



Regulators Sit on Sidelines as Hazards Documented

Synthetic Pyrethroids Linked to Cardiovascular Disease

A University of Iowa College of Public Health study, published in *JAMA (Journal of the American Medical Association) Internal Medicine*, demonstrates that an increase in exposure to synthetic pyrethroid insecticides is associated with higher risks of death from cardiovascular disease and other causes. These compounds—inhaled, ingested, or absorbed through the skin—are highly neurotoxic, and linked to certain cancers, endocrine disruption, and suppression of the immune system, as well as respiratory and reproductive impacts. The authors of the study, “Association Between Exposure to Pyrethroid Insecticides and Risk of All-Cause and Cause-Specific Mortality in the General US Adult Population,” gathered data on 2,116 adults, aged 20 or older, from the *National Health and Nutrition Examination Survey*.

Chemical Exposure Causes Decline in Children’s IQ

Exposure to environmental chemicals in the U.S. since the turn of the century has resulted in millions of lost IQ points, hundreds of thousands of cases of intellectual disability, and trillions of dollars of lost economic activity. This is according to a study, “Trends in neurodevelopmental disability burden due to early life chemical exposure in the USA from 2001 to 2016: A population-based disease burden and cost analysis,” led by a team of scientists at New York University (NYU) Grossman School of Medicine, published in the journal *Molecular and Cellular Endocrinology*. “Although people argue against costly regulations, unrestricted use of these chemicals is far more expensive in

the long run, with American children bearing the largest burden,” says senior study co-author and pediatrician Leonardo Trasande, MD, director of the Division of Environmental Pediatrics of NYU Medical School. Prenatal exposure represents a critical window when these effects can be particularly pronounced and result in lasting damage to a child. While using the insecticide chlorpyrifos as an exposure of concern, study authors warn that switching to another toxic pesticide is problematic. “Without proper toxicological testing standards for industrial chemicals in the United States we run the risk of introducing [substitute] chemicals that are just as bad, or even worse, for human health,” the study reads.

Pesticides were estimated to result in over 26 million lost IQ points and over 110,000 cases of intellectual disability, totaling roughly \$735 billion in economic costs. The total impact of all the chemicals studied by researchers, including flame retardants, lead, mercury and pesticides combined, is estimated at nearly 200 million lost IQ points, and almost 1.2 million cases of intellectual disability, costing the U.S. economy an astounding \$7.5 trillion.

FLUORIDE EFFECTS IN THE WOMB

A birth cohort study in Canada finds that elevated levels of fluoride exposure during pregnancy are associated with lower IQ scores in 3- to 4-year-old children. The research, “Association

Between Maternal Fluoride Exposure During Pregnancy and IQ Scores in Offspring in Canada,” published in the journal *JAMA Pediatrics*, builds on previous analyses that suggest high fluoride exposure is related to adverse effects to children’s neurodevelopment. Researchers recommend that pregnant mothers should reduce fluoride intake during pregnancy. Noting the controversial subject matter, *JAMA Pediatrics* editor Dimitri Christakis, M.D. said research was subjected to “additional scrutiny for its methods and the presentation of its findings.” The authors of this study note, “The beneficial effects of fluoride predominantly occur at the tooth surface after the teeth have erupted. Therefore, there is no benefit of systemic exposure to fluoride during pregnancy for the prevention of caries [tooth decay] in offspring. The evidence showing an association between fluoride exposure and lower IQ scores raises a possible new concern about cumulative exposures to fluoride during pregnancy, even among pregnant women exposed to optimally fluoridated water.” David Bellinger,



PhD, professor of neurology at Harvard Medical School and Boston Children's Hospital, notes that the effect size is comparable to what is seen with childhood lead exposure. Dr. Bellinger told National Public Radio that various routes of exposure, such as food, tea, and toothpaste, should be considered.

