques available both for buildings and landscapes, there is no reason for hospitals to spray toxic chemicals around sick patients who are especially vulnerable to toxic chemical exposure. Hospitals have a special obligation to establish safe pest management systems that uphold the medical profession's Hippocratic Oath, "first, do not harm." At over 5,500 hospitals in the U.S., over 100 million people are admitted each year, and that doesn't include friends, family, and staff who visit these facilities and are also exposed to pesticides. Beyond Pesticides has a long-standing program aimed at taking the toxic pesticides out of our health care system. After writing the report, *Healthy Hospitals: Controlling Pests without Harmful Pesticides*, we've worked closely with a number of hospitals in the Mid-Atlantic region, in collaboration with the Maryland Pesticide Education Network, to reduce and eliminate unnecessary pesticide use by instituting

toxic-free pest management practices inside their facilities. Pest management at hospitals is most often a contracted service, hired through a low-bid process without any input from medical personnel. Like any organizing effort, we encourage you to work with those who make pest management decisions—hospital administrators and environmental services staff. Doctors and nurses are generally helpful allies. In addition to discussing health effects like those in Beyond Pesticides' *Pesticide Induced Diseases Database* [see bp-dc.org/PIDD], you can present them with resources from our Healthy Health Care webpage [see bp-dc.org/healthcare], including our reports and training videos.

FROM THE WEB

Beyond Pesticides' Daily News Blog features a post each weekday on the health and environmental hazards of pesticides, pesticide regulation and policy, pesticide alternatives and cutting-edge science, www.beyondpesticides.org/dailynewsblog. Want to get in on the conversation? "Like" us on Facebook, www.facebook.com/beyondpesticides, or send us a "tweet" on Twitter, @bpncamp!

Excerpt from Beyond Pesticides' original blog post

(05/12/2017): Reports of Increasing Honey Bee Colonies Mask Continuing Pollinator Crisis. New data released by the U.S. Department of Agriculture (USDA) earlier this month, indicating a slight increase in the number of honey bee colonies, is masked by beekeepers' efforts to split hives in the face of losses.

Ann comments via Facebook: "This has been an ongoing catastrophe since the early 1980s. I didn't know what it was at the time when I walked out on my front door and found about 20 bees dead on my porch."

Maggie comments via Facebook: "It is so horrifying to go for a walk where I live and see dead bees all over the sidewalk. I do not understand why people feel the need to use pesticides or have lawn services that spray them. People seem to think it's a status symbol. Makes me wonder about the lawns their kids are playing on and what is inside their homes."

Excerpt from Beyond Pesticides' original blog post

(11/15/17): With the organophosphate chlorpyrifos and the neonicotinoid imidacloprid applied to millions of acres of farmland throughout North America, new research adds weight to arguments that pesticides are linked to the decline of migratory bird populations..

Vicki comments via Facebook: "The continued use of these poisons has been known to be harmful to living things and not just weeds and insects? Rachel Carson would be crying if she was still alive?"



Trump Administration Delays Action on Pesticides and Organic

The Trump Administration is asking a federal court to delay a prior agreement that the National Marine Fisheries Service (NMFS) issue findings by the end of 2017 on the risk of three highly toxic organophosphate pesticides to endangered species. The move is widely seen as influenced by the chemical industry, particularly the new agricultural conglomerate DowDuPont. The settlement agreement arose from a 2014 lawsuit filed by the Center for Biological Diversity. Earlier this year, EPA released its first biological evaluation analyzing “nation-wide effects” of the three chemicals, as required by the settlement agreement, finding that chlorpyrifos and malathion are likely to have a detrimental effect on 97% of endangered species, with diazinon likely to adversely affect 78%.

Vietnam veterans suffering from certain Agent Orange-related health conditions will continue to wait for compensation. U.S. Department of

Veteran Affairs (VA) Secretary David Shulkin announced in November that he intends to delay a decision to expand coverage to new illnesses arising from past exposure to the toxic herbicide cocktail Agent Orange used in the Vietnam War. Although the VA currently covers health care related to 14 conditions, veterans suffering from hypothyroidism, high blood pressure, tremors without a Parkinson’s diagnosis, and bladder cancer have been denied compensation. Despite a National Academy of Medicine (NAM) recommendation, Secretary Shulkin will “further explore new presumptive conditions for service connection that may ultimately qualify for disability compensation.”

Agriculture Secretary Sonny Perdue continues to delay implementation of the final rule on animal welfare in organic production. The effective date of the final rule published on January 19, 2017, delayed on February 9, and

again on May 10, is now delayed until May 14, 2018. By setting minimum indoor and outdoor space requirements and defining “outdoors,” the rule will make it more difficult for factory egg and poultry farms to be certified organic. Although many wished it to be stronger, more than 40,000 agriculture groups, farmers, and others urged the U.S. Department of Agriculture (USDA) to finalize the standard, while only 28 commenters opposed it. The Organic Trade Association sued USDA in September for failing to finalize the standard.

National Academy of Sciences Urges EPA to Study Low-Dose Endocrine Disruption

A new report by the National Academies of Sciences, Engineering, and Medicine (NAS) recommends to the U.S. Environmental Protection Agency (EPA) a strategy to evaluate the evidence of adverse human health effects from low-dose exposure to chemicals that can disrupt the endocrine system. EPA’s Endocrine Disruption Screening Program (EDSP) is years behind schedule and has been criticized for using outdated methods.

NAS finds that since endocrine disruption can occur at very low doses—lower than those used in traditional toxicity testing—EPA misses some effects. A systemic review of human and animal data by a NAS committee of scientists and medical researchers demonstrates how low-dose results can be integrated and assessed. The NAS report proposes: surveillance to detect signals of possible health effects, investigation and analysis of existing and new data, and action

to update chemical assessments or toxicity testing designs and practices. Although EPA is already conducting many activities consistent with the proposed strategy, its efforts fall short in evaluating low doses.

Endocrine disruptors are substances that can disturb normal hormone function. Even small alterations in hormone concentrations, particularly during embryonic development and developmental phases of life, can have lasting and significant health effects, including behavioral and learning disorders, such as attention deficit hyperactivity disorder (ADHD), birth defects, obesity, early puberty, infertility, cardiovascular disease, and childhood and adult cancers. Endocrine disrupting chemicals (EDCs), declared a global health threat by the United Nations Environment Programme (UNEP) and the World Health Organization (WHO), cost the U.S. more than \$340 billion annually in health care costs and lost wages.

Bill to Ban Neurotoxic Chlorpyrifos Introduced in Congress

In view of the failure of the Environmental Protection Agency (EPA) to act, U.S. Senators Tom Udall (D-NM) and Richard Blumenthal (D-CT), and U.S. Representative Nydia Velázquez (D-NY) introduced in July a bill to ban use of the insecticide chlorpyrifos. Introduction of the *Protect Children, Farmers and Farmworkers from Nerve Agent Pesticides Act*, S. 1624, and the related bill in the U.S. House of Representatives bill, H.R. 3380, *Pesticide Protection Act of 2017*, came one week after an appeals court refused to require EPA to decide whether to ban the chemical. Removing this neurotoxic insecticide from the environment would significantly reduce health risks for children and farmworkers in underserved rural communities, build pressure to address all toxic organophosphates, and help push U.S. agriculture in a more sustainable direction.

Chlorpyrifos is linked to a range of adverse health and environmental outcomes. Children are at particular risk from the chemical due to their developing immune, organ, and nervous systems. Organophosphates act on the nervous system, inhibiting the action of the neurotransmitter enzyme cholinesterase, resulting in long-term decreased motor function, impaired cognition, behavioral disorders, and lower IQ.

Many organophosphates like chlorpyrifos are also endocrine disruptors. Health risks of endocrine disruptors range from learning disorders to obesity, infertility, early onset puberty, and childhood cancers. These impacts result in organophosphate-exposed children having lower lifetime earnings, causing a “brain drain” for the economy that costs the U.S. over \$44.7 billion annually.

In March 2017, EPA Administrator Scott Pruitt reversed a pending 2015 decision to revoke food residue tolerances of chlorpyrifos due to the chemical’s neurotoxic impacts, which would have effectively banned the chemical from use in agriculture. Administrator Pruitt indicated the agency will continue to study chlorpyrifos, yet as Senator Udall said, “The science hasn’t changed since EPA proposed banning chlorpyrifos in 2015 and 2017. Only the politics have.”



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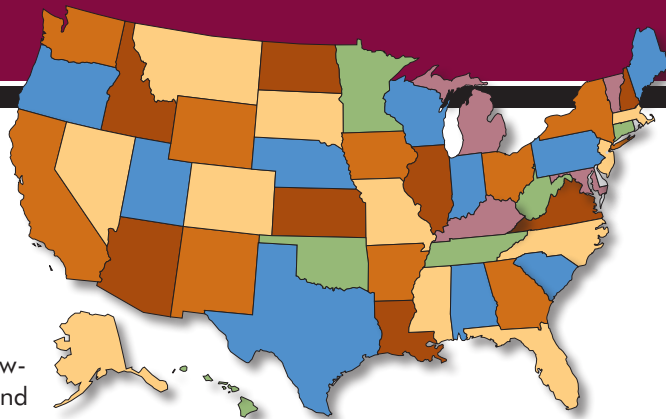
Lawsuit Filed to Protect Endangered Species from Neonicotinoid Pesticides

In October, the Natural Resources Defense Council (NRDC) filed a lawsuit challenging the U.S. Environmental Protection Agency’s (EPA) registration of three neonicotinoid pesticides—acetamiprid, dinotefuran, and imidacloprid—and its failure to consult with the U.S. Fish and Wildlife Service on their impact on threatened or endangered species. This case follows a federal court decision in May that EPA violated the *Endangered Species Act* (ESA) when it issued 59 neonicotinoid insecticide registrations between 2007 and 2012 for pesticides containing clothianidin and thiamethoxam. That case, *Ellis v. EPA*, was filed in March 2013 by beekeepers and environmental groups, including Beyond Pesticides.

