Beyond Pesticides: Protecting Health and the Environment with Science, Policy, and Action

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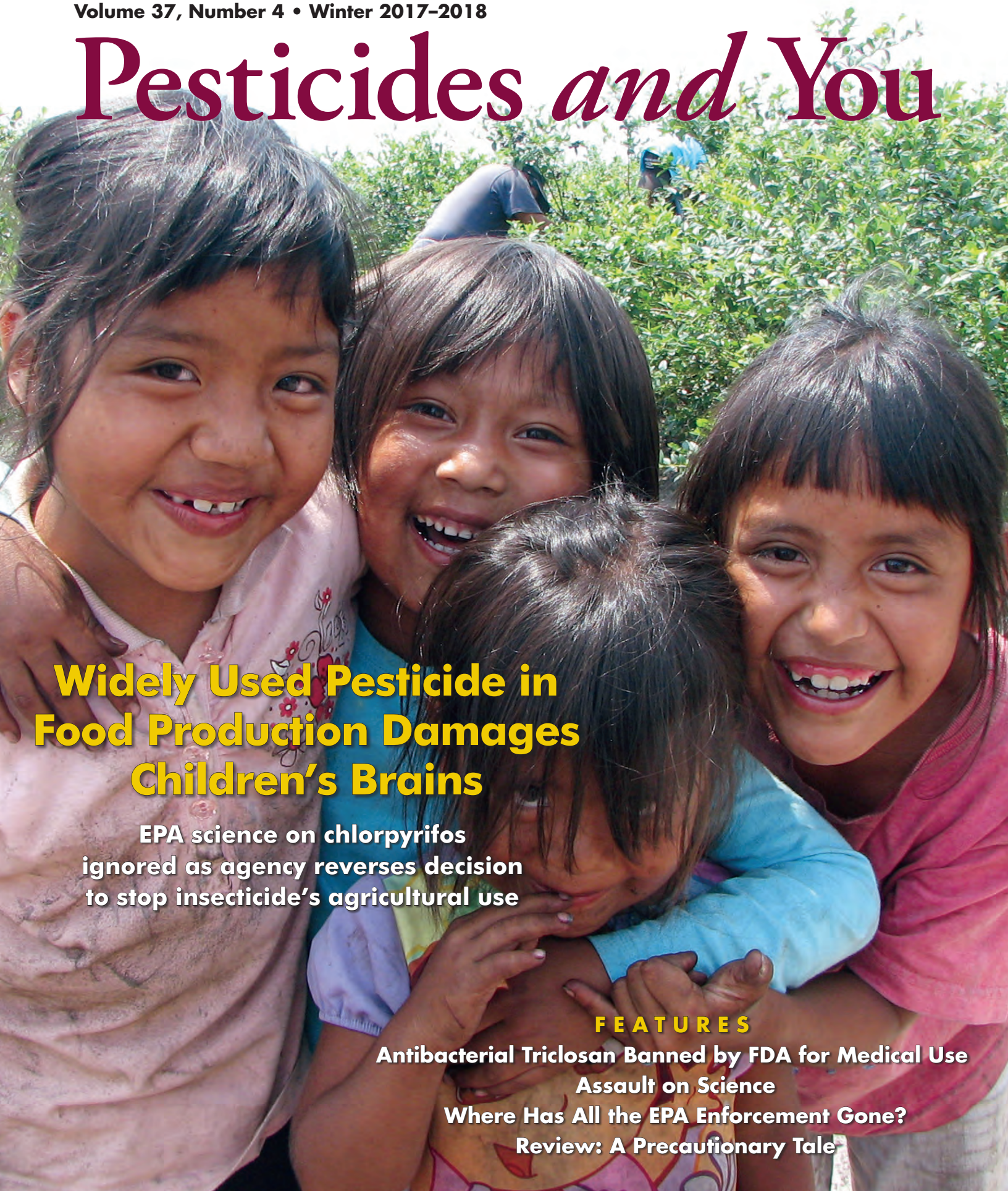
Pesticides *and* You



Widely Used Pesticide in Food Production Damages Children's Brains

EPA science on chlorpyrifos ignored as agency reverses decision to stop insecticide's agricultural use

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Antibacterial Triclosan Banned by FDA for Medical Use
Assault on Science
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Politicizing Science Raises Health and Ecosystem Threats

From a public health and environmental protection perspective, these are challenging times. Amid the attack on institutions and laws established to protect children, families, and the environment under the Trump administration, there is an incredibly positive groundswell of activity seeking to achieve these protections in communities across the U.S. As we plan for our upcoming Forum, *Organic Neighborhoods: For healthy children, families, and ecology*, April 13–14, 2018 in Irvine, California, we are inspired by the level of effective advocacy and changes in practices that are moving forward nationwide. Given the growing failures of our federal government, as discussed in this issue of PAY, the urgency of local action is upon us.

Portland, Maine Goes Organic

The City of Portland, Maine is the latest shining example of the critically important local democratic process exercising its authority to ensure a healthy community. The city in January adopted one of the strongest organic ordinances in the country.

Below is what Heather Spalding, deputy director of the Maine Organic Farmers and Gardeners Association, and I told the people of Portland before the city council voted on its ordinance in January.

Published in the *Portland Press Herald*

Toxic pesticides, which are of serious concern because of their adverse effects on people and the environment, are widely used in public parks and playing fields and on yards across the city. This shouldn't and doesn't need to be the case for two reasons: First, we can have beautiful parks, playing fields, and lawns that meet community expectations without toxic pesticide use; and second, the scientific literature is filled with studies that link pesticide exposure to a range of serious health concerns—cancer, neurological and immune system damage, respiratory illness and asthma, Parkinson's, Alzheimer's and diabetes. Most troubling, since the vast majority of the areas treated with pesticides are used by children, is the link between pesticides and learning disabilities and attention deficit hyperactivity disorder. Pets, too, are adversely affected.

And hazardous exposure isn't limited to contact with land: It occurs through air and water, too, as a pesticide application moves off the treated site and spreads in air currents and runoff into neighboring properties and waterways.

Perhaps the most widely used weed killer, glyphosate (Roundup), is associated with a wide range of illnesses, including non-Hodgkin lymphoma, genetic damage, liver and kidney damage, and endocrine disruption, as well as environmental damage.

The Need for Local Government Action

Why is city council action needed, especially now? Residents of Portland are not being protected by the U.S. Environmental Protection Agency (EPA). The head of EPA is dismantling the agency, has begun to roll back already-weak regulations that restrict pesticides and place former chemical industry employees or consultants in high-level regulatory positions. This has a direct effect on Portland, the health of residents and the environment, including managed and native bees.

As the concerns about pesticide exposure escalate in the scientific and medical community, land managers in Maine and across the country are rethinking the management of turf on a range of sites, including parks, school grounds, playing fields, golf courses, public spaces, and yards. The approach of putting down a bag of petroleum-based synthetic weed killers and fertilizers is increasingly understood to create a chemical dependency in lawn and garden management that is not only harmful, but costly and unnecessary to achieving desired results.

The local ordinance is just as much about preventing hazards and filling an increasing gap in protection from regulators, as it is about recognizing the viability of sound land management practices that do not rely on toxic chemicals, and result in healthier turf that stands up to stress and is less reliant on water.

The outdated chemical-intensive practices are tied to the belief that parks, playing fields, and home lawns require toxic chemicals and synthetic fertilizers to be managed to community expectations. So, an approach that recognizes the importance of soil biology in cycling nutrients naturally to feed plants is often new to many land managers who have not evaluated and nurtured the soil food web of microorganisms. This attention to the soil systems has been foundational to the success of organic agriculture nationwide.

If critics of this proposal tell the community that organic doesn't work, they are, in effect, challenging the underlying principles of soil management that have enabled the exponential growth of the organic agricultural sector, now a $50 billion industry and the fastest-growing part of the agricultural economy.

Beyond Pesticides Provides Tools for Action

This issue of PAY is a tool for local action, adding to the work that Beyond Pesticides does to assist elected officials, staff, and advocates in towns, cities, and counties throughout the country. If there ever was a time to take action, now is the time.

Jay Feldman, executive director of Beyond Pesticides

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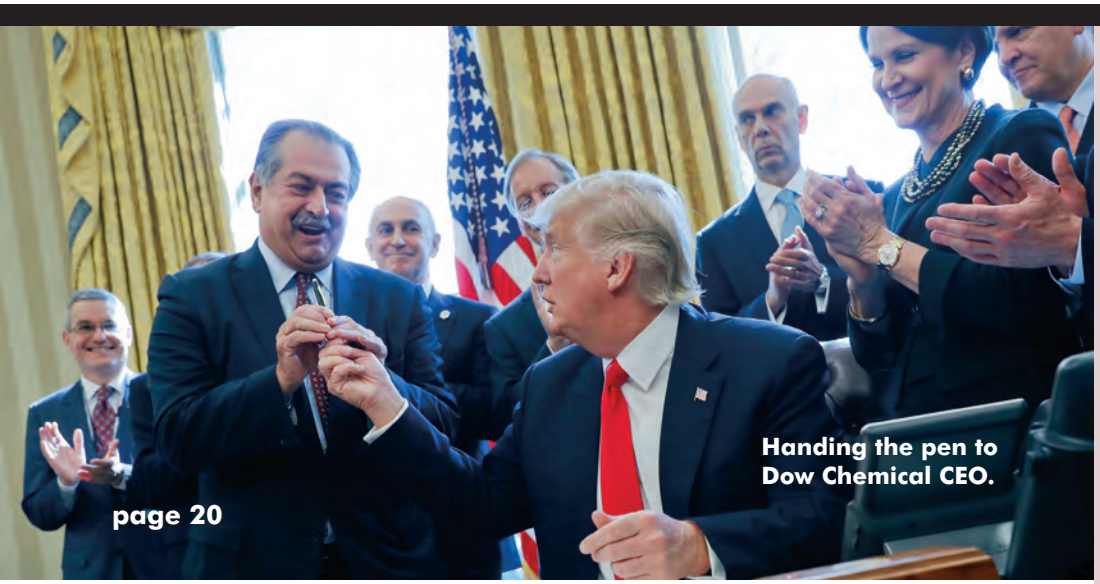

Handing the pen to Dow Chemical CEO.

© AP Photo/Pablo Martinez Monsivais

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Children of farmer families playing next to farmland.
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Gotta Go with Goats!

Beyond Pesticides,

In my town, a lot of wooded areas are completely choked with noxious weeds, bush honeysuckle, and other invasive plants. I've been told by local officials that control of invasives requires a lot of pesticide use. Even the most ecologically-focused agencies and companies who do this work seem to rely heavily on herbicides. I haven't run across many examples of this work being done successfully without herbicides. Do you know of any alternatives? Any information or insight you can provide on this would be great.

Carrie, Springfield, IA

Hi Carrie,

You're right that a large proportion of weeds and invasive species are currently managed with the use of toxic herbicides. Rather than restoring landscapes, these chemicals pollute them, damaging soil life and contaminating local waterways as they move off the treated sites. However, the presence of unwanted vegetation is often the symptom of broader problems with soil health. In order to restore the land, it is critical to focus on supporting the biological life of the soil. Herbicide use treats the symptoms, but there are other options. Managed goat grazing will not only remove the unwanted vegetation, but will address the factors that contribute to opportunistic invasives coming in, and support replanting the area with desirable plants or ground cover. Additionally, the goats help to restore the soil by aerating it with hoof action, and adding nutrients and beneficial fungi and bacteria through their urine and waste. While herbicides eliminate problem vegetation until it reappears the next season or becomes resistant to the chemicals, they fail to remediate the soil, thereby perpetuating conditions that lead to weed infestations.

