

### *Pesticides, Savior or Sinner?*

Pesticide is an umbrella term for just about any substance that neutralizes or kills any creature that causes damage or nuisance to people, homes, and industry. The roach motel poison is a pesticide, the weed killer you spray around your house and in the cracks in your driveway are pesticides. The noxious gas pumped into fumigated homes is a pesticide. The mold spray you use in your bathroom is most likely a pesticide. The crop dusters on major farms spray large quantities of pesticides onto crops to protect them from harmful insects and animals that would reduce their harvest. These chemicals have become so pervasive in modern society that it behooves us all to understand the real health implications these substances have.

Back in the 1940s, possibly earlier, there was this growing concern in the scientific community that with the then current farming practices, the United States, and eventually the entire world, would not be able to produce enough food to feed everyone. Unless a paradigm shift occurred and more efficient methods of agriculture were developed the entire country would be starving within a few decades.

After World War II, petroleum chemistry and agribusiness formed a union that would forever alter the dietary lives of the entire world. In order for farmers to maximize food production and keep costs down, they had to grow more hardy crops like iceberg lettuce and beefsteak tomatoes. They had to economize acreage and grow more crops on the

same parcels of land. Instead of rotating crops, they simply fertilized heavily to replace what had been removed. While these changes definitely improved crop size, they were still losing crops to pests. Bugs, birds, animals, microbes, viruses, they all had to go. No fence could keep them out, and thus the only apparent option was simply to find ways to kill every harmful creature that threatened the crop, yet not damage the cosmetic appearance of the crop. Crop quality at the markets is not determined by nutritional value, but by size and appearance.

Over the seventy years, scientists have developed well close to 20,000 pesticides, each with a particular target pest, and with a particular killing mechanism. One would think that with that much time, money, and manpower devoted to the task that we would have solved these problems. Sadly, a very different picture has emerged. Today's conventional food is less flavorful, less nutritious, and actually toxic. While the dollar price of staple foods has remained relatively low considering inflation, what about the cost to our health? Isn't that more important?

The real question is: how do pesticides affect human health? The question is straightforward. Who answers the question determines whether or not the answer is also. If you were to ask the EPA or the FDA, they would say this: "Pesticides are designed to (in most cases) kill pests. Many pesticides can also pose risks to people. However, in many cases the amount of pesticide people are likely to be

exposed to is too small to pose a risk. To determine risk, one must consider both the toxicity and hazard of the pesticide and the likelihood of exposure. A low level of exposure to a very toxic pesticide may be no more dangerous than a high level of exposure to a relatively low toxicity pesticide, for example.” (<http://www.epa.gov/pesticides/health/human.htm>, 2011)

When you read that you get the idea that there are several assumptions. Firstly, there is a sense that the use of pesticides is a necessary risk in order to ensure our continued food supply and that there is no alternative. Secondly, their concept of “risk” is determined by the effects of a single pesticide, in a particular exposure method, for a set amount of time. This is laboratory-style science thinking. We expose the mouse to one substance for a certain amount of time in a certain way and gauge the effects in order to prove that this exact substance produces these exact effects. In the real world, we are exposed to the entire spectrum of toxic pollutants all at the same time across the entire duration of our lives, including the fetal development stage.

The truth about pesticides is that they actually cause the destruction of crops, they pose a number of severe health risks to consumers, and their use is actually unsustainable and eventually alternatives will have to be used in order to safeguard our food supply.

The method of application is important in understanding

pesticides. Certain crops, such as strawberries and tomatoes, because of their high susceptibility to animals, insects, and fungus, farmers tend to use tremendously high amounts of pesticides throughout the entire growing period. The belief is that it is too risky and not cost effective to wait until pests attack and target that specific pest so instead they maintain a constant pesticide presence on the crop as a preventative. In order to survive watering and rain, these pesticides are made “rain-proof” and thus are not removable by consumers when they wash them before eating.

Despite this protective barrier, they still suffer crop loss to pests. How? Two ways. The first is through the unintentional termination of natural predator species. The natural food chain of nature ensures that every animal, except those at the very top all have a predator that controls population levels. The pesticides do not have brains that pick and choose which animal species they’re supposed to damage, they harm indiscriminately. This includes the pests’ natural predators allowing them to rapidly proliferate. The second is through resistance development. Because various predator species reproduce rapidly, subsequent generations are able to adapt and overcome dangers in their environment, including pesticides. It is a known fact that farmers are constantly in need of greater quantities of pesticides and different types of pesticides in order to outrun pesticide resistance.

Total crop loss to insects in 1945 was 7%. In 2000, it was 13%. Farmers, though, believe that unless

they use pesticides, their crop losses would be even greater and it is this fear that keeps the myth alive.

In a paper written by David Pimentel, prominent pesticide researcher at Cornell University, he describes the problems in Indonesian rice crops in the early and mid-1980s when they began to use insecticides continuously. It destroyed all the natural predators of a particular rice pest that devastated the rice crop so dramatically that rice had to be imported in the country. In two years, the cost of rice loss was \$1.5 billion in 1988 dollars, an epic figure in terms of the Indonesian economy.

To solve this problem, they actually cut back their pesticide use. Of the 64 pesticides in use, 57 of them would be prohibited from use. Instead of constant pesticide presence, they would “treat as necessary” meaning only when a threat was present they would use pesticide for that specific pest. By the early 1990s, pesticide use was down 65% and crop yields were up 12%. A complete reversal had been accomplished. Pimentel believes that pesticides only make a 10% difference in controlling pests in an agro-ecosystem, 50% is from natural enemies and predators, and the remaining 40% is from the plant’s natural resistances to the pest.