The lawsuit underscores EPA’s failure to evaluate the impacts of neonicotinoid pesticides (“neonics”) on threatened and endangered species, contending that the widespread presence of neonics in the environment poses significant adverse consequences to threatened and endangered species. NRDC is challenging EPA’s registrations of pesticide products containing three neonic active ingredients—acetamiprid, dinotefuran, and imidacloprid.

The 26 species identified as listed under ESA and at risk from neonic pesticides include the federally endangered rusty patched bumblebee, Karner blue butterfly, Hines’ emerald dragonfly, black-capped vireo, and pallid sturgeon, as well as the federally threatened vernal pool fairy shrimp. Neonics are highly toxic to bees, linked to pollinator decline in general, and have been shown to adversely affect birds, aquatic organisms, soil and waterways, and overall biodiversity.

Meanwhile, there are bills in Congress to weaken ESA. The U.S. House of Representatives Committee on Natural Resources in an October Press Release stated, “Clearly, the ESA process is broken and the status quo isn’t working for species, farmers and ranchers and rural communities that depend on our natural resources.”



Arkansas Ban on Monsanto's Dicamba Herbicide Continues

Complaints of crop damage related to the herbicide dicamba have been recorded on at least 3.6 million acres of soybeans across 24 states in 2017, including 986 complaints associated with dicamba under investigation in Arkansas, 310 in Missouri, 245 in Illinois, and 250 in Minnesota. EPA believes only one in five incidents were reported to state agriculture agencies. Missouri and Arkansas announced temporary bans on the chemical during the summer.

Dicamba has been linked to damage of the kidney and liver, neurotoxicity, and developmental impacts. The chemical has a strong propensity to volatilize and drift far off site. Sensitive crop species can be damaged by dicamba at levels in the parts per million. Although Monsanto blames farmers, evidence is mounting that Monsanto's proprietary dicamba and glyphosate formulation, Xtend, does volatilize enough to cause drift damage.

On the heels of Beyond Pesticides' campaign—with thousands of people urging

the state to act in view of massive crop damage, the Arkansas State Plant Board (ASPB) voted in November to prohibit the use of dicamba in agriculture during the next growing season between April 16 and October 31, 2018, if officially approved by a subcommittee of the state legislature. According to ASPB, the overwhelming majority of the 29,000 who commented strongly supported the state's plan to restrict the herbicide. Monsanto filed a lawsuit against ASPB for the temporary ban it passed on dicamba herbicides during this current growing season. Missouri announced a continued ban of a BASF dicamba product and is considering a ban of Monsanto's herbicide. Numerous lawsuits have been filed against Monsanto and BASF by farmers and others damaged by the herbicide.

The ongoing dicamba crisis is a direct result of a chemical-intensive food production system. Monsanto describes the dicamba-tolerant genetically engineered (GE) crops as "designed to provide farmers with more consistent, flexible control of weeds, especially tough-to-manage and glyphosate-resistant weeds to maximize crop yield potential." Once viewed by industry and EPA as an

unusual occurrence, weed resistance is now acknowledged to be a serious economic problem for farmers. While the agrichemical industry can no longer ignore weed resistance to pesticides, they continue to promote more chemical applications in GE crops as the solution, despite the success of organic systems.

MD Council to Defend Cosmetic Pesticide Ban in Court

The Montgomery County, Maryland County Council voted to direct the Office of the County Attorney to appeal an August Circuit Court ruling overturning the *Healthy Lawns Act*, enacted by the Council in 2015. The law restricts the use of lawn and landscape pesticides on private and county property starting on January 1, 2018. The lawsuit, filed by the chemical industry and pest control and chemical lawn companies, did not challenge the right of the county to restrict pesticides on county land. The court ruling stated, "Maryland's comprehensive program of pesticide regulation occupies the field of pesticide use and thus impliedly preempts the ordinance." It also held that the County's ban on the application of certain pesticides on private property conflicts with Maryland law.

The county is one of the few local jurisdictions to have such restrictions. "Our Council's legal team advised us that the County would have a reasonable chance of prevailing in an appeal of the Circuit Court's decision," said Council President Roger Berliner. "It is important that the Council is allowed to protect our community from the threat posed by pesticides on private lawns.

Soybean crop damaged by herbicide (dicamba) drift.



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Moreover, the broad scope of the court's decision threatens our existing regulatory regime."

Council member George Leventhal, lead sponsor of the law, said, "Studies have linked numerous chemicals found in lawn pesticides to cancer and other serious health conditions. The Council sits as the Board of Health, but the court has ruled that we are preempted from protecting our residents from this health threat. This sets a worrisome precedent that should be overturned."

New York City Schoolchildren Challenge Roundup and Other Pesticides in City Parks

Elementary school students at New York City's PS 290 took a stand against toxic pesticide use in New York City (NYC) parks, demonstrating support for Intro 0800 to the NYC Committee on Health in early fall. The bill was introduced by Manhattan Council member Ben Kallos, who is pushing to pass it by year's end.

NYC Local Law 37, passed in 2005 to stop toxic pesticide use on City-owned and leased land, failed to capture some pesticides known to be hazardous. It restricts the use of acutely toxic and carcinogenic pesticides as defined by the U.S. Environmental Protection Agency (EPA), and developmental toxicants as defined by the state of California under Prop 65. The proposed legislation is intended to ensure more comprehensive restrictions limiting pesticides to "biological pesticides," which would be allowed if evidence shows them necessary to protect public health. City agencies are encouraged to use less toxic products on City property and required to publish an annual *Pesticide Use Report* summarizing total pesticide amounts applied. As in many cities, the Parks Department is pushing back against further restrictions, despite a lack of experience with organic management systems.



Intro 0800 amends Local Law 37 to limit the use of pesticides on New York City property to only biological based pesticides and those currently exempt from pesticide registration requirements. Reform efforts are driven by the City's increased use of the herbicide glyphosate (Roundup) after the law was passed, and the finding of the International Agency for Research on Cancer that it causes cancer. Glyphosate use in NYC peaked in 2009 and declined thereafter, yet still represents over half of pesticide use by City agencies in recent years. In 2016, glyphosate was applied over 1,000 times by the NYC Department of Parks and Recreation.

Testifying in support of Intro 0800, Beyond Pesticides suggested some clarifying amendments to provide additional tools for landscapers to achieve aesthetic goals in NYC parks without sacrificing public health. This includes the addition, under exempt materials, of those products that are allowed under the U.S. Department of Agriculture's organic certification program. The list of *Products Compatible with Organic Landscape Management* is available on the Beyond Pesticides website. Though "biological pesticides" cover a majority of least-toxic products available on the market, many active ingredients are specific to agricultural uses, and some are genetically engineered proteins used in crops, and thus not relevant to City pest management.

Studies Document Reproductive Impacts of Pesticides

Pregnant women's exposure to pesticides can endanger the success of the pregnancy and the health of infants, according to three recent studies.

Eating foods high in pesticide residue is associated with a lower probability of live births and a higher probability of pregnancy loss for women using in vitro fertilization and other techniques in attempts to become pregnant, according to research published by Harvard University doctors in the *Journal of the American Medical Association*. While eating a diet rich in fruits and vegetables remains part of a healthy lifestyle, this research shows that the chance of total pregnancy loss increases as consumption of high residue foods increases.

University of California, Santa Barbara researchers report that exposure to pesticides as a result of living near agricultural areas increases the risk of giving birth to a baby with abnormalities. Studying 500,000 birth observations between 1997 and 2011 in the San Joaquin Valley, California, the researchers find that adverse birth outcomes increased by 5–9% among those exposed to very high quantities of pesticides. For



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exposures in the top 1%, there was an 11% increased probability of preterm birth, 20% increased probability of low birth weight, with a decrease in birth weight of approximately 30 grams.

Research published in the *International Journal of Cancer* links the residential use of pesticides to an increased risk of childhood brain tumors in children. Using phone interviews and data drawn from population-based, case-control studies, the researchers determined that mothers who use pesticides in the home while pregnant increase by 1.4 times their children's risk of developing a brain tumor under the age of 15. Scientists determined that use of pesticides in the home put children at 40% increased risk of brain tumors, with insecticides being specifically linked to this increase.

Intense Pesticide Use over Three Decades Reduces Insects by 75 Percent

Insect abundance has declined by more than 75% over the last 27 years, according to new research published by scientists in PLOS One. The dramatic drop in insect biomass has led to

equally dramatic warnings from highly respected scientists and entomologists. "We appear to be making vast tracts of land inhospitable to most forms of life, and are currently on course for ecological Armageddon. If we lose the insects then everything is going to collapse," said study coauthor David Goulson, PhD of Sussex University, UK. "As entire ecosystems are dependent on insects for food and as pollinators, it places the decline of insect-eating birds and mammals in a new context," said lead author of the study, Hans de Kroon, PhD.