Goat grazing to manage invasive species through land restoration is becoming increasingly popular throughout the U.S. Goats have been used at the Washington D.C. Congressional Cemetery, at Chicago O'Hare International Airport, at Google's headquarters, by Pacific Gas and Electric, and in Anaheim, California to manage land and reduce brush that fuels wildfires. Beyond Pesticides has successfully worked with the Washoe Tribe of Nevada and California to transition its invasive weed management program from a herbicide-dependent control approach to managed goat grazing.

Published in the journal *Environmental Practice,* a 2009 study compares vinegar-based alternative herbicides and goat grazing to conventional synthetic herbicide controls, confirms what land managers are seeing, and supports the burgeoning managed goat grazing movement. The study explains, "Cost estimates suggest that over a five year period, both methods [vinegar-based herbicides and goat grazing] are as cost effective as single application herbicides, while posing

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fewer concerns over impacts on human and ecosystem health. Both are simple solutions easily implemented, with some planning, even by small municipalities and communities." Please share this research and other communities' success stories with your local officials, and let us know how they respond.

Go After Glyphosate, But Don't Stop There!

Beyond Pesticides,

I'm trying to enact change in my community by getting rid of Roundup and other glyphosate-based herbicides.I simply can't accept that this carcinogen is used in local parks where my and others' kids play. Do you have a sample policy banning glyphosate that I can show city officials, and organize around?

Shane, Middlebury, VT

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.

Hi Shane,

The scientific literature on glyphosate finds not only cancer risks, but also adverse effects to the endocrine system, fetal development, and kidney and liver function. Roundup and other glyphosate-based herbicides should not be applied in parks and public spaces used by children and pregnant mothers; however, neither should a broad range of other toxic synthetic pesticides linked to similar health outcomes. Beyond Pesticides urges concerned residents to challenge the use of chemical-intensive land management, and glyphosate, of which it is a central component. While exposure to glyphosate represents a serious threat to health and the environment, this chemical's use exemplifies the need to reform local pesticide policy and management practices for parks, playing fields, school grounds, sidewalks, and rights-of-way. As grassroots action effectively engages local elected officials to restrict pesticides, we strongly suggest advocating for ordinance and policy language that restricts the full range of hazardous pesticides registered by the U.S. Environmental Protection Agency (EPA). This approach will avoid the future use of deleterious substitutions, which occurs when, for instance, glyphosate is simply replaced with the use of 2,4-D, dicamba, triclopyr, or another synthetic herbicide. To that end, Beyond Pesticides' model policy creates an "allowed" list of pesticide products that either meet organic certification standards, or are classified as "minimum risk" by EPA and not subject to formal pesticide registration.

In order to ensure a healthy community, local pesticide reform policies can require a comprehensive approach to organic land management and in the process eliminate toxic pesticides like glyphosate and other equally hazardous compounds. Transitioning from conventional, chemical-dependent land care to the natural and organic approach necessitates a change in focus from products to practices. And these practices put an emphasis on pest prevention. Cultural practices, such as mowing high, proper watering, aeration, overseeding, and dethatching should be prioritized. Based on soil tests to measure biological life, if necessary, introduce the judicious use of organic products, such as compost, compost tea, horticultural molasses, and humates that nurture soil biology to naturally cycle nutrients, and retain water and require less watering, while supporting healthier plants.

Restricting glyphosate alone is not enough to incentivize this transition to sustainable organic practices. Local policies that eliminate the use of toxic pesticide products and allow organic compatible products, experience shows, moves the community off the pesticide treadmill. Localities such as Cuyahoga County (OH), Douglas County (WI), and Boulder (CO) have successfully employed this approach. And in the states of New York and Connecticut, restrictions on a broad range of synthetics have been in place for years on most public school grounds and athletic fields.

This is a big change for many parks departments that will typically only support a glyphosate ban if another toxic chemical replacement is allowed. Advocacy, community education, and training of landscape staff is needed to explain the urgent need to protect children and the environment and support successful implementation of this comprehensive approach. Beyond Pesticides has the tools and success stories that advocates need to work effectively with local elected officials and land managers. Start with our Tools for Change webpage [*bp-dc.org/tools*], and contact Beyond Pesticides for additional materials and assistance at *info@beyondpesticides.org*, or by calling our office at 202-543-5450.

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 Action of the Week (12/04/2017): Don't Allow Dow to Poison Farms and Communities: Tell the Arkansas Pesticide Board Not to Allow 2,4-D To Be Used on Tolerant Cotton. You told the Arkansas Plant Board to exercise its authority to protect farmers, consumers, and the environment from use of the herbicide dicamba on genetically engineered (GE) soybeans, and the board listened. Now, we need to ask the board to stop the use of 2,4-D on GE cotton. The action of states is critical as the federal government ignores basic safety concerns. Action in Arkansas will influence other states.

Suzanne H. comments via Facebook: This is crucial to our friends and families in Arkansas! The effects of these harsh pesticides are devastating. A year ago, I experienced pesticide poisoning via helicopter spraying of pesticides on the tomato fields right near my patio in CA. My petition stopped the helicopter, but not the pesticides. I sold my home, and my lungs . . . are recovering. I'm sharing this because it is so very important that we take action to protect children, elderly, and all of us! There is no reason to use these pesticides. With healthy topsoil and solid strategies based on experience (and chemistry), harsh fertilizers and pesticides with toxic chemicals are not needed.

Jane D. comments via Facebook: 2,4-D is broadly applied by lawn companies on tens of thousands of lawns all across this country. It is sold in hardware stores in Weed & Feed® products. It should be totally illegal to allow toxic chemicals to be applied to lawns and we need to work to ban these chemicals once and for all.

Coated Seeds Endanger Birds and Aquatic Organisms

The U.S. Environmental Protection Agency (EPA) in December identified several neonicotinoid pesticides (clothianidin, thiamethoxam, dinotefuran) as causing acute and chronic risks to aquatic life, and the most widely used neonic, imidacloprid, as deadly to birds. In 2017, EPA said current imidacloprid levels kill aquatic life. Neonic-coated seeds pose the highest dietary risks to birds, exceeding agency levels of concern by as much as 200 times. EPA's assessment confirms that neonics are highly hazardous not only to bees, but to birds, aquatic life, and other non-target organisms.

For clothianidin, the agency finds that ingesting as little as one to five treated corn seeds exceeds acute and chronic levels of concern for small to large birds. According to EPA, "Dietary exposures from clothianidin treated seeds are noted to result in the highest acute and chronic risks from the terrestrial risk assessment to birds and mammals." The insecticide, which is widely used as seed coatings on millions of acres of corn and soybeans, is also determined by EPA to be very highly toxic to a range of organisms, including shrimp and aquatic insects. Reproductive effects are observed in several freshwater and estuarine/marine invertebrates. Developmental effects have occurred in benthic invertebrates living at the bottom, including the sediment surface and sub-surface, of water bodies.

Based on risks to aquatic organisms, Canada proposed, but delayed, banning imidacloprid. The United Kingdom, now proposing to ban neonicotinoids—given their harm to pollinators, is finding that chemicals have contaminated streams. The European Commission is considering an extension of its 2013 neonicotinoid ban to all outdoor crops.

EPA Ignores Cancer Science on Glyphosate

In December, EPA declared that glyphosate is likely not cancer causing. Prior to this, the European Union (EU) voted in late November to extend the license for the herbicide for another five years, despite extensive opposition in member countries.

The EPA pronouncement conflicts with the 2015 classification of glyphosate as a "probable carcinogen" by the World Health Organization's International Agency for Research on Cancer (IARC). It also contravenes a ruling by California's Office of Environmental Health Hazard Assessment, which added the chemical to its Proposition 65 list of "probable carcinogens" in July 2017. In its report, IARC notes that glyphosate has been linked to DNA and chromosome damage in human cells. Epidemiologic studies have found that exposure to glyphosate is significantly associated with an increased risk of the cancer—non-Hodgkin lymphoma.

The EPA and EU decisions are cloaked in controversy because of irregular corporate influence in their deliberations. Reporting and discovery in litigation uncovered that Monsanto, the manufacturer of glyphosate, has ghostwritten research papers for regulators, enlisted EPA officials to block a U.S. government review of glyphosate, and formed front groups to discredit critical scientists and journalists. It has been revealed that the European Food Safety Authority (EFSA) copied dozens of pages from a Monsanto study in reaching its conclusion that glyphosate is unlikely to pose a cancer hazard to people. In what was likely a recognition of the corrupting influence of industry, in October 2017 the European Parliament (EP) banned Monsanto lobbyists' access to its committee meetings, digital resources, and contact with any EP members.

More than 300 lawsuits are pending against Monsanto in U.S. District Court in San Francisco, brought by people who claim that Roundup (glyphosate) exposure caused them or a family member to contract non-Hodgkin lymphoma.

EPA To Weaken Farmworker Protection

EPA plans to revisit, and potentially weaken, rules passed in 2015 to update farmworker protections from hazardous pesticides. Improvements to Agricultural Worker Protection Standards (AWPS) were proposed under the Obama Administration after more than a 20-year delay. While certain provisions are slated to go into effect this year, EPA Administrator Scott Pruitt is set to propose new changes that are likely to significantly weaken safeguards for farmworker health. Most workers in the U.S. look to the Occupational Safety and Health Administration (OSHA) for standards to protect them from exposure to hazardous chemicals. However, farmworker protection from pesticides is left to EPA's authority under federal pesticide law and AWPS, a standard that is far less protective than OSHA. EPA announced in a press release that three aspects of the Obama-era AWPS would be revisited: i) a requirement that the farmworker be a minimum age of 18 to apply toxic pesticides; ii) a provision that establishes 25 to 100 foot 'exclusion zones' after toxic pesticide applications; and iii) a clause that allows farmworkers to have a 'designated representative' obtain information about where and when pesticides are applied.

EPA Nominee Withdraws

The Trump Administration's pick to become EPA Assistant Administrator for Chemical Safety and Pollution Prevention, Michael Dourson, PhD, withdrew his name from consideration after it became increasingly likely he would not pass Senate confirmation due to his deep connections to the chemical industry. In a letter obtained by the Associated Press, Dr. Dourson indicated his move "avoids unnecessarily politicizing the important environmental protection goals of Administrator Pruitt." Health and environmental groups, including Beyond Pesticides, which launched a campaign against Dr. Dourson's confirmation, are pleased by the withdrawal announcement, but remain deeply concerned with the Trump administration's continued propensity to promote industry interests and industry-backed nominees over real measures to safeguard environmental health and justice.

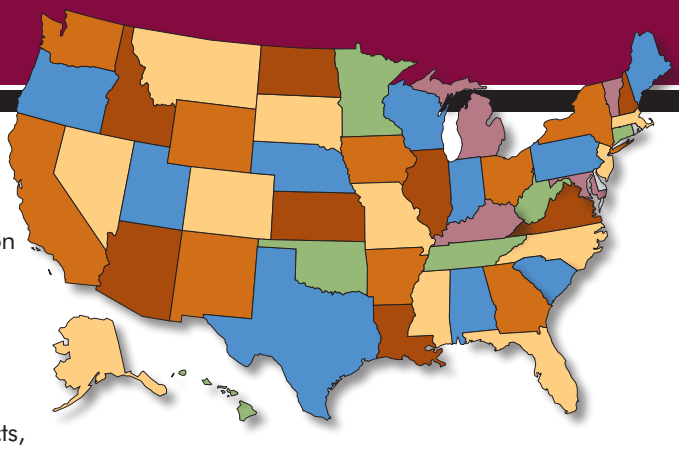
Dr. Dourson's withdrawal was triggered by reports in November that North Carolina's two Republican U.S. Senators, Richard Burr and Thom Tillis, planned to vote against Dr. Dourson's appointment. North Carolina is in the midst of a growing scandal implicating Chemours, a company spun-off from chemical giant DuPont in 2015, in widespread water contamination with the chemical GenX, used to make Teflon and other industrial products. Chemours operates a GenX production plant in Fayetteville, NC, and is accused of regularly dumping the chemical into local rivers, polluting drinking water in a number of communities. Recent tests have found the chemical in the honey of bees in farms two miles away from the GenX production site.