Indonesia is not the only place that has seen fantastic improvement from pesticide reduction. Sweden is the leading force in Europe for pesticide reduction. In fact, the country has reduced pesticide use by over 50% and has seen no reduction in crop yields. In fact, Sweden was the host of the Stockholm Convention on

Persistent Organic Pollutants where nearly two hundred parties agreed to restrict their use of over a dozen pesticides that were proven to be destroying not only human health, but the environment as well.

Are pesticides really so bad? If we must have them, even if only at 10% of the current level, are there really serious health implications? Absolutely. Even the government agencies acknowledge that pesticides are highly toxic.

Pesticides can cause:

- Permanent neurological damage.
- Behavioral and mood disorders, i.e. depression.
- Dermatitis and other skin disorders.
- Asthma, and other respiratory conditions.
- Mental and cognitive disorders and degradation, such as learning disabilities, memory loss, etc.
- Infertility in men and women, as well as damage to the reproductive systems.
- Fetal and childhood developmental disorders such as birth defects, fetal death, autism, etc.
- Various forms of cancer including, brain, kidneys, skin, lung, liver, pancreas, breast, prostate, lymphoma, and leukemia.
- Childhood cancers, i.e. Wilm’s tumor.

The three big toxic categories are infertility, neurological/psycho-neurological conditions, and cancer. The reason for this is the killing, or

neutralizing mechanism of these pesticides, meaning how they affect the pest is primarily through making them infertile, which prevents them from reproducing, or by shutting down their nervous system, which paralyzes them and eventually kills them.

The infertility, and certain cancers, it is hypothesized are more likely caused by those pesticides that are also hormone-mimics, meaning that when consumed the body believes they are hormones and attempts to use them as such with obviously harmful consequences. Most commonly, the body believes them to be estrogen, which may account for the particularly high incidences of breast cancer attributable to pesticide exposure, as well as prostate cancer in men.

The fact that certain pesticides directly target the nervous systems of pests, and the high incidences of mental and neurological diseases in those exposed to pesticides is obviously no coincidence. It does not take a double-blind, placebo-controlled study to recognize the connection. Interestingly, no such study will ever be performed in that manner because of scientific ethics, yet pesticide companies only have to prove that there is a "reasonable risk" with their product in order to have it approved for the open market.

Even more importantly, something has truly yet to be faced and honestly researched is the effects that multiple pesticides of different mechanisms have when humans are exposed to them. The EPA has done a little research on the effects of

"similar" pesticide exposure, but not what happens when wildly different pesticides are brewed together in the body and the health hazards they create. One can only speculate at this point, but no matter what it cannot be healthy.

As you can see this is serious stuff. Unfortunately, the costs of these diseases are not reflected in the price of corn, or the price of apples. People who have become aware of the effects of pesticides on human health are the driving impetus behind the organic food movement, which is quickly gaining ground throughout the world. Parents who do not want to spend the first years of the child's life in and out of the hospital. Adults who do not want to spend the final years of their lives fighting cancer, or giving birth to defective children, or not being able to have children at all.

To believe that the pesticide manufacturers or the farmers are ignorant of these facts is to be naïve. In fact, they have done cost/benefit analysis on the very topic. It has been calculated that for every \$3.2 million dollars in profits made from the use of pesticides, one person in America will get cancer. Now imagine you intend to sue a pesticide company for health problems their product caused and by some miracle you win, what do you think the settlement or damages would be? A few million perhaps? Unless real pressure is put on these companies and businesses by consumers refusing to purchase tainted products, change won't occur until all pests are resistant to all pesticides, which god only knows when that will occur.

As is typical of these articles, they always end on what YOU can do about it. The most obvious, and probably 80% of the battle, is reducing your exposure. If you're not exposed, it can't cause harm. Eating strictly organic foods, drinking high quality bottled water, and reading the labels of your hair-products and soaps to determine if they contain pesticides or other harmful substances is the strongest measure you can take to protect yourself and others.

If you live in a farming region where the air and water may contain higher levels, in all honesty, consider moving. There are volumes of research on the chronic diseases developed by people who work or live near areas where pesticides are used heavily. Your life is worth more than a toxic neighborhood. Unless you feel you can make a major impact and change the environment, consider living somewhere less toxic.

Assuming your diet is clean, but your water may contain what has become the normal level of pesticides and chemical toxins, some dietary supplements you may consider are vitamin C, which is an excellent anti-oxidant. Reduced glutathione is one of the strongest anti-oxidants the body uses and supplementing it can help the body remove pesticides from the entire body including the brain and liver. We also have a product line that uses a special blend of B vitamins and herbs to detoxify the body of a myriad of toxins, including many pesticides and pesticide metabolites.

To summarize: eat organic, read product labels, reduce your

environmental exposure, and supplement anti-oxidants and nutrients that promote liver/kidney support and detoxification. Obviously, everyone has a unique body and the environment you live in and the types of exposure you experience will determine what actions are best for you. Before making any major changes to your supplement regimen, it is always wise to consult a qualified medical professional who is an expert in detoxification and pesticides, as well as being familiar with your medical history and can help you make the best informed decision to maintain optimal health.

The only way we are going to make our voices heard and see some real changes in the way the food industry operates is to vote with our dollars. The less financial support we give the industry, the more they will cower to the demands of the people. It is not unreasonable to demand clean, healthy food so that we, and our children, can live healthier and happier lives. Let us set the example for the rest of the world.



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