An earlier study published in 2013 was limited to a single nature preserve, and scientists who worked on the study described their results as an anomaly. This new study cannot be ignored. Researchers used traps to collect insects and determine their biomass. They also recorded data on weather, land use, and habitat type. The study finds that insect biomass declined significantly in mid-summer, compared to samples in early spring or fall. Despite average temperature increases due to climate change, declines persisted. Rates of decline were similar across all habitat types, despite substantial habitat variation in the abundance of insects trapped.

The authors identified agricultural intensification as a plausible cause. Typical

of fragmented landscapes across Europe, 94% of preserve sites tested are surrounded by agricultural fields. Thus, the authors suggest that the protected areas, which serve as insect sources, "are affected and drained by the agricultural fields in the broader surroundings (serving as sinks or even as ecological traps)."

This research forms a framework for understanding the impact of pesticides identified in more focused studies. An international team of scientists, the Task Force on Systemic Pesticides, has identified neonicotinoids and other systemic poisons as responsible not only for declines in insect pollinators, but global biodiversity. In the U.S., increases in herbicide use have been attributed to declines in Monarch butterfly populations.

International Cancer Agency Defends Glyphosate Cancer Ranking

The International Agency for Research on Cancer (IARC), an arm of the World Health Organization, responded to the latest industry-fueled attacks on its reputation—this time from members of Congress—in the wake of its 2015 determination that glyphosate, the most commonly used herbicide in the world, is a probable carcinogen based on sufficient evidence of carcinogenicity found in laboratory studies. Despite strong evidence against continued use of the chemical, the European Union voted in November to extend its allowance in member countries another five years, not the 15 years that Monsanto and other chemical companies wanted, and France remains committed to banning the product in its home country and throughout the European Union as soon as possible. IARC explained that it dismissed findings that glyphosate is not carcinogenic after those findings were found to be ghostwritten by Monsanto employees.



Fertilizers Compatible with Organic Landscape Management

THE MARKET FOR SOIL HEALTH MANAGEMENT MATERIALS GROWS

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The *Fertilizers Compatible with Organic Landscape Management* list identifies the range of natural fertility product suppliers that support soil fertility and soil health, which is essential to healthy plants and landscapes. The microbial activity in the soil that makes up the soil food web (including bacteria, fungi, protozoa, nematodes and micro-arthropods, earthworms, insects, small vertebrates, and plants) is foundational to the natural cycling of nutrients that sustains plant life. Organic practices feed the biological life in the soil, not the plant directly. As communities recognize the hazards of and restrict pesticides (including insecticides, herbicides, and fungicides) used to manage their parks, school grounds, playing fields, golf courses, and public spaces (see bp-dc.org/LawnPesticideFacts), land managers are rethinking how turf systems are managed.

Since chemical-intensive practices are built on the presumption that parks and playing fields require toxic chemicals and synthetic fertilizers to be managed to community expectations, thinking about the soil system is often new to land managers. While managers often test and manage soil chemistry and plant nutrients, they typically have not evaluated and nurtured the soil food web. When restrictions on pesticides are put in place to protect public health, pets, wildlife, and the environment, land managers often ask, “What products can replace those that have been taken away or restricted?” However, when transitioning to organic management, the better

question is, “What practices and products should be adopted to build healthy turf or landscapes?” The answer: A combination of soil fertility practices that nurture the soil biology, cultural practices that facilitate the natural cycling of nutrients, and products that are compatible with microbial life in the soil and organic systems. Toxic pesticides and synthetic fertility use is harmful to the soil biology, creating a dependency on toxic chemicals to solve what become unending and escalating pest problems—often referred to as the pesticide treadmill.

Beyond Pesticides has compiled the *Fertilizers Compatible with Organic Landscapes* list to assist in establishing the foundation of a healthy lawn, turf system, landscape, and garden. This list complements the list of *Products Compatible with Organic Landscape Management*, which identifies organic compatible insecticides, herbicides, and fungicides.

WHY FOCUS ON SOIL FERTILITY AND SOIL HEALTH?

The focus on soil health is a basic principle in organic agriculture that has direct applicability to all land management, including organic lawn and landscape management. The healthier the plant, the more resilient it is to the stress of playing field or park use. Organic soil systems improve water retention, reducing water consumption and making the system less vulnerable to periods of drought or low water. They also more readily sequester carbon as a food source, and slow global climate change. In organic, as defined by



Larger compost tea brewer

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the *Organic Foods Production Act*, passed by the U.S. Congress in 1990, the only inputs allowed in certified operations are those that do not adversely affect the “biological and chemical interactions in the agroecosystem, including the physiological effects of the substance on soil organisms. . .” [7 U.S.C. 6518(m)(5)]. Because of this, synthetic fertilizers are prohibited in certified organic systems. While chemical-intensive land management relies on synthetic fertilizers that are soluble chemicals taken up by the plant and prone to run-off into waterways, organic systems rely on feeding the soil microbes, which in turn produce solubilized nutrients that are absorbed by the plant. Understanding of the living soil and the launching of organic principles in agroecology go back to the field studies (1939) and publication of *The Living Soil* (1943) by agriculturist Lady Evelyn Balfour, the work of Sir Albert Howard (*An Agricultural Testament* and *The Soil and Health*), and J.I. Rodale (*Pay Dirt: Farming and Gardening with Composts*), among others.

ORGANIC MATTER AND COMPOSTED MATERIALS

In an organic system, organic matter (such as a material derived from compost or natural sources) is added to the turf or landscape and then broken down into nutrients. Author and professor David Montgomery, PhD has said of transitioning his own lawn and garden,

“The microbial life—the bacteria and fungi—were the things primarily responsible for that transformation, and they turned out to be very nutrient rich—rich in nitrogen, rich in phosphorus, and rich in the micronutrients that all life forms need. Why? Well, because they are breaking down organic matter that used to have those nutrients—used to be living matter. When nematodes and microarthropods can graze on and consume these smaller creatures, it comes out later in a transformed state that can be fairly good fertilizer. I like to think of them as tiny livestock that are manuring the soil from the inside out. We are adding all that organic matter to the yard, basically feeding our grazing animals, which are then in turn being grazed. That is essentially building up the nutrient levels in the soil through a two-step soil-food web.” (2017)



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There are important distinctions between synthetic and organic fertilizers used on lawns and landscapes

Dr. Montgomery explains the importance of the rhizosphere, which is the area around a plant’s root system that is rich with microbial life, and describes it as “one of the most life-dense zones on the planet.” Dr. Montgomery continues,

“I learned to see the rhizosphere, this life-dense zone around the roots of plants, as what we call a biological bazaar, where microbes and plants trade nutrients, metabolites, and exudates.” And, “The plants are helping to feed the microbes, the microbes are helping to nurture the growth, and, it turns out, the health of the plants. Mycorrhizal fungi, reaching out into the soil, are going out and excavating things like phosphorus, manganese, or iron from the soil, bringing it back, and trading it to the plant in exchange for a cut of the photosynthetic harvest,” Dr. Montgomery said. (See Dr. Montgomery’s *Sustaining Life: From Soil Microbiota to Gut Microbiome* at bp-dc.org/soil-life.)

BUILDING A LIST OF SOIL FERTILITY PRODUCTS

The *Fertilizers Compatible with Organic Landscape Management* list identifies categories of products and companies that are currently marketing organic fertility products to general consumers and smaller purchasers. The list also indicates whether products are available for purchase through the manufacturer’s website or must be purchased through a retailer or dealer. The list will grow over time, and readers are encouraged to send product names and companies that should be listed as the online list expands. At this time, the list does not include specific fertilizer products, but instead provides a description of each company’s specialty. While companies like Dr. Earth provide a range of consumer-friendly fertilizers for lawns and landscapes, Worm Power, for instance,

specializes solely in liquid vermicompost teas (a source of microbial life). To further assist consumers in supporting companies that go organic, the list indicates whether a company's entire product line is compatible with certified organic operations, or whether only a select number of products achieve that status. Products are often labeled as "OMRI" listed, which means that manufacturers have paid the Organic Materials Review Institute to assess the product's compliance with the *Organic Foods Production Act*. However, there are numerous products that may be determined by a materials review organization to be compatible, but are not OMRI-listed.

BUT ISN'T A FERTILIZER JUST A FERTILIZER?

There are important distinctions between synthetic (including ammonium nitrate and urea nitrate) and organic fertilizers used on lawns and landscapes. Synthetic, salt, and ammonia-based fertilizers are not good at feeding soil, and many are actually toxic to soil organisms. Employed by lawn care companies like TruGreen, these products give a lawn a quick boost and green-up, but the results are short-lived. Excessive synthetic nitrogen causes soil microorganisms to multiply rapidly, consuming available carbon and organic matter. Grass and plants become dependent on heavy influxes of nitrogen to maintain a green appearance, as well as toxic pesticides to keep weed, insect, and fungal pressures down, while soil quality continues to decline.

Organic fertilizers provide a gentle, slow release of a range of macro and micronutrients that nourish the lawn and landscape by slowly feeding soil microorganisms. As biological life in the soil grows, this microorganism "microherd" can become so productive that it begins to cycle up to two pounds of nitrogen per 1,000 square feet each month of the growing season. Thus, the focus is not on using fertilizer products to sustain cosmetic appearances, but using fertilizers that enable soil life to naturally sustain grass and landscape plants. And not only is biological life feeding plants, it is also acting to prevent pest problems by building plant resiliency. Well-maintained organic lawns grow thicker grass, which crowds out weeds, and has fewer problems with insects like grubs because predators in the soil consume eggs and larvae before they have a chance to damage turf. Over time, this approach saves money by not requiring the frequent use of expensive, petroleum-based synthetic fertilizer or toxic pesticide applications.

