The Myth of Safe Pesticides

By Dr. Mercola

Most of us have no concept as to the amount and the variety of chemicals sprayed onto the produce we eat. To shed light on this important topic, André Leu wrote the book, *The Myths of Safe Pesticides*.

He has a long history in organic agriculture and his book tells a frightening but important story—we're being exposed to more pesticides than we ever suspected, and safety testing is sorely lacking.

In the US, there are about 80,000 registered chemicals used. Of these, only a few hundred are actually tested for safety, and even that testing is considered to be inadequate by most toxicologists.

Part of the problem is that most chemicals are tested in isolation. In real world application however, most of them are using combination, and no one's testing for the *synergies* between the chemicals.

"This is a very important point," André says. *"There are two aspects of that: first, the product that a farmer buys is a cocktail of different chemicals.*

You have what they call the active ingredient in the pesticide and then you have the other synergists, adjuvants, and other chemicals like solvents that are also toxic...

But they only test the one ingredient they call the active ingredient and they ignore the others by calling them inert. The actual combination that is sold and used on our food is not tested."

Things are about to get even more disconcerting with the recent approval of a new generation of genetically engineered crops that are resistant to even more toxic pesticides, including dicamba and 2,4-D—the active ingredient in Agent Orange.

The 'Rigorous Testing' Myth

André's book decimates a number of persistent myths surrounding pesticides. The first one is that pesticides and other chemicals are rigorously tested for safety before being allowed on the market.

The fact is the vast majority *aren't. How* they're tested is a related issue. Most of the toxicology testing of chemicals is antiquated, with some methodologies harking back 150 to 400 years!

"Believe it or not, science has actually moved on a bit since then," André retorts. *"We have much more rigorous and sensitive ways of testing instead of just feeding animals, destroying them, and looking at their organ parts under a microscope.*

We can now use things like magnetic resonance imaging (MRI) scans, actually look inside the living animals and humans and see where there's damage. We can use cell lines, human cell lines, culture them, and actually look at the levels of damage.

When you do that, you find that in some cases, you can go down to parts per trillion and get significant toxic effects.

For the listeners to understand what a part per trillion is, if I were to get three Olympic-sized swimming pools and just put one drop in there, that is a part per trillion. We now know that there are hundreds of chemicals that can cause adverse effects at that level."

Interestingly, some chemicals might not cause a problem at levels of parts per billion, yet at *lower* doses and concentrations they start causing hormonal disruptions. This appears to be particularly true in utero, as the hormonal signals that trigger the baby's development are very minute.

The 'Insignificant Amount' Myth

A related myth is that chemicals are present in such tiny amounts that you don't have to worry about it. As just noted, the converse is oftentimes true! To determine the allowable daily intake (ADI) for pesticides in food, they feed the chemical to animals, and then look for damage.

Once they've determined a dose at which no damage is observed under a microscope, they call that the no-observed-adverse-effect level (NOAEL). The NOAEL is then typically reduced by a factor of 100 or 1,000 to come up with an ADI for humans.

This process is based on the concept that the lower the dose, the less poisonous it is. But as just mentioned, this is a grossly flawed concept, as some chemicals become MORE hazardous to your health when consumed in smaller amounts. Endocrine disruptors fall into this category.

"This is a data-free assumption," André says. *"They do not test the actual low dose of the ADI. Not one chemical is tested for that; it's assumed it will be safe.*

It's a myth to say 'because we have lowered the dose, it is safe.' The regulations should be done on actual evidence-based science, not data-free assumptions."

The Breakdown Myth

Another myth is "the breakdown myth." We're told that the newer chemicals aren't like the old ones; modern chemicals readily biodegrade and break down, they say.

According to André, such statements can easily be challenged because you can measure residual levels of many of these chemicals. If a chemical readily breaks down, why are there residue levels on the food and/or in the soil and water?

