

SOME PHARMACEUTICALS ARE PFAS

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What is the collateral damage of the pharmacist's pipette?

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I have been writing about the serious adverse ecological impacts of pharmaceuticals for over 20 years. Few people realize how incredibly dangerous these are, that is, how adversely they affect biological functioning of every life form on this planet, including the planet itself. Even fewer know that most pharmaceuticals are not biodegradable or that they are made from petroleum. (Hence, oil production is never going to stop.) Yet, even I was surprised to find that 46 of the top 500 best selling pharmaceuticals in the United States are PFAS: synthetic organofluorine chemical compounds that have at least one fluorine atom attached to an alkyl chain.

As the Guardian newspaper reports: "PFAS, or per- and polyfluoroalkyl substances, are a class of about 12,000 compounds most frequently used to make products water-, stain- and grease-resistant. They are in thousands of products across dozens of industries, and have been linked to cancer, birth defects, decreased immunity, high cholesterol, kidney disease and a range of other serious

health problems. They are dubbed “forever chemicals” due to their longevity in the environment.”

In response to intense lobbying from the pharmaceutical and agricultural industries, the EPA has narrowed the definition of what constitutes PFAS. The alteration has removed a significant number of highly dangerous ecological pollutants from oversight by the EPA. This includes 46 of the 500 top selling pharmaceuticals in the United States (as well as many agricultural chemicals), among them: Prozac, Celebrex, Levaquin, Lipitor, Lexapro, Cipro, Diflucan, and Paxil. A number of these are significant revenue producers, each with more than one billion dollars a year in sales (as of 2018): Celebrex, Dexilant, Lipitor, Lexapro, Risperdal, Zetia, Clobex, Bystolic, Brilinta, Invokana, Travatan, and Emtriva. Januvia, an antidiabetic, for example, has sales of 24.250 billion dollars a year.

The number of prescriptions per year for these PFAS pharmaceuticals is also immense. As only one example, physicians prescribed Lipitor, a statin (a cholesterol lowering agent), 112 million times in 2019. (Many physician groups are agitating for every American citizen, from an early age, to be prescribed statins as a matter of course.) As of 2019 these 46 drugs were prescribed more than 350 million times. (Among these, antidepressants such as Prozac and corticosteroids such as Aristocort were heavily represented.) As I have explored previously in

books such as *The Lost Language of Plants*, *Herbal Antibiotics*, and, most recently, *Earth Grief*, the ecological disruption that pharmaceuticals cause is one of the most serious problems we face. Due to the power of the physician/hospital/pharmaceutical/medical industrial complex this is rarely discussed in the press. The recent *Guardian* article (link below) is a rare exception.

To be clear: It is **only** through the work of the approximately 100,000 chemists in the United States (and hundreds of thousands of others throughout the world) that these non-biodegradable, highly bioactive substances can be synthetically created. The majority of these chemists work for industry, the same industry that inhibits legislation which would regulate their presence in the Earth's ecosystems.

We are, all of us, participants in a great, uncontrolled chemical experiment that exists solely for the profit and benefit of the few. And it is facilitated by scientists. As I note in *Earth Grief*, it is past time that scientists are held responsible for the ecological repercussions of their work. They do not live in an ecologically inert profession; their work is often not benign. For those of us who grew up loving science, this is a hard realization to come to: that most of the ecological and climate problems we face are being facilitated by scientists. Further, when it comes to pharmaceuticals, it is only through the actions of

chemically oriented physicians that these drugs now find their way into the ecological systems of the planet.

Physicians in the United States (and I presume elsewhere) have little understanding of the ecological repercussions of their prescribing. Most have some awareness of the rise of antibiotic resistant organisms (from their over-prescribing of antibiotics) but none about their impacts on all life forms on this planet. Worse, most don't care. Physicians are neither diagnosticians nor healers of disease, they are prescribers of pharmaceuticals. And as most people with difficult to treat chronic diseases soon learn, they generally guess at what people have and then prescribe drugs for that guess. Half of the symptoms of the chronic Lyme patients who came to us were found to be from the pharmaceuticals they had been prescribed by physicians for conditions they did not have. Some of them, given benzodiazepines, were highly addicted and found the drugs difficult to stop.

Few people are told when they are prescribed benzodiazepines that merely taking them once can cause addiction or that sudden cessation can result in death. Some people are never able to stop taking them. Even if successful, cessation may take a year or more to prevent side effects from the withdrawal. (I find the over-prescribing of these drugs to be egregious considering they are far more dangerous than opiates but not acknowledged as such.) I will have more to say about physician incompetence in the near future (it is a lot worse than even I suspected),

but among their failings this must certainly be at the top: they take no responsibility for what happens to either people of this Earth we love from their over prescribing of pharmaceuticals. In truth, we are past the time they can escape responsibility for the social and ecological impacts of their work.

Benzodiazepines have been found in most rivers in the developed world. As Jerker Fick, et al, comment, “In this study, our results show the presence of one or more benzodiazepine(s) in 86% of the analyzed surface water samples (n=138) from 30 rivers, representing seven larger European catchments.” And they are not only in surface waters, they are in the tap water in most if not all cities. As *Salon* notes: “There’s a good chance that if you live in an urban area, your tap water is laced with tiny amounts of antidepressants (mostly SSRIs like Prozac and Effexor), benzodiazepines (like Klonopin, used to reduce symptoms of substance withdrawal) and anticonvulsants (like Topomax, used to treat addiction to alcohol, nicotine, food and even cocaine and crystal meth).”

Because all organisms on Earth have similar physiology, drugs meant for human use have potent impacts on our kindred species functioning. Benzodiazepines are no exception. They are generally found in parts per trillion, billion, and million in rivers and streams. And to be clear, even at these tiny levels, these drugs have potent physiological impacts on *all* life forms. But even this pales in comparison to the long term impacts of PFAS which, as the Guardian

noted, “have been linked to cancer, birth defects, decreased immunity, high cholesterol, kidney disease and a range of other serious health problems.”

Here is a link to the Guardian article; it links to a scientific paper re PFAS in pharmaceuticals.

<https://www.theguardian.com/environment/2022/apr/05/epa-pfas-definition-scientists-forever-chemicals>

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