FROM THEORY TO PRACTICE: START WITH A SOIL TEST

The theory behind the organic approach sounds good, but how do you actually put it into practice?

Start with two types of soil tests—one for soil chemistry and another for the soil food web.

Soil chemistry. Soil chemistry tests can be performed for a small fee by state agricultural extension offices or

What nutrients do grass need?

The primary nutrients that grass needs to grow are nitrogen, phosphorus, and potassium. Calcium, magnesium, and sulfur are considered secondary nutrients. A soil test will identify the levels that are required for optimal growth, but will vary for different species, cultivars, and time of year. In an organic system, the soil organisms, if properly nurtured with natural fertility, will provide the required nutrients for the healthy turf system. Key to fertility is the facilitation of both vertical and horizontal root growth to promote a thick and resilient stand. Fertility in the fall or cooler season helps support root depth. (For other cultural practices that contribute to a healthy lawn, see *Beyond Pesticides' Lawns and Landscapes* webpage.)

national labs such as WayPoint Analytical (<http://www.waypointanalytical.com>). Organic fertility recommendations should be requested. The soil test will identify the nutrients and minerals that are deficient in the soil. pH and lime or gypsum recommendations are important because soils that are too acidic or too basic lock up important nutrients that only pH corrections can address. Most grass species like the pH around 6.5 or 7.0.

Soil biology. The soil foodweb analysis will identify the microorganisms and the organic matter content in the soil. Generally for lawns, one application of compost sometime during the growing season is the best action you can take to jump-start soil life. Apply it at a rate of roughly ½ cubic yard per 1,000 feet—you should cover the lawn with about a quarter inch of compost. Alternatively, you can employ compost tea (vermicompost tea will also work) in place of a solid compost application. For higher-quality or heavily-used grounds and fields, you will need a bit more work to develop and maintain soil life. In that case, applications of humate products (follow label directions for applications) like Humamend by Organic Approach, biological soil stimulants like Vitazyme by Vital Earth Resources, or Neptune's Harvest Turf Formula can further enhance your microherd's ability to supply nutrients to turf.

Cultural Practices. While the list of *Fertilizers Compatible with Organic Landscape Management* should prove to be a good resource for sourcing high quality organic fertilizers, products alone will not achieve the desired results. Fertilizers are only one part of a system that requires attention to cultural practices, such as mowing high, aeration, proper watering, overseeding, and dethatching. Fall is the best time to apply compost or compost tea topdressing, as well as aerating and overseeding. For more information on the cultural practices that support an organically fertilized lawn, see *Beyond Pesticides' Lawn and Landscapes* program webpage at bp-dc-org/LawnLandscape. To add companies to list, contact info@beyondpesticides.org.

Fertilizers Compatible with Organic Landscape Management			bp-dc.org/organicfertilizer	
Company	Website	Specialty	All Fertilizer Products Organic?*	Available for Purchase on Website?
Advanced Marine Technologies	http://www.countrygemorganics.com/Products.html	Sea-based Fertilizer	Yes	Yes
AgTonik	https://www.agtonik.com	Humates	Yes	No (Call/Webform/Distributor)
Anasazi Gold Organics	http://www.anasazigoldorganics.com	Humates	No	Yes
Aquasap	http://www.aquasapseaweed.com	Sea-based Fertilizers	Yes	No (Call/Webform/Distributor)
Beneficial Biologics	https://www.beneficialbiologics.com	Misc Fertilizers	No	Yes
BioAgricultural Services	http://www.bioag.com	Humates	Yes	No (Call/Webform/Distributor)
BioChar Now	http://www.biocharnow.com	BioChar	Yes	No (Call/Webform/Distributor)
Biochar Supreme	https://www.biocharsupreme.com	BioChar	Yes	Yes
BioFert Manufacturing	http://www.biofert.ca	Misc Fertilizers	No	No (Call/Webform/Distributor)
BioFlora Systems	https://www.bioflora.com	Misc Fertilizers	No	No (Call/Webform/Distributor)
BioScientific	https://www.greatbigplants.com	Misc Fertilizers	Yes	Yes
BioWorks	https://www.bioworksinc.com/index.php	Misc Fertilizers	No	No (Call/Webform/Distributor)
BlackEarth	http://www.blackearth.com	Humates	No	No (Call/Webform/Distributor)
Blessing Blends	http://www.blessingsblends.com	Compost	Yes	No (Call/Webform/Distributor)
Botanicare	http://botanicare.com	Liquid Fertilizers	No	No (Call/Webform/Distributor)
Calcium Products	http://www.calciumproducts.com	Lime/Gypsum	No	No (Call/Webform/Distributor)
California Organic Fertilizers	http://www.organicag.com	Misc Fertilizers	Yes	No (Call/Webform/Distributor)
Coast of Maine	http://coastofmaine.com	Misc Fertilizers	Yes	No (Call/Webform/Distributor)
Cold Creek Compost	http://www.coldcreekcompost.com/products	Compost	No	No (Call/Webform/Distributor)
Compost Werks	https://www.compostwerks.com	Compost	No	Yes
Converted Organics	http://www.convertedorganic.com/services	Misc Fertilizers	Yes	No (Call/Webform/Distributor)
Crop Services International	http://www.cropservicesintl.com	Misc Fertilizers	No	No (Call/Webform/Distributor)
Cutting Edge Formulations	http://www.avengerorganics.com	Misc Fertilizers	No	Yes
Cutting Edge Solutions	http://www.cuttingedgesolutions.com	Misc Fertilizers	No	No (Call/Webform/Distributor)
Down to Earth Distributors	http://downtoearthfertilizer.com	Misc Fertilizers	No	No (Call/Webform/Distributor)
Dr. Earth	https://drearth.com	Misc Fertilizers	Yes	No (Call/Webform/Distributor)
Dramm	http://www.dramm.com	Fish Fertilizer	Yes	No (Call/Webform/Distributor)
Earth Green	http://www.earthgreen.com	Humates	No	No (Call/Webform/Distributor)
Earthworm Organics	http://www.vermigrowproducts.com/home1	Vermicompost Tea	Yes	No (Call/Webform/Distributor)
EB Stone Organics	https://www.ebstone.org	Misc Fertilizers	No	No (Call/Webform/Distributor)
Eco Friendly Products	http://www.ecofriendlyonline.com	Turf Care	No	Yes
Eco Nutrients	https://www.econutrients.com	Sea-based Fertilizers	No	No (Call/Webform/Distributor)
Ecocraps	https://www.ecocraps.com	Compost	Yes	No (Call/Webform/Distributor)
Enterra Food Corporation	http://www.enterrafeed.com	Insect-based Fertilizer	Yes	No (Call/Webform/Distributor)
Envirem Organics	http://www.envirem.com/greenhousegold/index/index.html	Compost	No	No (Call/Webform/Distributor)
EnviroKure	http://www.envirokure.com	Liquid Fertilizers	Yes	No (Call/Webform/Distributor)
Environmental Care and Share	http://ecands.bio	Misc Fertilizers	Yes	No (Call/Webform)
Espoma	https://www.espoma.com	Misc Fertilizers	No	No (Call/Webform/Distributor)
E-Z Gro	http://www.ez-gro.com	Misc Fertilizers	No	No (Call/Webform/Distributor)
Fertilizers USA	http://www.fertilizersusa.com	Misc Fertilizers	Yes	Must go through distributor
Ferti-Organic	http://www.ferti-organic.com	Misc Fertilizers	Yes	No (Call/Webform/Distributor)
Fox Farm	https://www.foxfarmfertilizer.com	Misc Fertilizers	No	No (Call/Webform/Distributor)
Geoponics	http://www.geoponicscorp.com	Misc Fertilizers	No	Yes
Healthy Grow	http://www.healthygrow.com/about	Poultry-based Fertilizers	No	No (Call/Webform/Distributor)
Healthy Soil	http://www.healthysoil.com	Misc Fertilizers	Yes	No (Call/Webform/Distributor)

* If the company's entire product line is not compliant with certified organic standards, contact the manufacturer to confirm each product.