More importantly, how is it that residual levels can be found in the human body? The reason of course is because they do not, in fact, readily "disappear."

"The other thing we know is that when they break down, they break down into metabolites—and quite a lot of them. For instance, organophosphates break down to oxons, and suddenly they are 100 to 300 times more toxic.

To say that they break down is one thing. But they don't mention that actually when they break down, they are ***worse****."*

Another example is the disinfection products produced when municipal water is treated with chlorine. Chlorine itself isn't completely hazard-free, but it's relatively inert compared to the disinfection byproducts created when chlorine combines with organic material in the water.

Some of these disinfection byproducts are *10,000 times* more toxic than chlorine! According to André, one of the primary byproducts from water treatment with chlorine is a likely contributor to the rise in allergies and chemical sensitivity among the American population.

"In Germany it's actually illegal to chlorinate their water supply," André says. *"They actually use a combination of microfiltration and ultraviolet (UV) light and have clean water without any chemical residues. For all these chemicals, there's always a viable alternative. If Germany can do it for the whole country, so can all other countries."*

The Regulatory Authorities Myth

The next myth is that our regulatory authorities use good science; that they're protecting us; that there's no conflict of interest; and that we can trust them. If they say it's safe, there's no cause for concern.

"I pulled that myth apart as well and showed how they are ignoring hundreds of very good published peer-reviewed scientific studies demonstrating the adverse health effects of these chemicals. All they are really taking into account are the studies that are submitted to them by the manufacturers. That really is a conflict of interest," André says.

As mentioned earlier, many of the methodologies used to establish safe residue levels are actually data-free assumptions. They're *not* using evidence-based science to determine the safe level. As André notes, "You can see in the end that these decisions aren't scientific; they're actually political." One tip-off is the discrepancy between countries.

Why is it that atrazine is banned in Europe because it's dangerous, but in the States and in Australia the very same chemical is all of a sudden "safe if used as directed"? In 2009, the Environmental Working Group (EWG) published a study that found 232 chemicals in the placental cord blood of American newborns. That was five years ago, and no action has resulted from the publication of those disturbing results.

"The regulatory food authorities are completely ignoring the specific issue of children," André says. *"They test only for adolescent and adult animals, but there's no specific testing for the embryo and the developing young."*

Don't Give Up Hope—There Are Solutions

Despite all this bad news, there's hope—there are ways to avoid many of these chemical hazards. One of the simplest and most effective avoidance strategies is to eat organic food. Another option is to grow your own food—without pesticides, of course.

"We have good studies now showing that when children are eating organic food and they're urinating, metabolites of pesticides drop down to zero within about four days," André says. *"It is very easy to get it out of your system... We should be giving our children the best we can in life. That means any young couple planning to conceive, start eating organic food now, so you can be done with these heavy toxins. Give your baby the best chance through pregnancy and through breastfeeding. And for the rest of their life, make sure that they eat organic. That way, they won't get these pesticides at any level."*

The 'Organic Low-Yield' Myth

The idea that organic farming is less efficient and produces lower yields is yet another myth that has no bearing in reality. Conventional agriculture in the US is regarded as the highest-yielding in the world, and organic farmers can get the same yield... This tells us we really don't *need* chemicals in order to maximize yield. It can

be done without them. Even if organic agriculture wasn't as productive as conventional agriculture, it would still be superior from a nutrient density standpoint.

It's also the most important long-term solution as it protects and supports the health of the soil. Most industrial agricultural practices are degenerative; they decimate the topsoil. And by doing so, we're committing future generations to having no good soil to grow their food in. The organic approach includes many important and effective regenerative practices such as no-till, minimizing the use of synthetic fertilizers, integrating livestock, and use of cover crops. This actually *rebuilds* the soil, and that's going to ensure the survival of future generations. André notes:

"We want to leave a better planet for the next generation, and that's exactly what we're doing with regenerative organic agriculture. The Rodale Institute's use of biochar and compost in Pennsylvania is one excellent example of how, with good organic practices, they're not only getting the same and, at times, higher yields than conventional, but they're improving the soil every year. Their farm is getting better, whereas the conventional farms are degrading.