The use of the pesticide sulfuryl fluoride, allowed in food production since 2004, in combination with fluoride use in water fluoridation, creates unacceptable hazards under EPA and National Academy of Sciences (NAS) scientific determinations. Beyond Pesticides, Fluoride Action Network, and Environmental Working Group successfully petitioned EPA in 2006 and EPA announced a phase out in 2011 (to take effect in 2014), a decision that was reversed by a 2014 Farm Bill provision, which orders EPA not to follow the law and science that requires agency action to protect health.



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Ecological Disaster

Thousands of fox, coyote, and other carnivores will continue to be poisoned to death by hydrogen cyanide after EPA re-approved the use of M-44 "cyanide bombs" in December. Cyanide bombs are small, poison-filled land mines baited with food and placed on rural land to kill predators of grazing livestock. "EPA is blatantly ignoring its fundamental

duty to protect the public, our pets and native wildlife from the cruel, lethal impacts of cyanide bombs lurking on our public lands," said Kelly Nokes, an attorney with Western Environmental Law Center. Non-lethal predator management and deterrence are effective and critically important to healthy ecosystems, avoiding cascading adverse ecosystem effects (trophic cascades).

The End of Science in Regulatory Decision Making

The *Scientific Integrity Act*, H.R. 1709, was introduced by U.S. Rep. Paul Tonko (D-NY) to restore scientific integrity to government agency decision making. Attacks on science in federal agencies have increased significantly in the Trump administration. H.R. 1709 finds that "science and the scientific process should inform and guide public policy decisions on a wide range of issues, including improvement of public health, protection of the environment, and protection of national security."

Reported in a front page January 1, 2020 *New York Times* piece, "A top panel of government-appointed scientists [Science Advisory Board], many of them handpicked by the Trump administration, said on Tuesday that three of President Trump's most far-reaching and scrutinized proposals to weaken major environmental regulations are at odds with established science." These

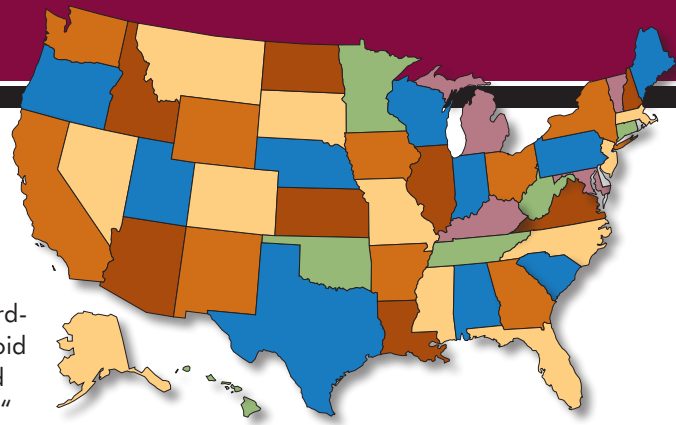
most recent rollbacks involve protection of waterways, limitations on vehicle emissions, and use of scientific data to support health regulations. Without reliance on science, an agency's determination is by definition "arbitrary and capricious," resulting in rulemaking that can be found illegal in the courts. Quoted in *The Times*, Vermont Law School professor Patrick Parenteau said, "The courts basically say if you're going to ignore the advice of your own experts you have to have really good reasons for that . . . that go to the merits of what the critiques are saying."

Scientific Critiques Challenge EPA's Failure to Regulate

Over a dozen groups joined with Beyond Pesticides in January to tell EPA that it has failed to meet the statutory standard for continued registration of five pyrethroid insecticides. They raise several human health and environmental concerns—synergistic effects of combined

active ingredients in common formulations, a large number of adverse effects incidents, endocrine disruption, vulnerability of children to exposure, and threats to pollinators and endangered species. The comments criticize the agency's ability to ensure that pesticide products commonly available for insect control are safe, do not expose the public to serious hazards or uncertainties, and are necessary, given the availability of alternatives.