Fertilizers Compatible with Organic Landscape Management			bp-dc.org/organicfertilizer	
Company	Website	Specialty	All Fertilizer Products Organic?*	Available for Purchase on Website?
Humic Growth Solutions	http://www.humicgrowth.com	Humates	No	No (Call/Webform/Distributor)
JH Biotech	http://jhbiotech.com	Misc Fertilizers	No	No (Call/Webform/Distributor)
Jobes	https://jobescompany.com/brands/easy-gardener	Misc Fertilizers	No	No (Call/Webform/Distributor)
John and Bob's Fertilizer Company	https://www.johnandbobs.com	Misc Fertilizers	No	Yes
Jongs Organic	http://www.jongs.com	Misc Fertilizers	No	No (Link to order through web)
Juniper Farms	http://www.juniperfarms.com	Mulch/Growing Media	No	No (Call/Webform/Distributor)
Kellogg Garden products	http://www.kelloggarden.com	Misc Fertilizers	Yes	No (Call/Webform/Distributor)
LiveEarth	http://www.liveearth.com	Misc Fertilizers	No	No (Call/Webform)
Maxicrop	http://www.maxicrop.com	Sea-based Fertilizers	No	No (Call)
McGeary Organics	https://www.mcgearyorganics.com	Misc Fertilizers	Yes	Yes
Mighty Grow Organics	http://www.mightygrow.com	Misc Fertilizers	Yes	No (Call/Webform/Distributor)
MontanaGrow	https://shop.montanagrow.com	Silicon Amendments	Yes	Yes
Monterey	https://www.montereylawngarden.com	Misc Fertilizers	No	Yes
Monty's Plant Food Company	http://www.montysplantfood.com	Humates	No	No (Call/Webform/Distributor)
Nature Safe	https://www.naturesafe.com	Turf Care	No	No (Call/Webform/Distributor)
Neptune's Harvest	http://www.neptunesharvest.com	Sea-based Fertilizers	No	Yes
North Country Organics	http://norganics.com	Misc Fertilizers	No	No (Call/Webform/Distributor)
NutriAg	http://www.nutriaghomeandgarden.com	Misc Fertilizers	No	No (Call/Webform/Distributor)
OceanGrown	https://www.oceangrown.com	Sea-based Fertilizers	Yes	No (Call/Webform/Distributor)
Organic Ag Products	http://organicagproducts.com	Misc Fertilizers	Yes	No (Call/Webform/Distributor)
Organic Approach	https://www.organicapproach.com	Misc Fertilizers	No	Yes
Pacific Gro	http://www.pacificgro.com	Sea-based Fertilizers	No	No (Call/Webform/Distributor)
Premier Tech	http://www.pthomeandgarden.com	Misc Fertilizers	Yes	No (Call/Webform/Distributor)
Progressive Farms	http://www.microbemakers.com	Compost Teas	No	Yes
Purple Cow Organics	http://www.purplecoworganics.com	Misc Fertilizers	Yes	No (Call/Webform/Distributor)
Red Worm Power	https://www.redwormpower.com	Vermicompost Tea	Yes	Yes (Webform and invoice)
Reforestation Technologies International	https://www.reforest.com	Tree Fertilizers	No	No (Call/Webform/Distributor)
Safer Brand	http://www.saferbrand.com	Turf Care	No	Yes
Southern Organics and Supply	https://www.southernorganicsandsupply.com	Misc Fertilizers	No	No (Call/Webform/Distributor)
Sun Gro	http://www.sungro.com	Mulch/Growing Media	No	No (Call/Webform/Distributor)
Sustane Natural Fertilizers	http://www.sustane.com	Misc Fertilizers	No	No (Call/Webform/Distributor)
TechnaFlora Plant Products	http://www.technaflora.com/Products	Liquid Fertilizers	No	No (Call/Webform/Distributor)
Terra Fresh	https://terrafreshhome.com	Plant Extracts	Yes	Yes
The Ahimsa Alternative	http://www.neemresource.com	Neem Products	Yes	Yes
The Worm Farm	http://www.thewormfarm.net	Vermicompost	No	Yes
Therm-O-Rock	http://www.thermorock.com	Pearlite/Vermiculite	Yes	No (Call/Webform/Distributor)
Thorvin	http://thorvin.com	Sea-based Fertilizers	Yes	No (Call/Webform/Distributor)
True Organic Products	https://true.ag	Misc Fertilizers	Yes	No (Call/Webform/Distributor)
Vermicrop Organics	http://www.vermicrop.com	Vermicompost	Yes	No (Call/Webform/Distributor)
Vermitechnology	https://vermitechnology.com	Vermicompost	Yes	No (Call/Webform/Distributor)
Vital Earth Resources	http://vitalearth.com	Misc Fertilizers	Yes	No (Call/Email/Distributor)
Western Nutrients	http://westernnutrientscorp.com	Misc Fertilizers	No	Yes
Westland	http://www.westlandltd.com	Misc Fertilizers	No	No (Call/Webform/Distributor)
WisEarth Organics	https://www.wisearth.com	Misc Fertilizers	Yes	Yes
Worm Power	http://www.wormpower.net	Vermicompost Tea	Yes	Yes



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PESTICIDE USAGE

- 88 million households in the U.S. use pesticides around their home.
- Herbicides account for the highest usage of pesticides in the home and garden sector, with over 28 million pounds applied on lawns and gardens in 2012.
- Suburban lawns and gardens receive more pesticide applications per acre (3.2-9.8 lbs.) than agriculture (2.7 lbs. per acre on average).
- Pesticide expenditures (or sales) by the chemical industry average \$9 billion. Annual sales of the landscape industry are over \$53.9 billion.
- Included in the most commonly used pesticides in pounds per year are: 2,4-D (7-9 million), glyphosate/ Roundup (4-6 million), MCPP (Mecoprop) (2-4 million), pendimethalin (2-4 million), carbaryl (2-4 million).
- 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.

HEALTH & EXPOSURE RISKS

- Of the 30 commonly used lawn pesticides, 16 are probable or possible carcinogens, 12 are linked with birth defects, 21 with reproductive effects, 14 are neurotoxic, 25 cause liver or kidney damage, 26 are sensitizers and/or irritants, and 17 have the potential to disrupt the endocrine (hormonal) system.
- Pregnant women, infants and children, the elderly, and the chronically ill are at greatest risk from pesticide exposure, which can increase risk of chronic diseases.
- Scientific studies find significant pesticide residues inside homes due to drift through the air and chemicals tracked in, where they contaminate air, dust, surfaces, and carpets. Higher levels of pesticides in a child's home has been associated with higher levels of pesticide residue in their urine.

CHILDREN & PESTICIDES

- Children take in more pesticides relative to body weight than adults and have developing immune, nervous, and digestive systems that make them more vulnerable to environmental toxins.
- The President's Cancer Panel on Environmental Cancer Risk notes that leukemia rates are consistently elevated among children whose parents used pesticides in their home and garden.
- The National Academy of Sciences estimates 50% of lifetime pesticide exposure occurs during the first five years of life. A study in Cancer Causes and Control suggests that preconception pesticide exposure and possible exposure during pregnancy is associated with an increased risk of childhood brain tumors.
- Studies show low levels of exposure to lawn pesticide products are linked to increased rates of miscarriage, and suppression of the nervous, endocrine, and immune systems.

- Research finds that young infants and toddlers exposed to herbicides (weedkillers) within their first year of life are 4.5 times more likely to develop asthma by the age of five, and almost 2.5 times more likely when exposed to insecticides.
- Researchers at Cincinnati Children's Hospital Medical Center found an association between increasing exposures to commonly used synthetic pyrethroid insecticides and attention deficit/hyperactivity disorder (ADHD), with a higher association in boys than girls.
- 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.

WILDLIFE, PETS & PESTICIDES

- A study published in *Environmental Research* found that dogs whose owners' lawns are professionally treated with pesticides are associated with a significantly higher risk of canine malignant lymphoma.
- Of the 30 commonly used lawn pesticides: 22 are toxic to birds, 14 are toxic to mammals, 30 are toxic to fish and aquatic organisms, and 29 are deadly to bees.
- Pesticides can be toxic to wildlife and cause food source contamination, behavioral abnormalities that interfere with survival, and death.
- Lawn and garden pesticides are deadly to nontarget species and can harm beneficial insects and soil microorganisms essential to a naturally healthy lawn.
- Home and garden insecticides in the neonicotinoid class have been linked to pollinator decline, with harm to bees' reproduction mobility, navigation, feeding, foraging, memory and learning.

Lawn and garden pesticides . . . harm beneficial insects and soil microorganisms essential to a naturally healthy lawn.

PESTICIDES IN THE WATER

- Of the 30 commonly used lawn pesticides, 19 are detected in groundwater, and 20 have the potential to leach.
- In a U.S. Geological Survey study of glyphosate contamination in 38 states, scientists detected the chemical in more than 50% of samples of sediment, ditches and drains, precipitation, large rivers, and streams.
- Half of shallow wells within the U.S. have detectable levels of pesticides, while 20% of private wells contain at least one contaminant at levels of potential health concern.
- After the Canadian Province of Ontario implemented restrictions on the use of pesticides, a government report found a staggering decline in herbicide concentrations. Median concentrations for herbicides 2,4-D, dicamba, and MCPP, commonly used by both private individuals and lawn care companies, declined by 81%, 83%, and 71%, respectively.
- In addition to harming pollinators, neonicotinoid contamination has been detected in rivers, lakes, and streams in 29 states, at levels that can result in detrimental effects to keystone aquatic organisms and the entire aquatic food web.
- Runoff from synthetic chemical fertilizers pollutes streams and lakes and causes algae blooms, depleted oxygen and damage to aquatic life.





**Organically managed playing field
in Marblehead, Massachusetts.**

© Joy Feldman

Most states have preemption laws that prohibit localities from passing ordinances that restrict pesticides on private property more stringently than the state policy.

THE REGISTRATION SYSTEM & PESTICIDE REGULATION

- The health data assessed by the U.S. Environmental Protection Agency (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.
- EPA often registers pesticides through a program called “conditional registration.” In these cases, the agency permits a pesticide to go to market without all of its required data on health and environmental impacts because the agency assumes that no harm will result as it waits for this data. The U.S. Government Accountability Office (GAO) has criticized the agency for this process, noting that EPA “does not have a reliable system...to track key information related to conditional registrations.”
- EPA’s evaluation of endocrine (hormone) disrupting pesticides is years behind schedule and has been

criticized for using outdated methods. The National Academy of Sciences has urged the agency to alter its approach to adequately address the low dose impacts of these chemicals.

- EPA only tests the active ingredient in pesticide formulations. Despite the fact that a pesticide product can contain multiple ingredients, the agency does not look at synergistic effects. Science shows that combinations of active ingredients can increase or decrease the toxicity of a product, but this impact is simply not evaluated by the agency.
- Most states have preemption laws that prohibit localities from passing ordinances that restrict pesticides on private property more stringently than the state policy.

