

The Parent's Guide to the Myths of Good or Bad Pesticides

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STORY AT-A-GLANCE

- › In the U.S., there are about 80,000 registered chemicals. Of these, only a few hundred have been tested for safety, and even that testing is considered inadequate by most toxicologists
- › Chemicals are tested in isolation. In real world application however, chemicals are used in combination, and the few studies done on synergetic effects reveal even nontoxic chemicals can become toxic when mixed together
- › The agricultural and global chemical industries have manipulated the system to control and suppress safety concerns. Through regulatory capture, regulators end up working for the industry's rather than the public's interest
- › Regulators make decisions on the safety of poisons in our food and environment based on data provided by the company selling the toxin, and outsiders cannot review that evidence
- › There's no specific safety testing done for children, but studies show there is no lower level of pesticides that is safe for children

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In the U.S., there are about 80,000 registered chemicals. Of these, only a few hundred are actually tested for safety, and even that testing is considered inadequate by most toxicologists. Part of the problem is that most chemicals are tested in isolation. In real world application, however, most chemicals are combined with others, and the few

studies done on synergetic effects reveal even nontoxic chemicals can become toxic when mixed together.

While there are many sources of chemical exposure, our food is a significant one, as most conventionally farmed foods are sprayed with pesticides. The chemical industry would have you believe pesticide residues on food is of no major concern.

Others vehemently disagree. To help parents sort out truth from myth, André Leu, former president of International Federation of Organic Agriculture Movements (IFOAM) and current international director of Regeneration International, wrote "Poisoning Our Children: The Parent's Guide to the Myths of Safe Pesticides."

In 2014, I interviewed him about his first book, "The Myths of Safe Pesticides," which reveals the vacuum of scientific evidence for the safety of pesticides. As noted by Leu, the safety of pesticides is "based on data-free assumptions."

"When I was researching data, I realized there's absolutely no scientific evidence at all about the safety of pesticides and other chemicals for our children.

Yet, we have hundreds of scientific studies showing the damage that the smallest amount of pesticides can do. The fact is the science shows there's absolutely no safe level of these chemicals for children. I think it's very important for parents to learn about it and be aware of what the science says."

How Chemical Industry Manipulates Data to Suppress Concerns

A key argument in his book is that the agricultural industry and global chemical industry have manipulated the system to control and suppress safety concerns. The process is called "regulatory capture." This is where the industry actually captures the regulators, and the regulators now work for the industry instead of working for the public. A number of toxic industries have used the same playbook to achieve this aim, including the tobacco, asbestos, lead and pesticide industries.

Part and parcel of this process is the revolving door between government and industry, where regulators are given high-paying jobs in the industry, and industry executives get hired as senior managers in regulatory agencies such as the U.S. Environmental Protection Agency (EPA), where they start approving the products of their former company.

"That is really a form of corruption," Leu says, "But we see this everywhere around the world. In every country I look at, the regulators are owned by the industry."

The tobacco industry really perfected the regulatory capture strategy, and other industries have boldly followed in its footsteps. Take lead, for example. It's now widely acknowledged that lead is a toxin that causes brain damage and lowers IQ. This recognition was largely the result of the tireless efforts of Clair Patterson, Ph.D., a geochemist who took on the oil companies, exposed the fraud being committed and pushed to get lead removed from gasoline.

It's a classic example of how dangerous chemicals and metals can get introduced into the environment, primarily as the result of benefiting some large corporate infrastructure. It's also an inspiring example of how a single individual can change the whole system and protect millions from unnecessary harm.

Toxic Limits Based on Assumptions

Aside from regulatory capture, another strategy used by the chemical industry is to manipulate the legal limits for the toxin in question. This is crucial, because if you rig the game so that the limit is higher than it should be, the industry can contaminate the environment without taking a financial hit or having to make any changes to the product or sales strategy.

Part of manipulating the safety limits involve suppressing independent data that raise red flags. "There are lots of independent scientists and researchers. They publish in scientific journals. This is regarded as the gold standard in research. But this evidence gets suppressed," Leu says.

Instead, regulators take into account primarily studies submitted by the corporations themselves, and most of these studies are confidential, so the public – as well as other scientists and researchers – cannot access them. So, regulators make decisions on the safety of poisons in our food and environment based on data provided by the company selling the toxin, and no outsider can review that evidence.

"To me, that's another sign of corruption," Leu says. "If these were good studies, why are they frightened of a transparent and open system? Why don't they publish them and allow independent scientists to peer review them if that's the gold standard of science?"