Without an assistant administrator in place, health and safety decisions are in the hands of Nancy Beck, PhD, Deputy Assistant Administrator for Chemical Safety and Pollution Prevention, a former senior director of regulatory science policy at the American Chemistry Council, a lobby group for the chemical industry.

Congress Begins Farm Bill and Organic Negotiations

As the U.S. Congress gears up for the 2018 Farm Bill reauthorization, advocates are calling on Congress to support continuation of the organic certification cost share program, which enables small and medium-sized organic farms to become certified under the *Organic Foods Production Act*. The costs of annual certification are increasing. The two federal programs providing certification cost share offer a modest partial (75%) reimbursement of up to $750 annually per certification to help defray these costs. Having a diversity of scale of operations involved in organic production helps to maintain the integrity, vitality, and opportunity of the U.S. organic sector. There has been some murmuring on Capitol Hill of changes to the organic provisions of the Farm Bill, originally the *Organic Foods Production Act of 1990*, particularly the makeup of the National Organic Standards Board—changes strongly opposed by Beyond Pesticides and other organizations. It has been an open secret that those in industrial agriculture want weaker standards to allow their entry into the lucrative organic sector.

More broadly, the *Farm and Food Act* (H.R. 4425) has been introduced by U.S. Representative Earl Blumenauer (D-OR), and co-sponsored by Reps. Rosa DeLauro (D-CT), Chellie Pingree (D-ME) and Don Beyer (D-VA), to correct current policies that the sponsors see as subsidizing diet-related disease, climate change, and water pollution. The bill language is the result of a two-year conversation, "Sing Your Own Farm Bill," in which Mr. Blumenauer engaged a diverse group of farmers, ranchers, fiscal hawks, food and agriculture policy experts, environmentalists, animal welfare advocates, and others to brainstorm ideas for shaping future farm and food policy. The bill incentivizes the transition to sustainable practices, supports food and nutrition programs, and advances animal welfare, among other things.



Landmark Court Cases in California

Two landmark court decisions in California rein in pesticide regulators to be more restrictive in complying with the *California Environmental Quality Act* (CEQA). The California Supreme Court in December declined to review and therefore upheld a state Court of Appeals decision requiring state regulators under CEQA to conduct pesticide reviews that consider feasible alternatives to allowing a pesticide use, consideration of the cumulative impact of aggregate use of the pesticide under review, and providing for public review in making a 'no significant effect' finding. The case, filed by Pesticide Action Network North America, Center for Food Safety, and Beyond Pesticides, with Earthjustice serving as counsel, challenged the Department of Pesticide Regulation's (DPR) June, 2014 decision to allow expanded use of the neonicotinoid, bee-killing insecticide dinotefuron, associated with the decline of bee populations. The court directed the department to rescind its decision.

The California Superior Court found that DPR violated its responsibilities under CEQA when permitting broad spray programs without an adequate Program Environmental Impact Report (PEIR). The Court decision halts a state program allowing pesticide spraying at schools, organic farms, and backyards across California because of inadequate public disclosure of the chemicals' adverse effects, deficient review of cumulative effects, and improper analysis of environmental conditions. The California Department of Food and Agriculture's (CDFA) statewide "pest management" program required no site-specific analysis of risks before the application of 79 pesticides, including some known to cause cancer and birth defects and to be highly toxic to bees, butterflies, fish, and birds.

Localities Act To Stop Pesticide Use

In January, the City Council of Portland, Maine voted unanimously (9-0) to restrict the use of toxic pesticides on all lawns and landscapes within the city, both public and private property. Passage of the new pesticide ordinance, one of the strongest in the country, represents the culmination of nearly two and a half years of intense debate and discussion between residents, advocates, pesticide proponents, and City of Portland officials. Local and national health and environmental groups are praising the city for its diligence in addressing the issue, and its ultimate decision to restrict hazardous pesticide use in the face of insufficient protections from federal and state regulators. The City of Portland now joins neighboring South Portland and other jurisdictions in the state of Maryland (the City of Takoma Park and Montgomery County), which have taken similar action. Twenty-eight jurisdictions throughout Maine have restricted pesticides in various ways, including only on public property, but the comprehensive Portland-style ordinance stops virtually all hazardous pesticide use throughout the community, eliminating problems associated with pesticide drift and runoff. In support of the legislation, the city councilors received a letter from 31 medical and science professionals, who said, "As health professionals, it is our contention, based on the molecular and microbiologic actions of these synthetic land care pesticides, that the continued use of them must be challenged, banned, and replaced by practices and products that are not harmful to people and the environment."

Hearing on pesticide ordinance in Portland, Maine, June 2017.

© Jay Feldman

The ability to apply pesticide restrictions to private property is permitted within only a handful of states due to preemption laws that prevent localities from enacting pesticide policies stricter than the state. While Maine localities are not preempted, during the course of deliberations in Portland, Governor Paul LePage and other state lawmakers friendly to the pesticide industry launched a failed attempt to pass preemption legislation. The bill was rejected unanimously by a committee of the state legislature.

Buoyed by a strong and growing coalition of Non Toxic advocates fighting for

a healthier environment for their children, pets, and wildlife, the City of Carlsbad is the newest in a string of southern California communities that have adopted safer pest management policies. Carlsbad's new policy expands a 2003 integrated pest management park policy to all city maintained or operated land and facilities with a tougher approach against toxic pesticide use. The policy prioritizes the use of organic products and cultural, mechanical, environmental/physical, and biological controls. However, it distinguishes itself from a Portland-style ordinance (adopted previously by Takoma Park, Montgomery County, and South Portland) that clearly prohibits the allowance of any toxic pesticides used in managing landscapes that are not compatible with organic methods, except in cases of public health protection and management of invasives.

CA School Drift Regulations Take Effect

With a long-documented history of children's exposure to pesticides that drift from agricultural fields to school yards, California's new regulations establishing no-spray buffers took effect January 1, as labor and public health groups acknowledged the progress *and* inadequacy of the measure. The new rule, DPR 16-004 Pesticide Use Near Schoolsites, adopted by the California Department of Pesticide Regulation (DPR), prohibits many pesticide applications within a quarter mile of public K-12 schools and licensed child day care facilities during school hours, Monday through Friday between 6am and 6pm. This includes all applications by aircraft, sprinklers, air-blast sprayers, and all fumigant applications. In addition, most dust and powder pesticide applications, such as sulfur, will also be prohibited during this time. The new rule was announced in November, 2017.

Advocates say the new rules fail to address persistent low-level exposures associated with the use of the pesticides near schools, which are in agricultural areas that are disproportionately Latino and farmworker families. There is continuing concern about children's exposure to hazardous pesticides because children use school grounds after school hours and on weekends, and residues from drift may remain on fields. Many pesticides used are persistent and systemic, lingering in the air and on surfaces long after they are applied. In fact, 2016 air monitoring data found pesticide residues at levels more than 18 times higher than federal standards on the campus of Shafter High School in Kern County.

Rally to support School Suffer zones in Delano, California.

Monsanto Pays Farmers to Use Deadly Dicamba

Reuters news service reported that the agrichemical company Monsanto plans to offer farmers a cash incentive to use its highly toxic and drift-prone dicamba-based herbicide next season, despite links to widespread crop damage that has pitted neighbor against neighbor in agricultural communities throughout the country. The move comes as more and more states enact or consider restrictions on use of the herbicide, which is paired with genetically engineered (GE) soybean crops resistant to both dicamba and glyphosate, another controversial herbicide produced by Monsanto. Dicamba will be prohibited from use in Arkansas agriculture from April 16 to October 31, 2018, following a recommendation from the Arkansas State Plant Board last year and a vote in January by the state's Legislative Council. Monsanto is suing to stop the state action, arguing that farmers need its herbicide.

Monsanto plans to provide farmers with more than half of the cost of herbicide per acre as an incentive to plant its GE seeds. However, given the range of new regulations surrounding the products, as well as the social stigma around its use, it remains to be seen whether the offer will sway farmers. Dicamba has stirred up fights between neighbors in a number of agricultural communities. Bader Farmers, with over 110,000 peach trees on over 1,000 acres in production in Missouri, is suing Monsanto after its insurance company refused to pay for damages caused by dicamba drift from surrounding farms. In June last year, University of Arkansas' agricultural research station had over 100 acres of soybeans ruined from nearby dicamba use. NPR reported that a dispute last October between two neighbors over dicamba drift led to the murder of one Arkansas farmer.

Monsanto claimed earlier this year that the problem was that farmers were not following product label directions, using contaminated equipment, or buying older formulations of dicamba that are

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cheaper, but more prone to drift. However, research is showing that the new product Monsanto released, although promoted by the company as being less prone to off-site drift, has inherent problems that will continue to lead to nearby crop damage.

Bumblebees at Risk

Bumblebees are in decline as a result of insecticide and fungicide use, according to research findings. Published in the *Proceedings of the Royal Society B.*, Cornell University researchers report that fungicides, in particular the chemical chlorothalonil, are likely compounding risk and toxicity for U.S. bumblebee species. After sampling eight bumblebee species at nearly 300 sites in 40 states, researchers found declines associated with fungicide use. Scientists focused on the prevalence of *Nosema bombi*, a fungal pathogen that has also been closely linked to declining bumblebee species. They found that the use of the fungicide chlorothalonil at a site was the most accurate predictor of *N. bombi* prevalence. "*Nosema* can be devastating to bumblebees and honeybees," said lead author Scott McArt, PhD. "Since fungicide exposure can increase susceptibility of bees to *Nosema*, this may be the reason we're seeing links between fungicide exposure, *Nosema* prevalence and bumblebee declines across the United States in this data set."

Another study published in *Scientific Reports* finds that bumblebees exposed to field-realistic levels of neonicotinoid insecticides have problems with "buzz pollination" that results in reduced pollen collection. This is the latest science to tease out the complex ways in which neonicotinoids interfere with these important pollinators. Flowers that bumblebees pollinate require the insects to emit soundwaves, or 'sonicate,' to release their pollen, and bumblebees must perfect their techniques over time in order to maximize the pollen they are able to collect. Researchers tested the effect of neonicotinoids on bumblebees' sonication abilities by exposing them to field realistic doses of the insecticide thiamethoxam at rates of two parts per billion (ppb) and 10 ppb, and observing their ability to successfully collect pollen. A control group that never came into contact with thiamethoxam was also used into compare the progress of the exposed group.

Lead author of the study, Penelope Whitehorn, PhD, said, "[B]ees that came into contact with pesticide did not collect more pollen as they gained more experience, and by the end of the experiment collected between 47 percent [in the 2 ppb group] and 56 percent less pollen [in the 10 ppb group] compared to the control bees."