“INERT” INGREDIENTS

- Pesticide products are made of an active ingredient and several “inert,” or other, ingredients. “Inert” ingredients are not 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.
- “Inert” ingredients can be more toxic to humans than the active ingredient. Polyethoxylated tallow amine, or POEA, often found in Roundup formulations with glyphosate, is an example of an “inert” ingredient linked to damage to embryonic, placental and umbilical cord cells.
- After a 2006 proposal by EPA to disclose “inert” ingredients allowed in pesticide formulations, the agency retracted its original intent and released information about only 72 of the 371 “inerts” allowed in pesticide product formulations. EPA further indicated the disclosed “inerts” were no longer in use.

For cited version, see bp-dc.org/LawnPesticidesFacts.

The Threat to Scientific Integrity at EPA

COMMENTARY

Chemical industry influence pervasive at the agency in the last year

The “revolving door” and collusion between the regulated chemical industry and U.S. Environmental Protection Agency (EPA) regulators has reached new heights in the first year of the Trump Administration. With chemical industry insiders and advocates for dismantling EPA taking leadership positions at the agency, there is a clear breakdown in the use of independent science, a deference to industry interests, and a failure to take action to protect public health and ecosystems.



THE REVOLVING DOOR THREATENS ENVIRONMENTAL PROTECTION

The passage of the nation's environmental statutes empowered EPA with broad mandates to protect air, water, land, and people. However, EPA's failures in carrying out these mandates have been documented in reports by the U.S. Government Accountability Office (formerly the U.S. General Accounting Office), EPA's own Inspector General, and the media. Despite many dedicated employees, EPA's mission has been corrupted by the "revolving door"—former EPA officials and lawmakers taking lobbying positions with the industry that advance policies that weaken environmental regulations or create exemptions for polluters.¹

FORMER EPA STAFF, INDUSTRY CONSULTANT, NOW NOMINATED TO EPA POSITION

The Trump Administration's nominee for EPA Assistant Administrator for Chemical Safety and Pollution Prevention, Michael L. Dourson, PhD, has spent a good deal of his career helping companies resist constraints on their use of potentially toxic compounds in consumer products, which could present significant conflicts of interest.² His nomination is awaiting a Senate hearing, as of this writing.

Dr. Dourson's professional history provides an example of the "revolving door." He started as a staff toxicologist at EPA in 1980. By 1989, he headed a pesticides and toxics group, supervising scientists who support EPA's regulatory work. In 1995, Dr. Dourson started his consulting group, Toxicology Excellence for Risk Assessment (TERA), performing work for chemical companies, producing research and reports that often "downplayed the health risks posed by their compounds."³

When hired by Dow AgroSciences, the manufacturer of chlorpyrifos, Dr. Dourson and his researchers produced three papers claiming flaws in peer-reviewed studies linking delays

in fetal development with chlorpyrifos exposure.⁴ EPA Administrator Scott Pruitt overruled the findings of his agency's own scientists to reverse an effort to ban chlorpyrifos, claiming the science is "unresolved" and deciding it would push off any finding on the pesticide to 2022.

OTHER EXAMPLES OF THE REVOLVING DOOR

Former Louisiana Senator David Vitter sponsored legislation in 2016 to "reform" the federal Toxic Substances Con-

trol Act (TSCA) and subsequently joined a firm that lobbies on behalf of industry, including the American Chemistry Council. Nancy Beck, formerly a senior director at the American Chemistry Council, became, in Spring 2017, the Deputy Assistant Administrator of EPA's Office of Chemical Safety and Pollution Prevention, a position that does not require Senate confirmation.

Nader Elkassabany, PhD, former branch chief of the Risk Assessment and Science Support Branch in the Antimicrobial Division in EPA's Office of Pesticide Programs, left EPA to join CropLife America as senior director of environmental policy, where he helps to manage the pesticide industry trade association's Environmental Risk Assessment Committee and its working groups. CropLife America has been an aggressive advocate for pesticide dependency.

Perhaps the highest profile example of the revolving door is Michael Taylor, JD, former vice-president for public policy at Monsanto, and current Deputy Commissioner for Foods and Veterinary Medicine, Food and Drug Administration (FDA). Mr. Taylor's appointment to FDA by the Obama administration in 2009 sparked outrage from environmentalists because of his ties to the biotech giant Monsanto. From 1998 until 2001, Mr. Taylor served as the vice president for public policy at the company, and is credited with paving the way for the explosion of genetically engineered (GE) crops in the marketplace.

DOCUMENTS SHOWING COLLUSION SURFACED IN 2017

In a lawsuit against Monsanto by cancer victims who link their non-Hodgkin's lymphoma to exposure to glyphosate-based herbicides—in particular, Monsanto's Roundup—a federal judge unsealed documents showing collusion between officials at EPA and Monsanto to fight a cancer classification for glyphosate. The documents were released in two actions—in March

and August—and have come to be called the “Monsanto Papers.” The documents include Monsanto’s internal emails and email traffic between the company and federal regulators and implicate Monsanto as the ghostwriter of research that was later attributed to academics.

The released files show that Monsanto was told about the IARC cancer classification by a deputy division director at the EPA, Jess Rowland, before the report was released, allowing the company to be prepared with a public relations assault on the finding before its publication.⁵ According to Monsanto’s internal emails, Mr. Rowland had promised to fend off efforts by the Department of Health and Human Services (HHS) to conduct a separate review of the chemical, which never ended up occurring. The documents show a refusal by both EPA and HHS to protect public health over industry interests and advance the science on issues such as carcinogenicity of chemicals.

The Monsanto papers add to evidence of collusion in “The Poison Papers” (<https://www.poisonpapers.org>)—a project of The Bioscience Resource Project (BRP) and the Center for Media and Democracy (CMD) that makes public more than 20,000 documents obtained through legal discovery in lawsuits against Dow, Monsanto, EPA, the U.S. Forest Service, the U.S. Air Force, and pulp and paper companies, among others. These papers show that both industry and regulators understood the dangers of many chemical products and worked together to conceal this information from the public and the press.

REAL-LIFE IMPACTS OF COLLUSION: Did Dow Chemical Influence the EPA Administrator’s Decision to Reverse Chlorpyrifos Ban?

EPA Administrator Scott Pruitt met privately with Dow Chemical’s CEO several weeks before reversing EPA’s tentative decision to ban chlorpyrifos. A copy of Mr. Pruitt’s schedule reveals he met with Dow CEO, Andrew Liveris, on March 9 at a Houston hotel and “twenty days later Mr. Pruitt announced his decision to deny a petition to ban Dow’s chlorpyrifos pesticide from being sprayed on food.”⁶ Of note is Dow Chemical’s contribution of \$1 million dollars to President Trump’s inauguration celebration.

EPA’s own chlorpyrifos risk assessment, which incorporates recommendations from a 2016 Scientific Advisory Panel (SAP), finds that children exposed to high levels of chlorpyrifos have brain damage, attention problems, attention-deficit/hyperactivity disorder problems, and pervasive developmental disorders.⁷ The SAP agreed with EPA that there is an association between prenatal exposure to chlorpyrifos and neurodevelopmental outcomes in children. After the 2016 review, EPA concluded that there is “sufficient evidence” that there are neurodevelopmental effects even at levels below the agency’s level of concern, and that current approaches for evaluating



chlorpyrifos’ neurological impact is “not sufficiently health protective.”

The influence of the industry is also evident in the action of the Trump Administration to ask a federal court to delay a prior settlement agreement that the National Marine Fisheries Service (NMFS) issue findings on the hazard that three highly toxic organophosphate pesticides pose to endangered species. The move is widely seen as being influenced by the chemical industry, in particular the new agrichemical conglomerate DowDuPont.

GLYPHOSATE IN FOOD SUPPLY REMAINS UNMONITORED

Despite the known risks of glyphosate exposure, the U.S. Department of Agriculture (USDA) first agreed to and then abandoned plans to monitor the U.S. food supply for the presence of glyphosate residues in March 2017. Meanwhile, independent testing of food commodities, from oatmeal products, including baby food, to honey, continues to find glyphosate residues. The federal government’s pesticide monitoring program is run jointly by USDA, FDA, and EPA.

EPA RESISTS SETTLEMENTS WITH LITIGANTS

In mid-October, EPA Administrator Scott Pruitt announced another action in his effort to remake the agency by issuing a directive that seeks to stop the practice—often referred to as “sue and settle”—of settling lawsuits with outside (often, environmental) groups. Ending the practice of “sue and settle” has long been high on the to-do lists of business groups and conservatives. Most environmental statutes contain a citizen suit provision to ensure that EPA takes appropriate timely action, and thus the practice of bringing pressure with

lawsuits has been an important tool for the public in ensuring accountability of federal agencies.

INDUSTRY INFLUENCE UNDERMINES PROTECTION FROM HORMONE-DISRUPTING CHEMICALS

Scientists at Rutgers University and North Carolina State University warn that inadequate federal testing, disproportionate industry influence, and subverted regulatory oversight threaten decades of progress on protecting people from hormone disrupting chemicals.⁸ They express the fear that EPA's Endocrine Disruptor Screening Program is facing elimination, and concern that toxics policy is being orchestrated and implemented by individuals with close ties to the chemical industry, including a former senior director of the American Chemistry Council, the main trade association for the chemical industry. Earlier this year, the National Academies of Sciences, Engineering, and Medicine (NAS) recommended to EPA a strategy to evaluate the evidence of adverse human health effects from low-dose exposure to endocrine disruptors. NAS believes that EPA's current process, which utilizes traditional toxicity testing, misses effects that occur at doses lower than those evaluated by EPA.⁹

OTHER INDUSTRY TACTICS

The revolving door and other forms of collusion may be among the most effective strategies of the industry, however other tactics are used to gain political influence. Front groups—industry representatives posing as public interest groups—are used to influence elected officials and sway public opinion.