Separate comments challenge EPA's analysis of the weed killer paraquat, prohibited in over 30 countries, including all of the EU and China, and linked to Parkinson's disease and possible endocrine disruption. The agency's risk assessments infer that changes in labeling will mitigate risks, despite serious uncertainties and data gaps in its assessment. The comments cite deficiencies in the assessments, several exceedances of unacceptable risk, and a failure to demonstrate that paraquat can be used without serious adverse effects. The groups urge the agency to ban the chemical.



Bird Population Decline Tied to Pesticides



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Birds are facing an existential crisis. Three billion birds have disappeared since 1970. Two out of three birds are threatened by climate change. In spite of this, the nation's most important bird protection law, the *Migratory Bird Treaty Act* (MBTA) is being weakened by the Trump Administration's Department of the Interior. The *Migratory Bird Protection Act*, H.R. 5552, introduced by U.S. Representative Alan Lowenthal (D-CA) and cosponsored by 18 bipartisan cosponsors, is intended to restore the critical protections removed by the Trump administration.

Songbirds Threatened. The poisonous farm fields that migratory birds forage reduce their weight, delay

their travel, and ultimately jeopardize their survival, according to research, "A neonicotinoid insecticide reduces fueling and delays migration in songbirds," published in the journal *Science*. Like their effects on other pollinator populations, neonicotinoid insecticides generally are not causing acute poisoning and immediate death, but instead precipitating a cascade of sublethal impacts that reduces their fitness in the wild. As the authors told *Environmental Health News*, the study is a call not simply to ban neonics or one class of chemical, but to transition the entire farming system to sustainable bird- and bee-friendly practices.

Bird Habitat Threatened in Arkansas. A citizen science monitoring project of Audubon Arkansas has found evidence of contamination from the weed killer dicamba far from the genetically engineered soybean and cotton fields, documenting nearly 250 observations of dicamba symptomology across 17 Arkansas counties.

Community scientists were trained by Audubon to detect typical dicamba contamination symptoms, such as leaf cupping (just as it sounds, the leaf takes

on a concave shape), epinasty (a distorted leaf growth pattern), and chlorosis (yellowed leaves because of insufficient chlorophyll), and to look for multiple symptoms on one plant, uniform symptoms throughout a plant, and instances of numerous plants in an area exhibiting symptoms. Species found to be affected include oak, redbud, and sycamore trees, and muscadine and trumpet vine plants.

Dan Scheiman, PhD, bird conservation director for the organization, after launching the project last spring, said, "Spraying dicamba on millions of acres of soybean and cotton is an uncontrolled experiment that puts sensitive habitats at unacceptable risk. In a landscape full of genetically engineered crops, the atmospheric build-up of volatized dicamba may result in significant damage to our state natural areas, wildlife management areas, national wildlife refuges, family farms, and the wildlife they harbor."

Studies Show Sustainability Only Achieved without Pesticides

Treated Seeds Offer No Benefit. The actual utility of pesticides to achieve their purported goals is an under-recognized failing of the regulatory review of pesticide compounds for use. A study published in *Scientific Reports* exposes the faulty assumptions underlying the use of neonicotinoids—the most widely used category of insecticides worldwide. The study, "Neonicotinoid seed treatments of soybean provide negligible benefits to US farmers," demonstrates that use of neonicotinoids (neonics) to treat seeds—a very common use of these pesticides—actually provides negligible benefits to soybean farmers in terms of yield and overall economic benefit. In a 2014 report, the U.S. Environmental Protection Agency (EPA) concluded that soybean seed treatments with neonicotinoid insecticides provide little or no overall benefits in controlling insects or improving yield or quality in soybean production.



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However, the agency does not evaluate efficacy or essentiality in its pesticide registration process, despite calls from advocates to do so.