The myth here, the general perception, is that we have objective federal regulatory agencies that do independent testing to validate the safety of the chemicals they permit. But that's not the case at all. The regulatory agencies rarely do any independent testing. Instead, they make assumptions about safety and toxicity limits based on the confidential testing done by the chemical manufacturer.

There's No Safe Limit for Any Pesticide for Children

As noted by Leu, when access to corporate studies are gained through freedom of information requests or legal discovery, most turn out to be of poor quality. "Most of them actually show a whole range of diseases and risks," Leu says, leading many independent scientists to conclude the chemical in question is harmful and should be either severely restricted or banned altogether.

Having extensively reviewed the science on pesticides, Leu believes the greatest threat is the hazard these chemicals pose for our children.

"There's no specific testing done for children," he says. "There's absolutely no published scientific evidence to show any level of safety. On the other hand, studies show there is no lower level that is safe for children.

Children, when we talk about the unborn, the newborn and grown children up to puberty, they do not have the detoxification enzymes in their livers that we have

as adults. Particularly for young children, that means they have no way of detoxifying even the smallest amount of a pesticide or a chemical.

The evidence shows that even small amounts, when children are exposed in the womb, through breastfeeding or at a young age, it severely affects the way they develop. It affects the nervous system, the hormone system and the reproductive system.

When you look at the science, there are so many areas that can be negatively affected by these small amounts. Unfortunately, a lot of these effects last a lifetime. And also, we know some are intergenerational. Those children's grandchildren will be affected."

Clinical Signs and Symptoms of Harm

Clinical signs and symptoms of pesticide exposure include malignancies and tumors. "If you look at the World Health Organization's (WHO) figures on children's cancers, they are skyrocketing, and we have good evidence linking back to small amounts of pesticides in food," Leu says. Hormone disruption is another critical side effect.

Chemicals in really tiny amounts, parts per trillion, have an effect on fetal development, and can affect a child all through puberty and beyond. One part per trillion is the equivalent of one drop in three Olympic-sized swimming pools of water.

"These parts per trillion are significant in the normal development of a child, because at different times the hormones tell genes to come on and develop different parts of the body, like the reproductive system, arms, legs, eyes and the brain. If these signals are disrupted by chemicals that mimic hormones, that upsets this whole normal growth pattern. It's called a programming event. It can affect them for the rest of their lives ...

There's one very good study done by Warren Porter and colleagues at the University of Wisconsin Madison, where they looked at the normal contamination of pesticides, herbicides and fertilizers in the drinking water in

the Midwest. They found it caused severe development problems in baby rats and, of course, issues like thyroid problems, which is one of the master glands.

Another really important issue is the normal development of the nervous system. We know that many of these chemicals, such as glyphosate, actually stop the normal development of nerves in children, and the brain contains the greatest concentration of nerves ...

The evidence shows diseases like attention-deficit hyperactive disorder, the autism spectrum of disorders, the bipolar schizophrenia spectrum – as well as anger management and a whole range of behavioral problems seen in children – go back to these very small quantities of pesticides in our food, air and water.”

Your Tap Water Likely Contains Dozens of Pesticides

Just how concerned do you need to be about these exposures? I recently conducted extensive toxicology testing on my tap water where I live in Florida. It was an eye-opening experience.

The results reveal more than 50 different chemicals in my water, ranging from 3 to 11 parts per trillion, including atacor, atrazine, lindane, chlordane, endrin, heptachlor, epoxide, simazine, toxifin, 2,4-D, dalapron, dinazeb, pentachlorophenol, carbofuran and oxymel. I also have 4,200 parts per trillion of glyphosate in my water, which is an insane amount, especially when you consider I use this water for my organic garden.

Every time I watered my garden, I was dousing my organic fruits and vegetables with glyphosate and a whole host of other pesticides. Since then, I've added my whole-house water filtration system to the water for my plants. Indoors, I have a reverse osmosis system for my drinking water on top of that.

But what about everyone else in my community? What about families with young children, who use no filtration at all? Odds are you live in a community where pesticides are found in your water supply as well. I would strongly encourage you to get a water

quality report from your local water authority, and take steps to purify your water before drinking, cooking and bathing in it, especially if you have young ones in the house.

Organic Matter in Your Soil Helps Prevent Contamination

The good news is that the higher the quality of your soil, the better the soil can trap and break down pesticides, preventing them from contaminating your food. The key is to have high amounts of organic matter in your soil, which is one of the benefits of organic and biodynamic farming – it builds organic matter. Leu, who has done toxicology testing on regenerative and organic farm soils, says:

"Soil organic matter ... sort of works like a buffer. It traps these chemicals. While these chemicals are in the environment, they actually get trapped in the organic matter. When we test [organic food] products, we find that the vast majority of them are actually free of these chemicals.