Public Employees for Environmental Responsibility (PEER) found that scientists working with USDA do not have adequate protections from pressure and retaliation when researching issues that threaten the interests of powerful agrichemical corporations like Monsanto. The organization filed a petition for rulemaking with the agency in March, seeking to strengthen USDA's Scientific Integrity Policy and adopt best practices used in other federal agencies in order to prevent political suppression or alteration of studies.¹⁰

In a letter to the scientific journal *Critical Reviews in Toxicology*, scientists called for the retraction of a 2016 paper that refuted glyphosate's cancer risks after learning that the paper was secretly edited and funded by Monsanto, manufacturer of glyphosate. Contrary to the journal's conflict-of-interest disclosure statement, Monsanto directly paid at least two of the scientists who authored the paper, and a Monsanto employee substantially edited and reviewed the article prior to publication.

Finally, one of the most outrageous of industry's covert tactics was used by Syngenta Crop Protection. An investigative report in 2013¹¹ uncovered that the company launched a multi-million dollar campaign to discredit critics of its controversial herbicide atrazine, most notably Tyrone Hayes, PhD, whose research finds that the chemical feminizes male frogs.

CONCLUSION

As the chemical industry seeks to control the science and regulatory process that drives the public debate and restrictions on pesticide use, local communities and, in some cases, states are adopting standards that reject EPA pesticide decisions viewed as inadequate and not protective of public health and the environment. If the chemical industry is successful in introducing doubt into the scientific and community discussion on the hazards of pesticides, as it has tried to do with the glyphosate (Roundup), it only strengthens the resolve of local decision makers who embrace the precautionary approach, which seeks to avoid harm or uncertainty. As organizations like Beyond Pesticides advance management practices that do not require toxic chemical inputs, such as certified organic farming and landscape management, the ultimate question becomes, "Why do we need to use these chemicals if we can get the same results, or better results, without using them?" In this context, the community and state debate on land management is guided by those with expertise in organic practices that support soil biology and biodiversity as a means of preventing pests and nurturing ecosystems, plants, and crops that are resilient and less vulnerable to disease and infestation.

END NOTES

- 1 <https://ethics.harvard.edu/economy-influence-shaping-american-public-health-and-environment>.
- 2 <https://apnews.com/877205e5d2c04b3eb40984ff02201c79/EPA-nominee-once-helped-chemical-industry-lobbyists>.
- 3 <https://www.nytimes.com/2017/09/19/science/epa-chemical-industry-dourson.html>.
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- 5 Email exchange in Exhibit 43. Case 3:16-md-02741-VC Document 649-13 Filed 10/27/17. Available at: <https://usrtk.org/wp-content/uploads/2017/10/Email-EPA-Jess-Rowland-discusses-IARC-finding-before-it-is-made-public.pdf>.
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- 11 Clare Howard, 2013. Pest Control: Syngenta's Secret Campaign to Discredit Atrazine's Critics. <https://100r.org/2013/06/pest-control-syngentas-secret-campaign-to-discredit-atrazines-critics>.



Got Organic?

Grown in Nature with Soil or Factories in Water Solution?

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EDITOR'S NOTE: *The vision and practice of the organic system of agriculture is being challenged by hydroponic operations that do not use soil or nurture biodiversity. This shift is taking place in organic production, as the U.S. Department of Agriculture (USDA) allows hydroponic producers to be certified organic as long as inputs are restricted to those permitted under organic law. However, because labeling is not required, consumers are not able to distinguish between those products grown in soil and hydroponic products produced in a liquid solution. In a period of history when there is increasing awareness of the need to advance production systems that regenerate the earth, sequester carbon, and protect and enhance biodiversity, allowing hydroponics—which meets none of these critical needs—to be marketed as organic, and without full disclosure, undermines the basic principles, values, and legal standards that govern the commercial use of the word organic.*

At its Fall 2017 meeting, the National Organic Standards Board (NOSB), in a 7-8 vote, failed to pass a motion to prohibit certifying and labeling as “organic” hydroponic food production that only uses allowed materials under National Organic Program (NOP) regulations. The vote heightens an existing controversy that centers on the very definition of organic production, which recognizes the foundational role of soil biology and the regenerative practices associated with soil health. The meeting saw opposition by founders and leaders in the organic movement, as well as numerous certifiers, to soil-less production practices—including hydroponics, aquaponics, and aeroponics.

The issue of allowing hydroponics to be certified as organic started brewing in the early 2010s when NOP permitted it, despite what most people in the organic community at the time saw as a clear prohibition by the NOSB and organic law. In its May, 2014 newsletter, *Organic Integrity Quarterly*, NOP announced, “Some organic farms use hydroponic growing methods to produce organic crops under the USDA organic regulations,” and published an interpretation of history that is widely disputed by longtime organic farmers and those who have been engaged in organic policy for several decades, including the writing of the *Organic Foods Production Act* (OFPA).

HISTORY OF NOSB ACTION ON HYDROPONICS¹

The NOSB has concluded repeatedly that both OFPA and the USDA organic regulations require those producing organic crops to do so in soil. A 1995 NOSB recommendation states, “Hydroponic production in soil-less media to be labeled organically produced shall be allowed if all provisions of the OFPA have been met.” However, when the NOSB proposed regulations for greenhouse standards in 2001, hydroponic production was rejected as not meeting *all* basic organic production principles.

In 2003, the NOSB published a discussion document that asked for public input and stated that rulemaking for hydroponic standards should not proceed until the NOSB has submitted a final recommendation. Despite an NOP agreement not to propose hydroponic standards until the NOSB submitted a final recommendation (a final recommendation rejecting



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hydroponics was adopted by a decisive vote in 2010 as part of a greenhouse standard), hydroponic food labeled organic has continued to grow in the market.

NOSB discussion documents in 2008 and 2009 continued to examine “the overriding question of whether soil-less systems are compatible with organic production.” The 2010 NOSB-recommended greenhouse standards concluded that “hydroponic and aeroponic systems are prohibited.”²

Despite this history, NOP acknowledged in 2014 that food from hydroponic operations was being labeled organic, saying, “Accredited certifying agents are certifying organic hydroponic operations based on the current organic regulations and the operation’s Organic System Plan.”³ In view of this conflict between adopted policy and NOP practice, the agency established a Hydroponic and Aquaponic Task Force in 2015 to provide further guidance to the NOSB on whether hydroponic and aquaponic production should be allowed under the current organic regulations. At the April 2015 NOSB meeting, then-NOP Deputy Administrator Miles McEvoy said a rule change would be needed in order to exclude hydroponics, a reversal of the earlier position that the agency would not act until the NOSB recommended a hydroponic standard.

The Task Force “report,” completed in July 2016, documented the history and law that prohibits the organic labeling of hydroponic-produced food. The report is actually two reports with very different viewpoints, one from the 2010 NOSB Recommendation Subcommittee requiring soil in organic production, and the other from the Hydroponic and Aquaponic Subcommittee of the Task Force, which promotes certification of “organic” hydroponics. In the Fall of 2016, a majority on the NOSB, whose membership has since changed, went on record as supporting a prohibition of hydroponic systems that have an entirely water-based substrate.

FALL 2017 NOSB FAILURE TO DECIDE

The Crops Subcommittee brought to the Fall 2017 NOSB meeting three motions—to prohibit aeroponics (which passed 14-1), to prohibit hydroponics and aquaponics (which failed 7-8), and to prohibit “any container production system that does not meet the standard of a limit of 20% of the plants’ nitrogen requirement being supplied by liquid feeding, and a limit of 50% of the plants’ nitrogen requirement being added to the container after the crop has been planted” (which failed 7-8). Only the vote on aquaponics can be characterized as a final recommendation. Nevertheless, NOP interprets the vote as allowing organic certification of hydroponic operations, while questions of legal interpretation of the history and the organic law persist.

VIEWS OF ORGANIC SUPPORTERS⁴

The NOSB attracted commenters and demonstrators from around the country who support organic production in the soil. Fred Kirschenmann, PhD, long-time organic producer and leader in the organic movement, said, “I think we all also need to keep in mind that in the not-too-distant future, all input-intensive systems will become unworkable [because] we are rapidly depleting the non-renewable resources on which most of them depend. . . . So, any of us interested in farming in the future [need to] stay with keeping the soil that is constantly ‘brought back to life’ in our practices!”

Former Deputy Administrator Miles McEvoy said a rule change would be needed in order to exclude hydroponics, a reversal of the earlier position that the agency would not act until the NOSB recommended a hydroponic standard.

CHALLENGE TO NOSB AND NOP (IN-)ACTION

The 2017 NOSB vote raised questions about the legality of allowing soil-less agriculture to be certified as organic under OFPA. Barely a week after the meeting, the Minnesota Organic Advisory Task Force (OATF) unanimously recommended that the Minnesota Department of Agriculture seek a legal opinion on the legality of hydroponically grown products being certified and labeled “organic.” OATF contends that soil-less production systems are out of compliance with some sections of NOP regulations. For example, OFPA states, “An organic plan shall contain provisions designed to foster soil fertility, primarily through the management of the organic

content of the soil through proper tillage, crop rotation, and manuring.”⁵ OATF also maintains that an organic designation for hydroponic and aquaponic products misleads consumers and allows unfair competition to bona fide organic producers.