Neonicotinoids are systemic pesticides that move through a plant's vascular system and are expressed in pollen, nectar, and guttation droplets (droplets exuded on the tips or edges of leaves of some vascular plants). They can also persist in the environment—in soil and water—for extended periods. Neonics are applied to seed, as well as to crop soils and to plant foliage. Corn and soybean seed treatments represent the largest uses of neonics in the U.S.—somewhere between 34% and 50+% of the soybean crop and for nearly all field corn. This contrasts dramatically with metrics from the decade prior to the introduction of neonics to the marketplace, when a mere 5% of soybean acreage was treated with insecticides. The pesticide is also applied liberally to cotton, oilseed rape, sugar beet, vegetable, and pome, stone, and citrus fruit crops.

Regenerative Agriculture Undermined by Pesticide Use

Pesticides and Soil Health, a report by Friends of the Earth, focuses on an often overlooked aspect of soil health, “that eliminating or greatly reducing toxic pesticides is key to building healthy soils and ecosystems for a healthy planet.” Beyond Pesticides has long maintained that toxic pesticide use has no place in organic and regenerative land management practices and that they can and should be eliminated. According to Jay Feldman, executive director of Beyond Pesticides and former member of the National Organic Standards Board (NOSB) said, “Pesticide reduction strategies that allow continued use of toxic substances undermine the soil biology and biodiversity that is critical to healthy plants and unnecessary to achieving pest management goals.” “It's past time to talk elimination of toxic pesticides and nothing short of that,” he said.

Toxic pesticides have a diverse range of unintended impacts, including cancer and other diseases to those exposed via usage or drift, and crop loss. Lesser known is the impact that pesticides have on the microbes that live in the soil. The report notes that a teaspoon of healthy soil holds billions of soil microorganisms. These bacteria and fungi provide a range of services to plants, such as access to necessary nutrients like nitrogen and phosphorus. In exchange, plants provide these tiny life forms with carbon in the form of carbohydrates. As the climate crisis continues to wreak havoc, this process of carbon sequestration is integral to carbon drawdown (decline) in the atmosphere. Pesticides, therefore, pose a threat to the capacity of soil to play a role in the fight against the climate crisis.

Toxic chemicals damage the soil microbiota by decreasing soil microbial biomass and altering the composition of the soil microbiome. Fungi-rich soil improves productivity and increases carbon sequestration capacity. Soil degraded by

toxic pesticide use sequesters less carbon than soil with a diverse array of microbiota.

While no-till (eliminating tillage) practices are often associated with regenerative practices that reduce erosion and preserve microbes, the report states, “Data indicates that the majority of no-till farmers rely on herbicides such as glyphosate, the active ingredient in Roundup. In fact, 86% of *No-Till Farmer* readers said they planned to plant Roundup Ready corn in 2017, while 80 percent planned to plant Roundup Ready soybeans, and some 92 percent planned to use glyphosate for weed control.”

Synthetic Fertilizers Disrupt Carbon-Capturing Ability of Salt Marshes

Salt marshes, areas of coastal grassland regularly flooded by saltwater, provide a major global service by sequestering and storing carbon in the form of organic matter. However, research finds that nitrates from synthetic fertilizers found in agricultural runoff could change the microbial composition of the salt marshes to encourage organic matter decomposition and carbon release instead of capture. The study, “Nitrate addition stimulates microbial decomposition of organic matter in salt marsh sediments,” was published in *Global Change Biology*.

Led by scientists at the Marine Biological Laboratory (MBL), Woods Hole, and Northeastern University, the study—conducted on salt marsh sediments located in Plum Island Sound, MA—evaluated three core samples from the site, sectioning each one into shallow, mid, and deep sediments. The results indicate that nitrates stimulate the production of dissolved inorganic carbon, leading to decomposition of organic matter that would otherwise remain stable in salt marsh sediments. First author Ashley Bulseco, PhD, wrote, “Traditionally, we have viewed salt marshes as resilient to nitrogen pollution, because the microbes there remove much of the nitrogen as gas through a process called denitrification. But this research suggests that when nitrate is abundant, a change occurs in the microbial community in salt marsh sediments that increases the microbes' capacity to degrade organic matter. This potentially reduces the ability of the marsh to store carbon.”