Birds Threatened

Songbirds exposed to widely used insecticides fail to properly orient themselves for migration, according to a study published by Canadian scientists in *Scientific Reports*. With the organophosphate chlorpyrifos and the neonicotinoid imidachlorprid applied to millions of acres of farmland throughout North America, this new research adds weight to arguments that pesticides are likely a cause of declining migratory bird populations. "Studies on the risks of neonicotinoids have often focused on bees that have been experiencing population declines. However, it is not just bees that are being affected by these insecticides," said Christy Morrissey, PhD, study author and biology professor at the University of Saskatchewan.

Researchers captured 57 white crowned sparrows in northern Canada and held them in an outdoor pen for roughly two weeks, during which time all the birds either gained or maintained their weight. The songbirds were then split into three groups, one exposed to imidacloprid, another to chlorpyrifos, and the last untreated and acting as a control. The imidacloprid and chlorpyrifos exposed groups were each further separated by exposing a portion to the insecticide at 10% of the lethal dose that would kill 50% of a given population (LD_{50}), and another to 25% of the LD_{50}. According to the study, at those rates, the 10% dose was equivalent to the sparrows eating four treated canola seeds or less than a tenth of a corn seed, while the 25% dose was like the birds eating nine coated canola seeds or two-tenths of a treated corn seed. Both insecticides are commonly used to coat the outside of crop seeds before planting. Over 90% of corn and canola seeds are coated with neonicotinoid insecticides, despite strong evidence that it does not contribute to higher productivity.

Antibacterial Triclosan Banned by FDA for Medical Use

Remains in toothpaste and consumer products, despite lack of efficacy and contributing to crisis in bacterial resistance to antibiotics

Antibacterial products with triclosan are being banned for medical use by the Food and Drug Administration (FDA). The pesticide has long been identified as a highly toxic, ineffective, and unnecessary antibacterial pesticide that contributes to the escalating international crisis of bacterial resistance to antibiotics and antimicrobials, especially when sold in soap, toothpaste, or in plastics and textiles in consumer goods. The FDA in December announced it was removing from the market 24 over-the-counter (OTC) disinfectants or antimicrobial ingredients, including triclosan, used by health care providers primarily in medical settings, such as hospitals, health care clinics, and doctors' offices. Despite banning its use in liquid soaps in 2016, FDA allows the pesticide in toothpaste, while wide use continues in products under the jurisdiction of the U.S. Environmental Protection Agency (EPA).

FDA ACTS AFTER FOUR DECADES OF CONCERN

FDA took this action after the chemical industry did not respond to a 2015 request for data to support a finding of "generally recognized as safe and effective (GRASE)." The decision, which follows a 2016 FDA decision to remove OTC consumer soap products with triclosan for the same reason, leaves toothpaste and numerous EPA-regulated consumer products (fabrics and textiles, sponges, undergarments, cutting boards, hair brushes, toys, prophylactics, computer keyboards, other plastics, etc.) on the market with triclosan (often labeled as or produced by Microban®). The December decision leaves in commerce six antiseptic compounds widely used in the hospital and medical setting, in response to industry requests for more time to develop safety and efficacy data.

In what appears to contradict FDA's finding that it does not have sufficient data to make a GRASE determination for virtually all antiseptic products used in the health care and medical settings, the agency, under chemical industry pressure, is not restricting the mostly widely used compounds. There is heightened concern that health care providers and hospitals are using fraudulently labeled products for patient and staff protection from pathogenic bacteria, leading to potentially deadly infections. In its press release, FDA states,

> In response to requests from industry, the FDA has deferred final rulemaking for one year, subject to renewal, on six specific active ingredients that are the most commonly used in currently marketed OTC health care antiseptic products—alcohol (ethanol), isopropyl alcohol, povidone-iodine, benzalkonium chloride, benzalkonium chloride, benzethonium chloride, and chloroxylenol (PCMX—to provide manufacturers with more time to complete the scientific studies necessary to fill the data gaps identified so that the agency can make a safety and efficacy determination about these ingredients. In addition, the final rule does not affect health care antiseptics that are currently marketed under new drug applications and abbreviated new drug applications.

Examples of products infused with Microban®.

For public health advocates, the speed of the federal government's progress on regulating toxic chemicals is alarmingly slow. FDA's narrow 2016 ban of triclosan and triclocarban—its chemical cousin—in consumer soap products, promulgated after persistent scientific arguments over the course of the past few decades, is a case in point.

CAPITALIZING ON CONSUMER FEARS OF GERMS

The common and rapid adoption of soaps with triclosan or triclocarban was based largely on a public perception that the antibacterial compounds are effective tools for safeguarding health from harmful bacteria. For years, studies have challenged the utility of the chemicals, and found that, in fact, OTC antibacterial soaps show no health benefits compared to soap and water washing. The chemical was originally introduced as a surgical scrub in 1972 and exploded on to the consumer market over the next decade. With widespread exposure, the Centers for Disease Control and Prevention (CDC) has found that 75% of U.S. residents contains triclosan in their bodies. Triclosan enters the food chain through contaminated water or soil in which crops are grown.

After years of public health advocacy to ban triclosan from consumer products, FDA's 2016 ruling banned 19 specific ingredients in soap products, including triclosan and triclocarban, saying they were no longer "recognized as safe and effective," and citing risks to health and contributions to the problem of bacterial resistance. Manufacturers had until September 6, 2017 to reformulate their products and remove existing triclosan products from the market. That ban did not apply to products used in health care and food service settings.

When the 2016 ruling was announced, Beyond Pesticides executive director Jay Feldman noted, "FDA's decision to remove the antibacterial triclosan, found in liquid soaps (its use in toothpaste went unaddressed), is a long time coming. The agency's failure to regulate triclosan for nearly two decades . . . put millions of people and the environment at unnecessary risk [of] toxic effects and elevated risk [of] other bacterial diseases. Now, FDA should remove it from toothpaste and EPA should immediately ban it in common household products, from plastics to textiles." During the past few years, with pressure from consumer groups and media, major manufacturers, such as Procter & Gamble and Johnson & Johnson, have quietly reformulated their consumer products without triclosan; Colgate-Palmolive removed it from liquid soaps, but continues to include it in its Total® toothpaste.

CHALLENGING FEDERAL REGULATORS

Triclosan and triclocarban compounds have been the subject of a ban campaign and petitions by a coalition of health and environmental groups, led by Beyond Pesticides and Food and Water Watch (and targeted litigation by the Natural Resources Defense Council). In 2009, Beyond Pesticides, in partnership with Food and Water Watch and 80 other groups, submitted a petition to FDA calling for a ban on the non-medical uses of triclosan. (A companion petition was filed with EPA.) The agency announced plans in 2010 to address the use of triclosan in cosmetics and other products, saying in a response letter to U.S. Senator Ed Markey, D-MA (then a U.S. Representative), who had repeatedly requested that FDA write regulations for antibacterial products in hand soap and EPA on other products, that recent studies "raise valid concerns about the effect of repetitive daily human exposure to these antiseptic ingredients." FDA initiated triclosan's registration review in 2013, announcing that it would require manufacturers to prove that their antibacterial soaps were safe and more effective than soap and water (including providing the agency with data from clinical studies to demonstrate their findings). Manufacturers failed to do so. The state of Minnesota enacted a ban on triclosan in personal care cleaning products in 2014, and the European Union banned its uses altogether in 2015.

EXTRAORDINARY HAZARDS

Following the accumulated body of scientific literature developed over the past decade, in 2016, 200 scientists, medical doctors, and public health professionals released *The Florence Statement on Triclosan and Triclocarban* (Environmental Health Perspectives, 2017), which reads,

> *The Florence Statement on Triclosan and Triclocarban* documents a consensus of more than 200 scientists and medical professionals on the hazards of and lack of demonstrated benefit from common uses of triclosan and triclocarban. These chemicals may be used in thousands of personal care and consumer products, as well as in building materials. Based on extensive peer-reviewed research, this statement concludes that triclosan and triclocarban are environmentally persistent endocrine disruptors that bioaccumulate in and are toxic to aquatic and other organisms. Evidence of other hazards to humans and ecosystems from triclosan and triclocarban is presented, along with recommendations intended to prevent future harm from triclosan, triclocarban, and antimicrobial substances with similar properties and effects. Because antimicrobials can have unintended adverse health and environmental impacts, they should only be used when they provide an evidence-based health benefit. Greater transparency is needed in product formulations, and before an antimicrobial is incorporated into a product, the long-term health and ecological impacts should be evaluated.

Scientific evidence has demonstrated a variety of adverse health effects of triclosan and its cousin, triclocarban: skin irritation; exacerbation of allergic response; endocrine disruption (e.g., triclocarban has been shown to amplify the activities of natural hormones, which can cause adverse reproductive and developmental effects); interference with production of the thyroid hormones thyroxine and triiodothyronine; and increased risk (for children) of developing asthma, eczema, and allergies. In addition, there is substantial evidence that broad use of these compounds promotes the emergence of bacteria that are resistant to antibiotic medications and antibacterial cleansers important in health care, thus, contributing to the extremely serious issue of antibiotic resistance in "superbug" bacteria. Many health impacts are likely still unknown.

Another cause for concern about the prevalence of triclosan in waterways is that, when exposed to sunlight, it is converted into a dioxin. Dioxins are highly toxic compounds that cause reproductive and developmental problems, damage immune systems, interfere with hormones, and cause cancer. If that were not sufficiently alarming, triclosan can also combine with chlorine in tap water to form chloroform (which is listed as a probable human carcinogen)—creating yet another toxic exposure.

CONSUMER BEWARE: PROTECT YOURSELF

Products with triclosan can be avoided in the market. Whether it is toothpaste or textile or plastic/synthetic products, triclosan or Microban® ingredients can be avoided. Health experts advise people to wash hands frequently and thoroughly with soap and water for 15 seconds and rinse with warm water.

For more information and scientific citations on triclosan effects, see Beyond Pesticides webpage on triclosan at bp-dc.org/triclosan.

During the past few years, with pressure from consumer groups and media, major manufacturers, such as Procter & Gamble and Johnson & Johnson, have quietly reformulated their consumer products without triclosan; Colgate-Palmolive removed it from liquid soaps, but continues to include it in its Total® toothpaste.

COMMENTARY

Assault on Science

WHAT IS GETTING IN THE WAY OF USING SCIENCE TO PROTECT HEALTH AND THE ENVIRONMENT?

Science plays an important role in ensuring that the corporate profit motive does not force harmful impacts on human health, the environment, social conditions, and the economy. Environmental laws require the application of science, based on protocol subject to public oversight. These laws establish standards concerning acceptable environmental and health impacts regarding whether, when, where, and how toxic chemicals are used, their discharge into rivers and streams, emission into the air, disposal, and the remediation of inadvertent poisoning or contamination. Scientists, with a professional ethic for carrying out the scientific method,[1] are critical to bringing facts to discussions that can be highly politicized or involve those who have a vested economic interest in a particular policy outcome or standard. In the current political climate, scientists are being undermined, attacked, and removed from their historical role of informing and implementing environmental and public health law.

A HISTORY OF ATTEMPTS TO SILENCE SCIENTISTS

Of course, the attack on scientists and science is not a new phenomenon. The question is whether it is more pervasive and far-reaching, and irreversible, given the current state of environmental degradation and rates of environmentally induced diseases.

We can trace modern victims of attempts by corporations to silence scientific critics back to Rachel Carson in the 1960's, although the attack on Italian astronomer and physicist Galileo Gallilei by societal forces is well-known. Ms. Carson, who dared to speak out about the dangers of pesticides, was subjected to many attempts to silence her—chemical companies attempted to prevent the publication of *Silent Spring*. They characterized her as extremist and hysterical, and corporate sponsors withdrew their support for an hour-long *CBS Reports* show that featured her work.