We have good data on that. We also know that in these good agricultural systems, where we have good levels of organic matter, we have various soil microbes ... [that] actually degrade the poisons."

According to Leu, once you have about 3% or more carbon-based organic matter in your soil, with humus being the most important, pesticide contamination in your irrigation water becomes less of a concern as the microbes are now able to degrade the toxins.

Positive changes are often seen once you hit 1.5%. While this doesn't sound like much, most agricultural soils around the world today have less than 1% organic matter. In many places, it's as low as 0.5% to 0.6%, thanks to the overuse of agricultural chemicals, especially nitrogen fertilizers, which kill microbes and degrade the soil over time.

"Pesticides are synthetic organic molecules. They will bond to the organic matter and stay there. The plants take up nutrients through a process called ion exchange, and can actively select what they need.

They're not passive. In conventional industrial agriculture, where they are forced water-soluble fertilizers, [plants] have no choice as to what they take up. Many of these fertilizers have lead, cadmium and heavy metals, and they're soluble. When you water with those, [plants] take up these heavy metals.

In an organic system, it's the other way around. The toxins bond with the organic matter, and the plants actively select which molecules they need, so they can avoid these toxins. That's when we find, when we do the testing, there's a huge difference.

Even if they're growing in the same region, there's a huge difference in the amount of toxins in organic food compared to conventional. The largest study ... a meta-analysis of something like 300 comparison studies between organic and conventional, found organic food always has significantly lower levels of these toxins and heavy metals."

Synergistic Effects Are Completely Ignored

Even if there were limited danger from a given chemical, no one – no organization or agency – is looking at the synergistic effects of combining two or more chemicals, which is how we're actually exposed to them.

Rarely, if ever, do we come in contact with a chemical in isolation. In the normal production of any agricultural product, any crop, there are multiple approved pesticides that can be used, such as herbicides, fungicides and insecticides. Within a normal crop cycle, most of them are used, which is why foods frequently test positive for not just one but several different pesticides.

To that, we also have to add all the different cocktails of chemicals found in our homes, such as cleaning products, personal care items, plasticizers and fire retardant chemicals found in a wide variety of materials, just to name a few. There's absolutely no scientific evidence to show that these combinations are safe. Independent testing, however, has

revealed that combinations of chemicals have synergistic effects that increase their potency or ability to cause harm.

"When we talk about synergisms, where instead of an additive effect, where one plus one equals two, in synergism, one plus one can cause three or four. We have examples where one and one can equal more than 1,000 in toxicity. The effects are multiplied," Leu explains.

"This is a huge issue because not one regulatory agency in the world is doing anything about it. Regulatory agencies, like the U.S. EPA and the European Food Safety Agency (EFSA) are tasked by their governments to take this into account. They're supposed to have been doing this for the last 20 years, and not one has done anything whatsoever."

How to Protect Your Family From Pesticide Exposure

Two common-sense strategies to minimize your exposure to pesticides is to grow and buy organically produced foods. You don't need pesticides for your garden. There are many safe alternatives for when pests and plant diseases strike, and solutions can be found both in books and online.

"Go back to the way food is supposed to be, which is fresh and local, whenever possible. Cook real food," Leu advises. *"Avoid processed food, which not only is denatured in terms of the nutrient value, it's got all these different additives that we also know are toxic."*

Once again, there's no science to show that they're safe, but we're learning more and more about the dangers of all these food additives. Just go back to eating good, fresh and healthy food. It's going to make a huge difference to your children and to yourself as well."

Also remember that change always comes from people, not from governments. "You have to make this change yourself," he says. "It's simple to make. If enough of us are

making this change, we'll actually change agriculture because the retailers and farmers will be forced to change production to meet the market.

Buying organic food, buying local food, going to CSAs, is actually a very powerful political and change act. Your dollars will do more to change the system than probably anything else."

So, remember, vote with your pocketbook, and encourage others to do it as well. The more people who are involved, the stronger the incentive is for industry to change their destructive and toxic practices.

"I've been involved in this for 45 years. The best organic regenerative systems are actually higher-yielding than industrial agriculture. It's a myth to say that all organic is low-yielding. We now have good science on how we can grow nutrient-dense, healthy food, and get higher yields per acre than the industrial systems.

In fact, the industrial systems are running down the environment so quickly – and producing toxic food – that this world will not survive if we continue to go down that agricultural path.

The only way we're going to survive is by going over to regenerative systems that we know are good for the environment, increase biodiversity, increase the health of regions, and make sure that we don't have all these poisons going into our water supply, air and our food ... [Organic food] helps protect us against degenerative diseases, against toxins. Really, it's a win, win, win."