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Europe Moves Against Pesticides

Insecticide Chlorpyrifos Ban. The European Union (EU) voted to ban the neurotoxic insecticides chlorpyrifos and chlorpyrifos-methyl from use beginning February 1, 2020. The EU regulatory committee decided not to renew approvals following a European Food Safety Authority (EFSA) finding, released in August, that there is no safe exposure level for chlorpyrifos. The decision to protect the public in the EU differs from the trajectory of the U.S., where individual states are forced to step up to act in lieu of an independent, science-based federal regulatory system. Chlorpyrifos damages fetal brains and produces cognitive and behavioral dysfunction, particularly in children. Prenatal and early life exposure to chlorpyrifos is linked to lower birth weight and adverse neurodevelopmental effects, including reduced IQ, loss of working memory, attention disorders, and delayed motor development. Farmworkers are at heightened risk of acute exposure effects of the chemical (including accidents and

spills), which can cause respiratory paralysis and death.

Banning a Bee-Toxic Insecticide.

The European Commission (EC), in January, 2020 decided not to propose to renew approval of the neonicotinoid pesticide thiacloprid, citing both environmental and health concerns related to the pesticide's use and resulting exposure. The decision was approved by a majority of EU governments last fall. The EC based its decision on EFSA findings published in January 2019, which highlighted concerns about human toxicity and high concentrations in groundwater. European Commissioner for Health and Food Safety, Stella Kyriakides, commented, "There are environmental concerns related to the use of this pesticide, particularly its impact on groundwater, but also related to human health, in reproductive toxicity."

France Pulls Glyphosate. France made headlines in the great, global



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glyphosate (Roundup) debate. In December, the French health and safety agency ANSES (Agence Nationale de sécurité sanitaire de l'alimentation, de l'environnement et du travail—Agency for Food, Environmental and Occupational Health and Safety) made preliminary decisions within its review of authorizations for the 69 glyphosate (Roundup) weed killer products allowed for sale in the country. ANSES called for immediate withdrawal of authorization for 36 of those products "due to a lack or absence of scientific data which would allow all genotoxic risk to be ruled out."

Malibu, California Circumvents State Preemption Law

In a hard-earned win, the city of Malibu, California collaborated with the Coastal Commission to ban toxic pesticide use in their community. While the city had

already voted to ban all toxic pesticides back in 2016, the state's pesticide law preempts, circumvents, or prohibits, a municipality from restricting private use of pesticides more stringently than the state. However, the Coastal Commission, as a state agency that establishes agreements with municipalities—known as a "Local Coastal Program" or "LCP"—circumvents the preemption issue. The municipal agreement document codifies regulations that are set up between the Coastal Commission and a local jurisdiction. In December, Malibu City Council unanimously voted to amend Malibu's LCP to ban the use of toxic pesticides. According to activist Joel Schulman of Poison Free Malibu, "We're basing our local coastal program amendment on what [unincorporated L.A.] County did in 2014." That year, L.A. County and the Coastal Commission banned anticoagulant rodenticides and some toxic pesticides in the

unincorporated Santa Monica Mountains Coastal Zone LCP. In September 2017, a Superior Court rejected a lawsuit challenging the decision and affirmed the ability of the Coastal Commission to work with municipalities to restrict pesticide use.

New York Gov Opts for Regulatory Phase Out of Chlorpyrifos

The Governor of New York, Andrew Cuomo, vetoed legislation to ban the brain-damaging insecticide chlorpyrifos in December, then issued an immediate ban on aerial application, and proposed a regulatory phase-out that bans all uses by December 2020, with an exception for the application to apple tree trunks extended to July 21, 2021. The proposal is subject to a public comment period.



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