...We need a shift in the way the scientific research funding for agriculture goes. At the moment, it's only four dollars out of every thousand that is spent in agriculture is spent on solutions for organic. We know now that, with the science we have, we can get equal to greater yields. But if we can shift this research away from GMOs and pesticides towards organic methods, we can scale our farming worldwide. We don't have to have any pesticides in our food. I think that's a really important priority that we need to get across the government, the industry, and the regulatory agencies."

The most powerful way to ensure such a change is by voting with your wallet. Demand organic wherever you go. That demand will be the driver that will entice more and more farmers to transition to organic, and along with it, the allocation of agricultural funds will eventually shift with it.

Organic Food Resources

A whole host of environmental and human health problems could be corrected by addressing how we grow our food. Organically-grown, biodynamic whole foods are really the key to success here, and, as an added bonus, when you eat right, you're also optimizing your body's natural detoxification system, which can help eliminate toxins your body encounters from other sources. Therefore, I cannot encourage you to support the small family farms in your local area strongly enough. They, and by extension you, are part of the *solution*. Here are some great resources to obtain wholesome food that supports not only you but also the environment:

1. **Alternative Farming Systems Information Center**, Community Supported Agriculture (CSA)
2. **Farmers' Markets** -- A national listing of farmers' markets.
3. **Local Harvest** -- This Web site will help you find farmers' markets, family farms, and other sources of sustainably grown food in your area where you can buy produce, grass-fed meats, and many other goodies.
4. **Eat Well Guide: Wholesome Food from Healthy Animals** -- The Eat Well Guide is a free online directory of sustainably raised meat, poultry, dairy, and eggs from farms, stores, restaurants, inns, and hotels, and online outlets in the United States and Canada.
5. **Community Involved in Sustaining Agriculture** (CISA) -- CISA is dedicated to sustaining agriculture and promoting the products of small farms.
6. **FoodRoutes** -- The FoodRoutes "Find Good Food" map can help you connect with local farmers to find the freshest, tastiest food possible. On their interactive map, you can find a listing for local farmers, CSA's, and markets near you.

Other Suggestions to Help Reduce Your Chemical Exposure

There's no doubt that most people are being exposed to too many toxic chemicals, and while food is a major source, it’s certainly not the only one. Here are 10 additional recommendations that will help limit your family's exposure to toxic chemicals. Please remember that all of these become even more important if you're pregnant or planning a pregnancy, since *your* toxic load will be transferred on to your child.

1. Store your food and beverages in glass rather than plastic, and avoid using plastic wrap and canned foods (which are often lined with BPA-containing liners).
2. Have your tap water tested and, if contaminants are found, install an appropriate water filter on all your faucets (even those in your shower or bath).
3. Only use natural cleaning products in your home.
4. Switch over to natural brands of toiletries such as shampoo, toothpaste, antiperspirants, and cosmetics. The Environmental Working Group has a great database[1] to help you find personal care products that are free of phthalates and other potentially dangerous chemicals.
5. Avoid using artificial air fresheners, dryer sheets, fabric softeners, or other synthetic fragrances.
6. Replace your non-stick pots and pans with ceramic or glass cookware.
7. When redoing your home, look for "green," toxin-free alternatives in lieu of regular paint and vinyl floor coverings.
8. Replace your vinyl shower curtain with one made of fabric, or install a glass shower door. Most all flexible plastics, like shower curtains, contain dangerous plasticizers like phthalates.
9. Limit your use of drugs (prescription and over-the-counter) as much as possible. Drugs are chemicals too, and they will leave residues and accumulate in your body over time.
10. Avoid spraying pesticides around your home or insect repellants that contain DEET on your body. There are safe, effective, and natural alternatives out there.