CONCLUSION

Organic agriculture that embraces the principles developed by early organic adopters and codified by the organic statute and regulations is a long-term solution to myriad problems—health and environmental impacts of toxic pesticide use, productivity of the food system, the climate emergency, and protection of the critical biodiversity on which all life depends. Soil health is the foundation to these solutions.

CONSUMERS CAN PROTECT ORGANIC

In addition to advocacy for NOSB⁶ and NOP policy, the consumer of organic food has always been a key element in the exponential growth of the organic market, having grown to a nearly \$50 billion market in the last 20 years. Ask your retailer where your food comes from. If those tomatoes are hydroponic, tell your grocer that you want to buy organic food grown in soil, except for plants that naturally grow in water. The organic food market has always been driven by consumer expectations, and in the current political climate, where there are efforts to weaken organic standards, and excessive industry influence over regulations, it is incredibly important for consumers to engage with retailers at the point of sale. Please report to Beyond Pesticides (info@beyondpesticides.org) your experience with retailers when discussing hydroponically produced food labeled organic. For more background and Beyond Pesticides’ position on hydroponics, see (bp-dc.org/hydroponics).

ENDNOTES

- 1 See the Crops Subcommittee Fall 2017 Proposal for a more thorough treatment of the history. <https://www.ams.usda.gov/sites/default/files/media/CSHydroponicsContainersNOPFall2017.pdf>.
- 2 NOSB, 2001. NOSB Final Recommendation Greenhouse Production Systems. www.bp-dc.org/hydroponics. See appendices. See also, NOSB Hydroponic and Aquaponic Task Force Report, 2016. P. 17. <https://www.ams.usda.gov/sites/default/files/media/2016%20Hydroponic%20Task%20Force%20Report.PDF>.
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- 5 See the entire speech at <https://beyondpesticides.org/dailynewsblog/2017/11/organic-board-members-farewell-highlights-industry-influence-usda-organic-program/>.
- 6 OFPA, Section §6513, under Organic plan/Soil fertility.
- 7 See Beyond Pesticides’ Keeping Organic Strong, <https://www.beyondpesticides.org/programs/organic-agriculture/keeping-organic-strong>.

Francis Thicke, PhD

Iowa Dairy Farmer, Soil Scientist, and Environmentalist Speaks to the Future of Organic on Finishing Term on the NOSB⁵

There are two important things that I have learned during my five years on the NOSB. First, I learned that the NOSB review process for materials petitioned for inclusion on the National List is quite rigorous, with Technical Reviews of petitioned materials and careful scrutiny by both NOSB subcommittees and the full board.

The second thing I learned, over time, is that industry has an outsized and growing influence on USDA—and on the NOSB (including through NOSB appointments)—compared to the influence of organic farmers, who started this organic farming movement. Perhaps that is not surprising, given the growing value of organic sales. As organic is becoming a \$50 billion business, the industry not only wants a bigger piece of the pie, they seem to want the whole pie. . . .

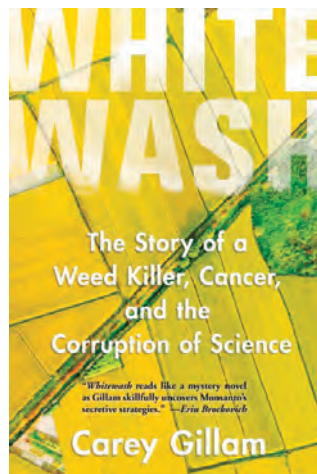
[In addition to] “organic” chicken CAFOs [confined animal feeding operations] with 200,000 birds crammed into a building with no real access to the outdoors. . . , “organic” dairy CAFOs with 15,000 cows in a feedlot in a desert, [and] large grain shipments coming into the U.S. that are being sold as organic, but that lack organic documentation, . . . [w]e have a rapidly growing percentage of the organic fruits and vegetables on grocery store shelves being produced hydroponically, without soil, and mostly in huge industrial-scale facilities. And we have a hydroponics industry that has deceptively renamed “hydroponic” production—even with 100% liquid feeding—as “container” production. With their clever deception, they have been able to bamboozle even the majority of NOSB members into complicity with their goal of taking over the organic fruit and vegetable market with their hydroponic products.

Perhaps we shouldn’t be surprised to find that big business is taking over the USDA organic program because the influence of money is corroding all levels of our government. At this point, I can see only one way to bring the organic label back in line with the original vision of organic farmers and consumers. We need an add-on organic label for organic farmers who are willing to meet the expectations of discerning consumers who are demanding real organic food.

In summary, organic is at a crossroads. Either we can continue to allow industry interests to bend and dilute the organic rules to their benefit, or organic farmers—working with organic consumers—can step up and take action to ensure organic integrity into the future.

Whitewash

THE STORY OF A WEED KILLER, CANCER, AND THE CORRUPTION OF SCIENCE



By Carey Gillam
Published by Island Press
October 10, 2017, 272 pages

Much of *Whitewash* will be familiar to readers of Carey Gillam's articles on glyphosate and Monsanto in the *Huffington Post*. Although Ms. Gillam's articles present a deeper view than most, the book length enables her to dig even deeper into the lies and deception that keep glyphosate on the market—and in our food, water, and land.

Formerly a senior U.S. correspondent for Reuters newswire, the author is now research director for U.S. Right to Know and has been recognized as one of the top journalists covering food and agriculture. In the book, she makes broader connections, ultimately indicting the entire pesticide industry and the regulators charged with protecting us from the dangers inherent in its products.

As I write this review, I am riding the train through a landscape transformed by glyphosate—thousands of acres of corn and soybeans in Illinois, probably all sprayed with glyphosate. The monotony and lack of diversity is depressing to an ecologist. This is a landscape created by an agriculture that depends on killing in order to grow crops.

The killing takes place in the field and off. Off the field, Ms. Gillam documents the ever-continuing efforts by Monsanto to cover up—through fraud, intimidation, ghostwriting agency documents—the science showing that glyphosate kills humans as well as weeds. For example, Monsanto led attacks on Aaron Blair, PhD, who chaired the committee of the prestigious International Agency for Research on Cancer (IARC) that classified glyphosate as a probable human carcinogen. Through CropLife America, Monsanto pressured EPA to remove the world-renowned epidemiologist Peter Infante, PhD from a science advisory panel (SAP) examining the carcinogenicity of

glyphosate. Monsanto ensured that government agencies would not sample food for glyphosate residues. A recurring theme is the support given to Monsanto by regulatory agencies—particularly by EPA, whose response to the IARC finding was described by Ms. Gillam: “But EPA said there was nothing to fear, for the studies showed glyphosate’s safety. What the EPA did not say was that 27 of the 32 studies were conducted by or funded by Monsanto or its industry allies. Only five of the studies considered by EPA were independent, and three of those five did in fact find that the chemical could pose a threat.”

In the field, the success of glyphosate comes from its action against *all* plants—all plants except those engineered to tolerate it. The combination of a totally nonselective herbicide and “Roundup Ready” crops has been a huge success for Monsanto, which gives the company incentive to use every means possible to protect it. Unfortunately for Monsanto, it cannot thwart evolution, and evolution has produced monster weeds that are not susceptible to glyphosate. But Monsanto’s insane response—if insanity is doing something over and over and expecting a different outcome—is to repeat the process with another herbicide, dicamba. However, the tragic effects of that endeavor on farms and farmers—resulting in drift damage throughout the South and Midwest, rifts in rural communities, and at least one murder—are only insane from the perspective of weed control. Meanwhile, Monsanto will continue to rake in profits.

The highlights presented here focus on Monsanto and glyphosate, but Ms. Gillam knows that they merely represent a particularly disturbing case history. Monsanto is not the only company rewriting agency science, and glyphosate is not the only chemical poisoning people and the landscape. The corruption of science in regulating pesticides is inevitable given EPA’s reliance on risk assessments and industry-generated studies. The poisoning of people and the land will continue until we adopt methods of food production based on nurturing the ecosystem and soil biology rather than killing it.

Every pesticide activist should read *Whitewash*. It will produce outrage, and that outrage can only lead to action.

The success of glyphosate comes from its action against all plants—all plants except those engineered to tolerate it. The combination of a totally nonselective herbicide and “Roundup Ready” crops has been a huge success for Monsanto, which gives the company incentive to use every means possible to protect it.

SAFETY SOURCE

How do I find a pest management service provider who will use practices that will protect, and not poison, my family and me?

Check out **Beyond Pesticides' Safety Source for Pest Management** (bp-dc.org/safetysource). The database is a constantly growing source of pest management service providers across the country who are utilizing practices that are sensitive to public health and environmental concerns—at least with some of their services.

Ask the right questions. Get the right answers. Though cost is an important issue when buying pest management services, the potential harm of products used is another critical issue to know about. The Safety Source directory requires that you, as the customer, ask some basic questions before you contract for services. If you're considering using a pest management company, make sure they complete the Safety Source survey at bp-dc.org/SafetySourceSurvey.

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Find a service provider that cares about your health at bp-dc.org/SafetySource.

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SAVE THE DATE

Protecting Health and the Environment with Science, Policy, and Action



The 36th National Pesticide Forum • Irvine, California April 13–14, 2018

The transition to organic land management is spreading to communities nationwide and across the globe as people understand the adverse effects of pesticides to children, the community, and the environment. With rollbacks in federal protections, local action takes on a new importance.

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- Discuss the practices that replace pesticides

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