



Pesticides, Pruitt and a plea for biodiversity

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This September marks the 55th anniversary of Rachel Carson's seminal book *Silent Spring*, which documented widespread and indiscriminate use of pesticides and their detrimental impacts on nature. *Silent Spring* awakened the general public, and sparked the legislation creating the Environmental Protection Agency in 1970.

One of the EPA's first actions was to ban agricultural uses of DDT, a pesticide that causes egg thinning in birds that eat the chemical's targeted insects. One result of this ban was a rapid resurgence in many bird populations, including those of our national emblem, the bald eagle.

Now, 47 years after Republican President Nixon signed the EPA into law, current Administrator Scott Pruitt is working to roll us back to the era before *Silent Spring*. At the end of March, Administrator Pruitt, ignoring his own agency's overwhelming scientific evidence, denied a formal petition to ban agricultural use of the pesticide chlorpyrifos.

Chlorpyrifos is among the most widely used pesticides in the world. Nearly 10 million pounds are used annually to eradicate a handful of insect pests, including cutworms, borers and rootworms that feed on our grain, vegetable and fruit crops. Chlorpyrifos kills these insects, along with ticks and mites, by disrupting their nervous systems.

But the effect of chlorpyrifos on target pest species is only the tip of a toxic iceberg wreaking ecological disaster. As a general neurotoxin,

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chlorpyrifos poisons a vast swath of species — some harmless, many beneficial — that are the collateral damage in this unending and arguably unwinnable war against agricultural pests.

The EPA's own [synthesis](#) of hundreds of scientific studies about chlorpyrifos estimates that nearly 2,000 species are susceptible to this chemical weapon of mass destruction. These species hail from numerous branches of the tree of life, and include plants, birds, fish, mammals and many, many insects.

Along these lines, a recent article in [Science](#) described the 'clean windshield phenomenon' — a precipitous decline in insect abundance and diversity. Our elders remember regularly scrubbing numerous large insects off car windshields, but today, far less scrubbing is required. In Germany, insect diversity and abundance has plummeted at least 80 percent in the last 25 years. Here in the U.S., similar studies are just beginning.

The cause of the clean windshields is unknown, but broad-spectrum insecticides like chlorpyrifos and other organophosphates are obvious culprits. Sadly, many of the non-target species killed by chlorpyrifos are common and provide crucial, keystone ecosystem services, including pollination and organic pest control, that [scientists and economists have estimated are worth tens of billions of dollars](#) each year in the US alone.

Even small dosages of pesticides like chlorpyrifos have unintended consequences. These include susceptibility to pathogen infestation in bees that can cause hive collapse, and recent evidence has demonstrated that dozens of pesticides are already present in the hives of bees, which are declining worldwide. If these common, beneficial species are brought to the brink of extinction by chlorpyrifos, the knock-on effects on our agricultural economy would be substantial. And these effects will, like those of DDT, reverberate up the food chain, affecting birds, mammals and ultimately humans.

Even if all these negative effects of chlorpyrifos on biodiversity are insufficient evidence to ban this pesticide, recent studies have demonstrated that it negatively affects our nervous system just like it affects that of insects. Most notably, children who have been exposed to chlorpyrifos exhibit deficits in IQ, memory and motor and developmental delays. The EPA sensibly banned most residential uses of chlorpyrifos in 2000, and in 2015 the Obama administration moved to ban it from widespread agricultural application.

Now, Administrator Pruitt has stopped this effort dead in its tracks. In asserting that there remained insufficient evidence to ban the chemical, he willfully ignored overwhelming data collected by scientists — including many in his own agency — that conclusively document detrimental impacts of chlorpyrifos to humans and the many other species with which we share this planet. Just as we have moral obligations to protect our children and our families, as stewards of this planet we are morally obligated to protect the silent majority of biodiversity that shares our home.

Silent Spring was such a powerful wake-up call that a Republican president and his administration concluded that the risks of DDT were large enough to ban its use. The thought of future springs without the call of songbirds — dead from eating poisoned insects — compounded by well-characterized impacts to our children's health should be more than sufficient to ban chlorpyrifos.

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