More recently, after the chemical company Syngenta hired Harvard and Berkeley educated biologist Tyrone Hayes, PhD to study the effects of atrazine, it refused to let him publish his finding that its top-selling herbicide, atrazine, feminizes male frogs. When his work appeared in the prestigious *Proceedings of the National Academy of Sciences*, Syngenta attacked the study and Dr. Hayes with a multi-million dollar campaign to

[1] Webster's defines scientific method as "principles and procedures for the systematic pursuit of knowledge involving the recognition and formulation of a problem, the collection of data through observation and experiment, and the formulation and testing of hypotheses."

discredit him and atrazine critics. The details of this orchestrated Syngenta campaign were uncovered in documents obtained in discovery in a lawsuit by water treatment plants—forced to clean up atrazine-contaminated water—against the company and fully described in a 2014 *New Yorker* article. Before uncovering the Syngenta campaign, the University of California, Berkeley, where Dr. Hayes is a professor, was pressured to remove funding for his laboratory and the continuation of his critical work. Recognizing the need for a mechanism to raise substantial funds to support independent scientific research that informs sound public policy to protect health and the environment, Beyond Pesticides established The Fund for Independent Science. The fund supports Dr. Hayes' work to protect life from harmful chemicals.

If researchers in universities are at risk, consider the position of scientists in government agencies, where their work may feed directly into regulatory policies. In 2009, the Obama administration issued scientific integrity policies for federal agencies in coordination with the White House Office of Science and Technology Policy through a presidential memorandum to the heads of executive departments and agencies. It stated that:

> Political officials should not suppress or alter scientific or technological findings and conclusions. If scientific and technological information is developed and used by the Federal Government, it should ordinarily be made available to the public. To the extent permitted by law, there should be transparency in the preparation, identification, and use of scientific and technological information in policymaking. The selection of scientists and technology professionals for positions in the executive branch should be based on their scientific and technological knowledge, credentials, experience, and integrity.

Despite these policies, Jonathan Lundgren, PhD was suspended by the U.S. Department of Agriculture (USDA) after he published research showing the adverse effects of neonicotinoid insecticides on monarch butterflies and bees. USDA's five-member Scientific Integrity Review Panel, which was convened to review Dr. Lundgren's complaint of USDA's action under USDA's scientific integrity policy, found, "USDA's Scientific Integrity Policy explicitly authorizes it to block publication of research containing 'statements that could be construed as being judgments of or recommendations on USDA or any other federal government policy.'" Dr. Lundgren, along with many other embattled government scientists, was represented by Public Employees for Environmental Responsibility (PEER), a nonprofit organization that works "with and on behalf of scientists to empower them in confronting their own agencies and the political and commercial forces behind scientific perversion."

Aaron Blair, PhD is a National Cancer Institute researcher (emeritus), author of more than 450 publications on occupational and environmental causes of cancer, and the overall chair of the International Agency for Research on Cancer's (IARC) evaluation panel that found glyphosate (Roundup) to be "probably carcinogenic to humans." When the 2015 IARC report on glyphosate was released, Monsanto, the manufacturer of glyphosate, was ready with a campaign to attack Dr. Blair and IARC.

Tyrone Hayes, PhD, professor, University of California, Berkeley.

POLITICAL ATTACKS ON SCIENCE IN THE TRUMP ADMINISTRATION

The Trump administration has declared open season on attacks on scientists. A recent example is the move by Republicans on the House Committee on Science, Space, and Technology to "conduct oversight" of Linda Birnbaum, PhD, the director of the National Institute of Environmental Health Sciences (NIEHS), an institute of the National Institutes of Health that operates in the U.S. Department of Health and Human Services (DHHS). The mission of NIEHS is "to discover how the environment affects people in order to promote healthier lives." U.S. Representatives Lamar Smith (R-TX) and Andy Biggs (R-AZ) wrote to the DHHS Inspector General and the Acting Secretary in January to say they were taking this step in response to an editorial Dr. Birnbaum co-authored in a scientific journal.

That editorial, published by *PLOS (Public Library of Science) Biology* in December 2017, addressed problems in the regulation of toxic chemicals in the U.S. In it, Dr. Birnbaum noted

that, "Though there are more than 85,000 chemicals approved for use in commerce . . . 'U.S. policy has not accounted for evidence that chemicals in widespread use can cause cancer and other chronic diseases, damage reproductive systems, and harm developing brains at low levels of exposure once believed to be harmless.'" Additionally, she posited a need for more research on the risks presented by chemicals in the materials stream, and noted that "'closing the gap between evidence and policy will require that engaged citizens—both scientists and non-scientists—work to ensure that our government officials pass health-protective policies based on the best available scientific evidence.'"

Reps. Smith and Biggs charge that this last statement may be a violation of the *Anti-Lobbying Act,* which bars federal employees from lobbying Congress on specific issues, and have called on the Inspector General to analyze their concerns with an eye to launching "a full scale review of the situation." They asked for a determination by the end of January.

The *Anti-Lobbying Act* says that no Congressional funds may be used to "pay for any printed or written matter . . . intended or designed to influence in any manner a Member of Congress, a jurisdiction, or an official of any government, to favor, adopt, or oppose . . . any legislation . . . before or after the introduction of any bill . . . [or] policy." In 1989, the Department of Justice (DOJ) offered further guidance, saying that the Act applies to grassroots lobbying, meaning all "'communications by executive officials directed to members of the public at large, or particular segments of the general public, intended to persuade them in turn to communicate with their elected representatives on some issue of concern to the executive.'"

It is worth noting that Dr. Birnbaum was not paid to write the editorial, nor does it advocate for any particular policy, legislation, or action—other than engaged citizenship. Also relevant is the fact that both Representatives received money from Koch Industries, Exxon Mobil, and other companies that have a financial interest in limiting research on the environmental effects of chemicals. Andrew Rosenberg, PhD, the director of the Center for Science and Democracy at the Union of Concerned Scientists (UCS), said, "I don't see how in any sense it is lobbying. . . . Science itself is not lobbying. It is reporting on evidence."

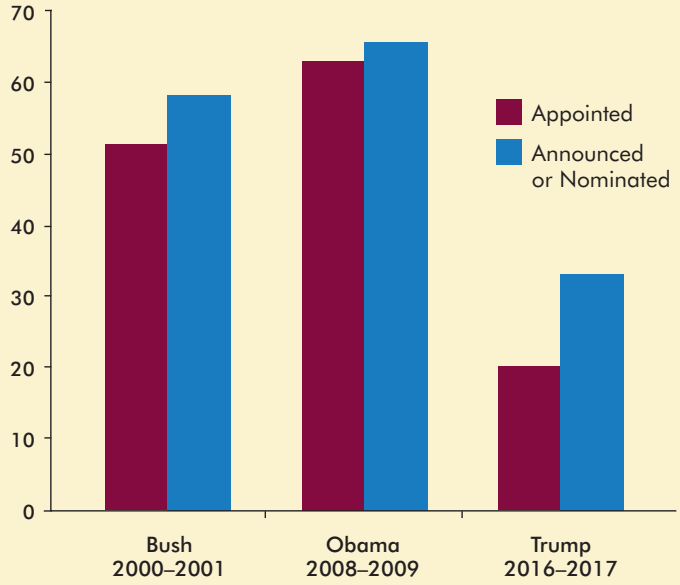
Members of the House Committee on Science had previously targeted Dr. Birnbaum for calling attention to environmental science that pointed to a need for increased regulation of chemicals. In 2013, then-chairs Reps. Larry Bucshon and Paul Broun criticized a paper in which Dr. Birnbaum described the harms of various endocrine disrupting chemicals, titled, "When environmental chemicals act like uncontrolled medicine." Industry and chemical manufacturing interests have perpetually challenged the science behind endocrine disruption linked to chemicals in products.

SIDELINING SCIENCE

UCS's Center for Science and Democracy recently released a report, *Abandoning Science Advice: One Year in, the Trump Administration Is Sidelining Science Advisory Committees*, that analyzes membership and meeting data of 73 science advisory committees across 24 departments, agencies, and sub-agencies, and interviews more than 30 current and former advisory board members. It concludes that the Trump "administration systematically sidelines science to an unprecedented extent, resulting in the neglect of valuable input from the nation's established network of scientific advisory committees." UCS finds: in 2017, federal science advisory committees met less often than in any year since the government started tracking in 1997; advisory committee membership decreased 14 percent from 2016 (a far larger dip than in the first year of the prior two administrations); and, at the Department of Energy, Department of Commerce, and EPA, fewer experts serve on science advisory committees than at any time since 1997.

Meanwhile, scientists and others charged with protecting the health of the public and the environment at EPA are being encouraged to exit the agency, as EPA Administrator Scott Pruitt advances his goal of trimming agency programs and staff by half. As Mr. Pruitt advances his goal through

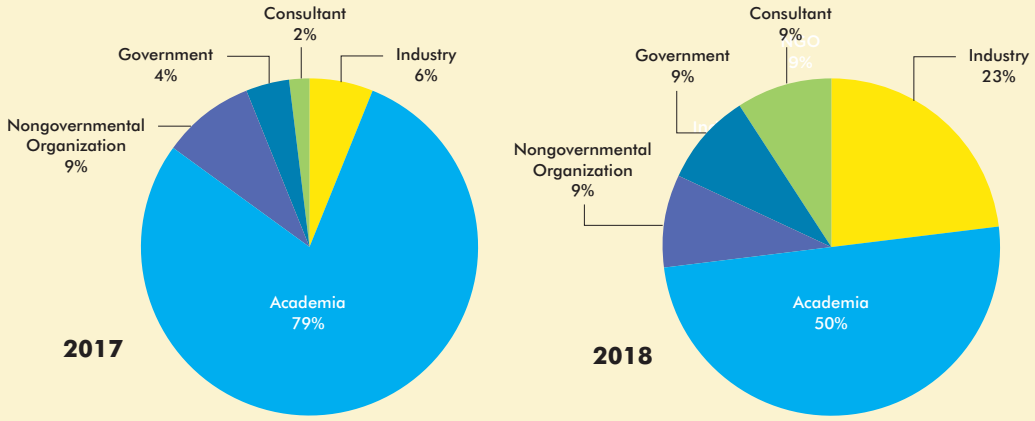
Presidential First-Year Appointments to Science Positions



Not only has President Trump failed to nominate a presidential science advisor, but he also has filled only 20 of 83 top government science positions, far fewer than his two predecessors in their first year as president.

SOURCES: UNION OF CONCERNED SCIENTISTS 2018 (UCSUSA.ORG); PARTNERSHIP FOR PUBLIC SERVICE; WASHINGTON POST 2017; NAS 2008.

The Changing Makeup of the EPA Science Advisory Board



EPA Administrator Pruitt's attacks on scientific and evidence-based guidance have distorted the composition of the agency's Science Advisory Board. By forcing academic scientists with EPA grants off the committee, he decreased the 2018 representation of academic advisors 40 percent compared with 2017. Over the same period, industry representation has tripled.

SOURCES: UNION OF CONCERNED SCIENTISTS 2018 (UCSUSA.ORG);EPA 2017C; GSA 2017.

encouraging retirement of senior scientists, the agency loses expertise, institutional knowledge, and sometimes entire areas of work. Younger scientists are discouraged from going into public service by the hostile environment. As the Trump administration focuses staff reductions on areas to which it is ideologically opposed, the agencies lose the institutional structures to deal with issues like pollution prevention and climate change.

Aides to Mr. Pruitt confirmed to the *Washington Examiner* that by the end of President Trump's first term, the agency's staff will be cut by nearly half. Administrator Pruitt told the *Washington Examiner* he was "proud" of his efforts to dismantle, some say cripple, the very agency he leads, which is responsible for enforcing the *Safe Drinking Water Act,* the *Clean Air Act,* the pesticide registration program under the *Federal Insecticide, Fungicide and Rodenticide Act* (FIFRA), and the Superfund toxic waste cleanup program, farmworker protection, and key provisions of the *Endangered Species Act*, among others. By early 2021, Mr. Pruitt and his team are aiming to reduce the staff of what was nearly 15,000 to below 8,000. Among the people who are being encouraged to "retire" are more than 200 scientists and nearly 100 environmental protection specialists.

SCIENCE AND THE MEDIA FIGHT BACK

In view of these attacks, it is not surprising that scientists and the independent media have responded. The latest is the launch of the *Silencing Science Tracker*, by the Sabin Center for Climate Change Law at Columbia Law School (Columbia University) and the Climate Science Legal Defense Fund. The function of the tracker is to monitor and record reported attempts by government to "silence science"—by prohibiting or restricting scientific research, discussion, education, or the publication or use of science information.

The tracker identifies six categories of such silencing: government censorship, self-censorship, budget cuts, personnel changes, research hindrance, and bias and misrepresentation. Reports that end up in the tracker come primarily from national news media reporting. The website also provides a resources page of other aligned initiatives, including resources for whistleblowers. Beginning with the 2016 Presidential election, the tracker has monitored silencing attempts only by the federal government, but plans to add information about analogous actions at the state level, as capacity permits.

Other initiatives have made available thousands of pages of scientific reports, legal proceedings, and other information—including emails between regulators and the regulated industry—in freely accessible databases. These include the Monsanto Papers (*https://usrtk.org/pesticides/mdl-monsanto-glyphosate-cancer-case-key-documents-analysis*), and Poison Papers (*https://www.poisonpapers.org/the-poison-papers*). The Poison Papers are contained in DocumentCloud (*https://www.documentcloud.org*). Searches of the more than 27 million pages in DocumentCloud are facilitated by a search engine (*https://www.documentcloud.org/public/search*).

AGENCIES NEED GOOD SCIENCE

Regardless of efforts to make research and government agency actions more transparent, agencies need scientists who understand the science and can apply it in a regulatory context. The politically based attacks and deliberate, overly aggressive staff reductions at EPA and other agencies encourage actions that may be arbitrary and capricious because they lack the required scientific basis. Congress must be encouraged to support full funding for science in federal agencies and push back to require the use of science in environmental and public health regulatory decisions.

WHAT YOU CAN DO

Contact your U.S. Senators and U.S. Representative and tell them that you are concerned about the lack of science informing regulatory decisions intended to carry out federal environmental and public health law. Ask them to initiate or support efforts that specify requirements for science-based decision making and staffing levels to carry out federal laws intended to protect our health and the environment.

Contributors to this article include Terry Shistar, PhD, Jay Feldman, and Debra Simes.

Widely Used Pesticide in Food Production Damages Children's Brains

EPA science on chlorpyrifos ignored as agency reverses decision to stop insecticide's agricultural use

Bills Introduced in Congress to Ban Chlorpyrifos

In response to the EPA reversal of its proposal to revoke tolerances of allowed chlorpyrifos residues on food, legislation was introduced in the U.S. Congress in July, 2017, and several states. The bills were introduced in the U.S. Senate and House of Representatives after an appeals court refused to require EPA to make a decision on the scientific issues supporting its earlier proposal to ban the chemical.

U.S. Senators Tom Udall (D-NM), Richard Blumenthal (D-CT), and eight cosponsors introduced *The Protect Children, Farmers and Farmworkers from Nerve Agent* Pesticides Act of 2017, S. 1624. U.S. Representatives Nydia Velázquez (D-NY) and 49 cosponsors introduced a companion bill, *Pesticide Protection Act of 2017,* H.R. 3380.

Bills have been introduced to ban or restrict chlorpyrifos in California, Hawaii, Maryland, and New Jersey.

One of Administrator Scott Pruitt's first acts, some would say politicized act, as head of the U.S. Environmental Protection Agency (EPA) was to rescind the agency's 2015 proposal to revoke the food tolerances, or allowable residues, of one of the most neurologically toxic pesticides on the market. The planned revocation of food tolerances would effectively ban the use of the organophosphate (OP) insecticide, chlorpyrifos, from agriculture and eliminate agriculture-related exposures to farmworkers and their children. Instead, Mr. Pruitt's EPA indicated the agency will continue to study chlorpyrifos, without any planned action until 2022.

Residential indoor uses were banned in 2000 due to elevated neurological risks to children. Since then, EPA scientists and regulators have been reviewing this hazardous pesticide, which is currently mostly used in agriculture, for mosquito-borne disease control, and on golf courses.

THE SCIENCE ON ADVERSE EFFECTS IS CLEAR

Chlorpyrifos is a neurological toxicant that damages the brains of young children. Exposures lead to decreased cognitive function, lower IQs, attention deficit disorder, developmental delays, and a host of other pervasive developmental and learning disorders in children. Because of this, it is evident to scientists and regulators that this chemical must be taken off the market.

DECADES OF SCIENCE CAST ASIDE

Chlorpyrifos is a cholinesterase inhibitor that binds irreversibly to the active site of an essential enzyme for normal nerve impulse transmission, acetylcholinesterase (AChE), inactivating the enzyme. In doing this, the chemical causes damage to the central and peripheral nervous systems and disrupts neurological activity.

Although the acute toxicity of OPs, such as chlorpyrifos, has been attributed to inhibition of AChE, there is growing evidence that this may not account for all the long-term neurotoxic effects of OPs. Studies show that OPs can induce additional neurotoxic effects at very low level concentrations below those demonstrated to inhibit AChE. Some studies find that OPs interfere with proper neuronal development and function. Others find that OP pesticides may influence the nervous system by disrupting the lipid profile of the nerve tissue; disrupting axonal transport (movement of mitochondria, lipids, synaptic vesicles, proteins, and other cell parts to and from neuron cells), and decreasing the number of nerve cells.

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CHLORPYRIFOS EFFECTS ON CHILDREN'S BRAIN FUNCTION

Studies have documented that exposure to low levels of chlorpyrifos during pregnancy can impair learning, change brain function and alter thyroid levels of offspring into adulthood, especially in females.

One pivotal body of science is the work conducted by Columbia University researchers at the Center for Children's Environmental Health (CCCEH), which measured chlorpyrifos in umbilical cord blood of pregnant mothers and conducted intelligence tests for children of these mothers later in childhood. This is part of a series of ongoing prospective cohort studies in inner-city minority populations that link exposure to chlorpyrifos to early childhood developmental delays. One study from this research group compares motor and mental development to levels of exposure to the pesticide at birth in 266 children born between 1998 and 2002 living in low-income New York City neighborhoods of the South Bronx and northern Manhattan. The study finds that concentrations of chlorpyrifos in umbilical cord blood correspond to a decrease in the psychomotor development and a decrease in the mental development in three-year-olds. A follow-up study finds that children with high exposure levels to chlorpyrifos have changed brain anatomy. Changes in brain structure attributable to low-dose chlorpyrifos exposure correlate with reduced IQ.

Additional data from CCCEH was rigorously reviewed by EPA scientists, who concurred that children exposed to high levels of chlorpyrifos had mental development delays, attention problems, attention-deficit/hyperactivity disorder problems, and pervasive developmental disorder problems. The results of these cohort studies have consistently found that depressed cognitive development, birth weights, and other neurodevelopmental endpoints are adversely affected by chlorpyrifos and other pesticidal exposures.

Further research at the University of California, Berkeley, examining families in the agricultural-intensive region of the Salinas Valley, California, found that IQ levels for children with the highest OP exposure were a full seven IQ points lower than those with the lowest exposure levels. The Berkeley team also found that every ten-fold increase in OPs detected during a mother's pregnancy corresponds to a 5.5 point drop in overall IQ scores in the seven-year-olds. Researchers at Mount Sinai School of Medicine also found that prenatal exposure to organophosphates is negatively associated with cognitive development, particularly perceptual reasoning, with evidence of effects beginning at 12 months and continuing through early childhood.

ENVIRONMENTAL JUSTICE: DISPROPORTIONATE IMPACTS WILL CONTINUE

Research on chlorpyrifos underscores that certain subpopulations are disproportionately affected by chlorpyrifos exposures. Low-income African American and Latino families, including farmworker families, continue to be at the highest risk of injury, and this disproportionate impact creates an ongoing environmental justice issue.

EXPOSURE IS DOCUMENTED

For farmworkers and their families, the threats from chlorpyrifos exposure are dire. Farmworker families tend to live in communities adjacent to treated fields, and within the buffer zones of many agricultural fields. Farmworker studies routinely show high exposure injury and disease from pesticide drift in these

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communities. Drift incidents with chlorpyrifos in California after field applications have been documented, including cases that required medical attention. Air monitoring data in the state reveal that chlorpyrifos residues are pervasive with levels more than 18 times higher than federal levels of concern. Because residues move from outside to inside homes, indoor residues of chlorpyrifos have been detected in relatively high concentrations, and farmworkers have been found to have multiple detections of pesticides in their urine, with chlorpyrifos detected in 44 percent of samples. Residues are also found on workers' clothing and on hard surfaces, such as portable toilets used by the workers in the field—demonstrating direct and indirect exposures.

Pregnant women in these communities are especially at risk. Research from a University of California, Davis study, *Childhood Autism Risks from Genetics and the Environment* (CHARGE), finds that pregnant women who live within a mile of agricultural fields treated with insecticides like chlorpyrifos are more likely to have a child develop autism. For women who live less than one mile from crops sprayed with OP insecticides during their pregnancy, the chance of a child being diagnosed with autism increases by 60%. Women in the second trimester living near chlorpyrifos-treated fields are 3.3 times more likely to have their children diagnosed with autism. The UC Berkeley Center for the Health Assessment of Mothers and Children of Salinas (CHAMACOS) study team evaluating OP effects in women and children in the Salinas Valley, CA finds that every 522 pounds of combined organophosphate pesticide applications within one kilometer of a pregnant woman's home correlates with a two point IQ loss in her children at seven years of age.

EPA'S REGULATORY RECORD ESTABLISHES EXCEEDED RISK CRITERIA

In 2015, EPA announced it would revoke all food tolerances for chlorpyrifos. This announcement came on the day of a court-ordered deadline for EPA to respond to a petition filed by Pesticide Action Network North America and the Natural Resources Defense Council a decade prior. That lawsuit called on the agency to ban all uses of the insecticide in light of the scientific evidence. Despite several assessments showing unacceptable risks, EPA made continued attempts to mitigate exposures by banning the residential use of chlorpyrifos in 2000, and imposing no-spray buffer zones in 2012 around public spaces, including recreational areas, schools, and homes, to reduce bystander exposure risks or, in the words of EPA, ensure that "any chlorpyrifos exposure outside the application site will not reach harmful levels." Thus, the decision to revoke tolerances resulted from an agency assessment that it could not meet "acceptable" risk criteria with additional mitigation measures, given the overwhelming data showing elevated risks to human health. EPA's assessments have repeatedly found 'significant risks' to children, farmworkers, and drinking water as a result of the chemical's normal agricultural use.

The unacceptable risk finding is based on the aggregate exposure assessment required by a provision in *Federal Food, Drug, and Cosmetic Act* (FFDCA), adopted in the *Food Quality Protection Act of 1996,* which requires that regulators determine dietary (i.e., food and water) and non-dietary (e.g., drift) exposure effects in combination, but explicitly not including occupational exposure. FFDCA requires the agency to consider all sources of exposure, except occupational, to the food use pesticide under review. EPA's risk assessment concludes that no level of exposure from drinking water is acceptable because both dietary risks from food exposure alone and residential exposure alone exceed levels of concern.

In 2016, EPA convened a Scientific Advisory Panel (SAP) meeting to discuss its proposed revocation of tolerances. Overall, the SAP agreed with the conclusions of the CCCEH study—that there is an association between prenatal chlorpyrifos exposure and neurodevelopmental outcomes in children. Following the SAP meeting, EPA released an updated human health assessment that stated, "[The] revised analyses do

In March 2017, under extreme political pressure orchestrated by industry groups, the agency disregarded the conclusions of its scientists and risk assessors, put aside its proposal, and called for further study.

not result in a change to the EPA's proposal to revoke all tolerances but it does modify the methods and risk assessment used to support that finding in accordance with the advice of the SAP." EPA concludes that there is "sufficient evidence that there are neurodevelopmental effects occurring at chlorpyrifos exposure levels below that required for AChE inhibition," and EPA's current approach for evaluating chlorpyrifos's neurological impact is "not sufficiently health protective."

From a scientific perspective, the data and risk assessment that EPA generated on chlorpyrifos resulted in a finding that does not meet the health standards set forth in FFDCA. EPA was clear in its 2016 revised assessment that "risk from the potential aggregate exposure does not meet the FFDCA safety standard."

Based on its scientific assessment, and in accordance with the standards set forth in food safety law, EPA moved ahead with a proposal to revoke food tolerances. However, in March 2017, under extreme political pressure orchestrated by industry groups, the agency disregarded the conclusions of its scientists and risk assessors, put aside its proposal, and called for further study. News reports cite a meeting between Administrator Pruitt and CEO Andrew Liveris of Dow Chemical, maker of chlorpyrifos, only weeks before reversing the agency's decision on chlorpyrifos.

WHAT NOW?

Now that EPA will continue chlorpyrifos use, at least until 2022 when the agency revisits the chemical, attention is turning to legislation in Congress and the states. (See box on p.16.) The data sets cited in this piece and others accumulated over years of study support a need to protect children from chlorpyrifos. Disregarding this wealth of research runs counter to the public health and environmental protection mission of EPA.

In June 2017, several farmworker and environmental groups filed an administrative appeal seeking to reverse Mr. Pruitt's decision. The appeal, which was unsuccessful, challenged EPA's action that allows chlorpyrifos to continue to be used on food crops. At the same time, attorneys general from California, Massachusetts, Maine, Maryland, New York, Washington, and Vermont filed a legal objection to the order, calling for its reversal and a revocation of all tolerances. The state of California's Office of Environmental Health Hazard Assessment has listed chlorpyrifos as a chemical known to cause cancer, birth defects and reproductive harm under its Proposition 65 law, which will trigger statewide warnings on product labels on December 15, 2018. Allan Hirsch, chief deputy director of the office, said, "The [Prop 65] panel was able to look at [the] studies, and they felt that all of the information from these studies taken together clearly showed that exposure to chlorpyrifos can harm the development of a child."

How are you exposed to chlorpyrifos?

Food: Chlorpyrifos is used to treat insect pests on a range of food commodities, and residues can remain in soil and on crops. Almonds, cotton, citrus, grapes, corn, broccoli, sugar beets, peaches, and nectarines receive the highest application of chlorpyrifos. It is also used on soybeans, Brussel sprouts, cranberries, and broccoli. Non-agricultural uses include golf courses, turf, greenhouses, wood treatments, such as utility poles and fence posts, and area-wide mosquito adulticiding for public health reasons. There are some cockroach and ant products used in secured baits.

Water: Chlorpyrifos drift contaminates surface water, including sources of drinking water. The breakdown product of chlorpyrifos, chlorpyrifos-oxon, persists in water and even through water treatment. It can remain in drinking water for at least 72 hours. EPA has determined that there is potential exposure risk from chlorpyrifos and chlorpyrifos-oxon in finished drinking water.

Air: Residues of chlorpyrifos have been detected in indoor air, including child care centers. Air monitoring reports have found chlorpyrifos at levels exceeding federal guidelines. Vapors of chlorpyrifos from treated fields can cause adverse effects, especially to those nearby. In 2012, the agency proposed new rules to reduce bystander exposure to chlorpyrifos drift from agricultural fields, including the use of buffer zones for vulnerable areas, such as residential areas, schools, hospitals, but drift from these sites still occurs, putting people at risk.

NOW IS THE TIME TO ACT! THERE ARE ACTIONS YOU CAN TAKE TO HELP STOP CHLORPYRIFOS USE.

- Urge your elected state officials to support efforts to stop the use of this highly toxic chemical in your state.
- Call your U.S. Senators and U.S. Representative and ask them to co-sponsor S.1624 and H.R. 3380, respectively, to ban chlorpyrifos.
- Tell EPA that its decision to reverse a chlorpyrifos ban is dangerous to children's health.
- Use your purchasing power. Support organic agriculture, which does not use chlorpyrifos in food production.
- Get involved: educate your neighbors, family and friends about the dangers of this and other neurotoxic pesticides.

For more information, see Beyond Pesticides' chlorpyrifos page at bp-dc.org/chlorpyrifos. For a cited version of this article, see bp-dc.org/chlorpyrifosban.

Nichelle Harriott, Terry Shistar, PhD, and Jay Feldman contributed to this piece.

President Trump gives pen to Dow Chemical CEO after signing executive order to eliminate regulations.

Where Has All the EPA Enforcement Gone?

Lax and no enforcement actions pervasive

Without enforcement of the regulations governing standards and use of toxic chemicals, the laws become unprotective and meaningless. Although the Environmental Protection Agency's (EPA) enforcement activities have varied from administration to administration and have been influenced by the "revolving door" phenomenon—with high-level employees rotating from positions in EPA to those in industry and back again—an unprecedented enforcement slowdown has been documented in the Trump administration.

When EPA was created in 1970, it was handed a wide range of responsibilities to protect human health and the environment under a range of congressional mandates. Its programs include the responsibility to implement and enforce requirements in the *Clean Air Act, Clean Water Act, Federal Insecticide, Fungicide, and Rodenticide Act* (FIFRA), *Resource Conservation and Recovery Act, Toxic Substances Control Act,* and others, including partial responsibility for the *Endangered Species Act. These laws provide EPA with a number of tools—ranging from* public disclosure, registration or licensing, to fines and injunctive relief in civil judicial enforcement cases. Historically, the EPA's authority provides a set of sizable "enforcement sticks" with which to ensure compliance with environmental statutes. *The New York Times* recently investigated what many in the science, environment, public health, and advocacy worlds perceive as a sea change, with the advent of the Trump administration and EPA Administrator Scott Pruitt's approach to the agency's mission.

HOW THE TRUMP ADMINISTRATION COMPARES

The New York Times analysis of the Trump administration's record on enforcement of environmental regulations, released in December, 2017, reviews a 266-day period during each of the Trump, Obama, and G.W. Bush administrations, in order to compare the records. The review looks at both judicial and administrative cases initiated by EPA in an effort to remedy violations of environmental regulations. Data from this analysis of enforcement substantiate a more permissive approach in the current administration toward polluters, as compared with that of the prior two administrations, says the *Times,* and enforcement actions have been fewer and smaller than those during those two previous administrations.

Injunctive relief actions have declined under the Trump administration, which has demanded approximately $1.2 billion in such remedies—12% of what was sought under the Obama administration, and 48% of that under President Bush. EPA has stated that it remains committed to ensuring that companies obey environmental laws and regulations, adding that it focuses on "EPA and states work[ing] together to find violators and bring them back into compliance and to punish intentional polluters." The *Times* reports that Mr. Pruitt has said that the Trump administration's high-profile regulatory rollback "'does not mean a free pass for violators of environmental laws.' But as the Trump administration moves from one attention-grabbing headline to the next, it has taken a significant but less-noticed turn in the enforcement of federal pollution laws."

THE TOP REGULATOR'S CLOSE RELATIONSHIP WITH THE REGULATED

Scott Pruitt's early 2017 confirmation as EPA Administrator set off alarm bells in the advocacy community. Prior to becoming Administrator, he was the Attorney General of Oklahoma and was infamous for suing EPA on behalf of industry interests under (thinly) veiled claims of the state's interests. As the Environmental Integrity Project notes, "The record shows that Pruitt has been a virtual lobbyist for the state's oil and gas companies, the agricultural industry, and other business groups. He also has a history of fighting federal action on environmental issues, cutting back on state enforcement, denying the reality of climate change, and trying to block clean water regulations. [He] built a national reputation, including as Chairman of the Republican Attorneys General Association, for suing EPA a dozen times in a politically charged campaign to try to scale back the power of the federal agency."

EPA Administrator Scott Pruitt built a national reputation for suing EPA a dozen times in a politically charged campaign to try to scale back the power of the federal agency.

New York Magazine's Daily Intelligencer reviewed Mr. Pruitt's schedule during his first four months in office and discovered through a records request by the nonprofit American Oversight that Mr. Pruitt spends most of his time meeting with industry lobbyists and executives, and only rarely meets with environmental, public health, or consumer groups. From April through early September of 2017 he had met with science or environmental groups five times, CNN reported.

When critics have spoken out about EPA's seeming uber-friendliness to business interests, the agency response has been that EPA had become, under prior administrations, "the poster child for regulatory overreach, and that Mr. Pruitt is now trying to "even the playing field" by meeting with those entities (read "industry") that had been "ignored" by the Obama administration. In its October 2017 article, "Scott Pruitt's Environmental Protection Agency Doesn't Give a Single Damn About the Environment," *GQ* magazine notes that, "The EPA is, at its core, an organization designed to *check* a free market that, absent regulation, would have no incentive to consider the environmental implications of its business decisions."

The *Times* article notes that "confidential internal EPA documents show that the enforcement slowdown coincides with major policy changes ordered by Mr. Pruitt's team after pleas from oil and gas industry executives. . . . After this [*Times*] article was posted, EPA issued a statement criticizing the report, and saying that 'Administrator Scott Pruitt is committed to enforcement,' and that 'there is no reduction in EPA's commitment to ensure compliance with our nation's environmental laws." Yet, according to confidential EPA documents, the agency plans to "stand down" on some pollution cases, and there is a national "handoff" of many enforcement duties to agencies in the states. Administrator Pruitt has called this "cooperative federalism;" critics call it an industry-friendly gesture to look the other way on polluters.

More than a dozen current and former EPA officials told the *Times* that the slowdown in enforcement is real on the ground and is coming from the top. Agency employees in the Chicago office—typically a very busy regional office because it oversees industry in Rust Belt states—told the paper that it has become hard even to start a new investigation. The *Times* reports that on May 31 of 2017 EPA employees nationally received an email memo from Susan Shinkman, the director of civil enforcement at EPA and one of Mr. Pruitt's top deputies. It directed agency investigators to get permission "before asking companies to track their emissions with instruments that determine the type and amount of pollutants being released at their plants."

The memo also told investigators that they need special authorization for such testing if the state objected to it, or if they did not already have evidence of a high likelihood of violation of pollution laws. "The scope was far-reaching, applying to possible violations of the *Clean Air Act*, the *Clean*

Enforcement Options

EPA's enforcement options are judicial or administrative. Judicial cases involve the Department of Justice (DOJ) pursuing legal action against a polluter on behalf of EPA, and can result in significant fines and stop use orders—effecting changes to ensure no further violations will occur. Administrative cases do not involve DOJ but can be heard by an administrative law judge, resulting in fines and injunctive relief. One of EPA's most effective options is enforcement actions to force companies to reconfigure or retrofit how they operate in order to curb pollution and meet existing regulatory standards. Most enforcement actions initiated by EPA are for the assessment of civil penalties. Matters may be resolved through alternative dispute resolution, with the administrative law judge serving as a mediator. In fact, the threat of litigation is a powerful tool to elicit compliance with the law.

Water Act and federal laws regulating hazardous waste plants," notes the *Times*. It functionally disarmed investigators of, arguably, their most important tool for snagging polluters. As the *Times* article reports, "Jeff Trevino, a lawyer in the Chicago office, who has worked for the agency for 27 years, said the new hurdles imposed by Mr. Pruitt had created 'a Catch-22' because, with new policies effectively discouraging requests for information, investigators will have a harder time getting the data needed to detect and confirm violations." It is worth noting that investigators' ability to order such tests has been a particular irritant for the fossil fuel industry.

In the past couple of years, the Denver and Chicago offices had issued a series of requests for information on petrochemical industry sites in the Midwest because of significant concerns about airborne particulate pollution, and adverse impacts of escaping air pollutants (such as benzene and methane) on health and climate. Late in the tenure of the Obama administration, companies ratcheted up their complaints about the testing, and Koch Carbon (a Koch Industries subsidiary) challenged EPA's authority to require such testing. Conservative U.S. Senator James Inhofe (R-OK), chair of the Senate Environment and Public Works Committee, and other Republicans got behind the challenge to EPA, holding public hearings and calling out the testing as a sideways maneuver to cut greenhouse gas emissions.

Once Mr. Pruitt was made EPA Administrator, the complaints fell on more-receptive, ears: "Ms. Shinkman, in an interview, said she was instructed to write the new policy memo after Mr. Pruitt received letters of complaint from oil industry executives in North Dakota and Colorado." The North Dakota Petroleum Council, for example, sent a letter to Administrator Pruitt on March 31, calling the testing costly, burdensome, and a potentially existential threat to petroleum companies' ability to do business. The Administrator wrote back, saying that EPA would "develop best practices for judicious use of the requests," and would "hand off" the bulk of enforcement functions regarding air pollution regulations to the state.

This response in North Dakota was seen by critics as part of an effort by the EPA to give states more say in how to treat polluters—a bellwether of the "new" EPA's intent to limit—or abandon — some of its enforcement functions. This deference to "state authority" can be interpreted as a reduction in enforcement, given the antipathy some states, such as North Dakota, tend to have for pollution regulations, coupled with the Trump administration's reduction in federal grants that help fund state and local enforcement of regulations.

EPA EMPLOYEES ARE DEMORALIZED

The enforcement "slowdown" has been exacerbated by both an exodus of more than 700 EPA employees since the 2016 Presidential election—many of them through "buyouts" designed to reduce the agency's workforce—and ongoing high-level vacancies, which are intentionally being left unfilled. A case in point: the EPA top enforcement officer, Assistant Administrator for the Office of Enforcement and Compliance Assurance Susan Bodine, was confirmed on Dec. 7—10.5 months into the current administration's tenure.

This "new paradigm" at EPA has career employees, and especially those in regional offices who have deep knowledge of local and regional circumstances and issues, reportedly feeling demoralized and stymied. A former regional director of air and radiation in the Chicago regional EPA office, George Czerniak, said to the *Times,* "'People at the agency are just being cautious, almost to the point of paralysis. They do not

want to do anything for fear of being told they have done something wrong—something the new administrator won't like.'"

"'Certain people who are polluting are doing it with impunity right now and I think it is horrible,' said Nicole Cantello, an EPA lawyer in the Chicago office, who has worked at the agency for 26 years." [Note: EPA employees quoted in the *Times* article spoke as union members, and not as employees; EPA did not authorize employees to speak.] A Bush administration lawyer who was assistant administrator for EPA's enforcement office, Granta Nakayama, said, "'If you're not filing cases, the cop's not on the beat. . . . Or has the cop been taken off the beat?'" Cynthia Giles, former assistant administrator for the enforcement office during the Obama administration, said, "'The Pruitt EPA is cratering on the enforcement work that matters most: holding the biggest polluters accountable.'"

The *Times* also reports, "Paul Calamita, who represents cities accused of violating the *Clean Water Act* when they release sewage and contaminated storm water into rivers and lakes, recommends that clients team up with state governments to push back against the EPA. . . . Under President Trump, Mr. Calamita said, the EPA and the Department of Justice have been willing to compromise, withdrawing a six-figure penalty in one instance after refusing to do so in two previous rounds of negotiations during the Obama administration. . . . 'States with new Republican governors are following the Trump approach—providing compliance assistance at the outset to avoid enforcement where the discharger is cooperative,' he said in a presentation to utility executives from around the United States. 'A state that pushes back on EPA is likely to be successful.'"

EPA BEFRIENDS PESTICIDE MANUFACTURERS

The rollback and slowdown of regulatory activity at EPA affects all regulated sectors, including pesticide use. Mr. Pruitt met privately with Dow Chemical's CEO, Andrew Liveris, several weeks before reversing EPA's tentative decision to ban chlorpyrifos. A copy of Mr. Pruitt's schedule reveals he met with Mr. Liveris on March 9 at a Houston hotel and "twenty days later Pruitt announced his decision to deny a petition to ban Dow's chlorpyrifos pesticide from being sprayed on food." 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. The SAP agreed with EPA that there is an association between chlorpyrifos prenatal exposure 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 rollback and slowdown of regulatory activity at the EPA affects all regulated sectors, including pesticide use. Scott Pruitt, EPA Administrator, met privately with Dow Chemical's CEO several weeks before reversing EPA's tentative decision to ban chlorpyrifos.

In November, the administration filed a request with a federal judge, seeking a two-year delay of a looming deadline related to a determination of whether a family of commonly used pesticides is harmful to endangered species. Under a 2014 legal agreement, the National Marine Fisheries Service was required to issue findings on the pesticides—chlorpyrifos, diazinon, and malathion—by the end of 2017. Beyond Pesticides and other environmental and health advocacy groups have battled for years to get the federal government to evaluate more comprehensively the risks to humans and endangered species of organophosphate pesticides. Federal scientists had compiled a record of 10,000-plus pages demonstrating that the three organophosphates pose risks to nearly every endangered species studied. Prior to the 2016 election, regulators had expected to issue new limits on the use of the pesticides. "It's appallingly clear that the pesticide industry is now essentially running Trump's EPA,' said Lori Ann Burd, environmental health director at the Center for Biological Diversity. "Rather than following the science and the law, the agency is turning its back on endangered species across the country," Ms. Bard said.

CONCLUSION

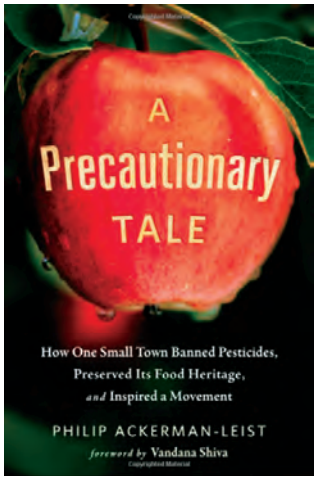
The perennial Goliath faced by entities working to protect public health and the environment—corporate influence on federal and state decision makers—appears to have been strengthened with less pressure coming from compliance and enforcement actions. The likelihood of getting caught and being fined for a violation has historically contributed to a general industry resolve to comply with regulations. The weakened workforce engaged in enforcement means that the threat to public health and the environment grows.

Debra Simes and Terry Shistar, PhD contributed to this article.

Reviewed by Terry Shistar, PhD

A Precautionary Tale

HOW ONE SMALL TOWN BANNED PESTICIDES, PRESERVED ITS FOOD HERITAGE, AND INSPIRED A MOVEMENT



By Philip Ackerman-Leist
Published by Chelsea Green Publishing, White River Junction, Vermont
2017, 256 pages

While the conflict over pesticide drift is a major theme in this book, and the pesticide ban is the climax of the story, this is primarily a tale about a place called Mals, the people who inhabit it, their relationships and values. Even though the title of this book includes the word "town," this book is actually about a "comune," a unit of government that may contain several subunits. Mals, the subject of this book, is over 93 square miles in area and encompasses ten villages and hamlets, as well as farmland, providing homes to 5,092 people.

Mals is located 3,445 feet above sea level in the province of South Tyrol in the Upper Vinschgau Valley, at the intersection of Italy, Austria, and Switzerland. Although it is now considered part of Italy, 97% of the population speaks German as a first language. Glaciers immediately above the Vinschgau Valley rise to almost 13,000 feet above sea level.

Mals and the Upper Vinschgau Valley have traditionally been home to a diverse agriculture, including dairy cattle, ancient and modern grains, fruits, and vegetables. Until recently, it was not possible to grow apples on a commercial scale there, but global climate change has made the climate more conducive to commercial apple production. "Big Apple"—large-scale chemical-intensive apple production—has been marching up the valley, replacing the diverse small farms with large apple monocultures. These large monocultures spray their apple trees 20–30 times per year.

Citizens of Mals were deeply concerned when they learned about the toxic chemicals—such as chlorpyrifos, captan, and dithiocarbamates—carried by strong winds blowing up the valley and being found in hay, honey, and food, as well as in the schoolyard. As they learned more, they became even more concerned about the combinations of chemicals, including so-called "inert," or undisclosed secret, ingredients designed to make the active ingredients more potent. They were concerned about their livelihoods, since the organic certification of some farms had been revoked. They were concerned about their health. They cared about the impact of pesticide drift on the tourist industry. And they were also troubled by the impact of the chemical-dependent monoculture on the culture of Mals.

The culture of Mals is not only diverse in its agriculture, but is also diverse in language and food traditions. It was pursuing a goal of becoming a sustainable community through changes in transportation, energy development, and ecotourism. Many in Mals felt threatened not only by pesticide drift, but also by the intrusion of monoculture in the form of Big Apple, or industrialized apple production.

All these concerns brought the community together for a united purpose. That goal was realized with the passage of a ban on pesticides in Mals, which required multiple strategies and actions. The advocates for a ban won, but you'll have to read the book to find out why. As one person said, it was a tussle. Above all, the advocates stressed the importance of a positive vision for Mals, even as they proposed a ballot measure focusing on the dangers of pesticides. The ballot measure passed with 75% of the vote, with 69% of the electorate voting. The referendum was then put into law by action of the Mals Municipal Council and survived a legal challenge that struck down the referendum, but not the ordinance passed by the Council.

Read *A Precautionary Tale* for the details and for a wonderful portrait of Mals and its inhabitants. Their stories inspire the action taking place across the U.S. as communities come together to adopt ordinances to ban toxic pesticides and adopt organic land and landscape management policies and practices.

The people in Mals were concerned about their livelihoods. They were concerned about their health, they cared about the impact of pesticide drift on the tourist industry, and they were troubled by the impact of the chemical-dependent monoculture on their culture.

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Bruce Blumberg, PhD, professor of developmental and cell biology at UC Irvine's School of Biological Sciences, studying epigenetic pesticide effects.

Dean Baker, MD, MPH, former director, Center for Occupational and Environmental Health, and professor of medicine, epidemiology, and public health, UC Irvine.

Kim Konte, board member, Non Toxic Irvine, spearheading Irvine ordinance transitioning city to organic land management.

Jay Feldman, executive director, Beyond Pesticides, supporting advocacy for federal, state, and local policies and practices.

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