

Pesticides:

A Significant Health Risk

By Sue Koger

This summer, as in previous summers, I watched as my neighbor launched a vigorous chemical attack on the weeds that populate both his property and the alley separating our homes. Personally, I do not feel at all comfortable with this pesticide spray so close to my own backyard. Perhaps I should be reassured by the fact that the man's child rides in a "snuggly" on his back while he applies the pesticide; certainly he wouldn't allow such contact if the chemical was hazardous. Unfortunately, research suggests that pesticides pose a serious health hazard—particularly to children.

Newspaper headlines and state policy decisions indicate that many Oregonians seem to share my concern about pesticide use. The recent truck accident that dumped about 3000 gallons of herbicide into a Columbia River tributary devastated fish and other wildlife and horrified local residents. In 1999, Governor Kitzhaber directed state agencies, such as the Department of Agriculture, to prohibit the release of *persistent bioaccumulative and toxic pollutants* (PBTs), which includes 10 dangerous pesticides, into the environment by 2020. Further, the Oregon Legislature passed a "right-to-know" bill mandating the tracking of pesticide use in all public areas, including schools, during its last session. Although this measure reflects public concern about pesticide use, it falls short of real reform. Not only will the mandated data be unavailable to the public until 2002, the bill itself merely requires careful record keeping, and doesn't actually restrict pesticide use.

Despite this apparent evidence of concern and activism on the part of the public and our state government, many homeowners continue to use widely available weed-killers and insecticides. Although designed to act on "undesir-

able" species of plants, *organochlorines*, *organophosphates*, and other active pesticide ingredients have a significant effect on all organic matter—a fact implied by the prefix "organo." This organic matter includes us, our children, our pets, and regional wildlife as potential, though unintended, targets of these dangerous chemicals.

Health Effects Associated with Pesticide Exposure

The human brain is particularly vulnerable to even minute toxin exposure in both prenatal and early childhood developmental periods. Thus, developmental disabilities may result from exposure to pesticides early in life¹. Disordered cognitive development, including low IQ scores and memory impairment, has been associated with prenatal exposure to pesticides even through breast-feeding. And while most parents are aware of poisoning risks through accidental ingestion of household chemicals, the Environmental Protection Agency (EPA) estimates that more than 100,000 children are poisoning victims from pesticide ingestion each year.

Adults also are not immune to the health effects of pesticides. The body's ability to fight disease is diminished under the influence of pesticide exposure.² Further, several forms of cancer have been linked to adult pesticide exposure³. Pesticides also have been implicated in the research linking exposure to the development of Parkinson's Disease⁴. Clearly, this scientific evidence should make us think

twice about using pesticides in our homes and gardens.

What my overzealous neighbor doesn't realize, however, is that his attempts to eliminate or control "pests" will eventually backfire. Just as bacteria in the human body build resistance to drugs like antibiotics, a similar process occurs with pesticide use: organisms not destroyed by pesticides multiply as competition to survive is removed, enabling the original organism's survival characteristic to be passed on to its offspring. Over time, pesticides become ineffective in controlling new generations of targeted organisms.

As pesticide consumers, we contribute to the development of highly resistant strains of the very organisms we are hoping to destroy. Although manufacturer's labels caution us to use the products only in accordance with package directions and to use care when disposing of unused chemicals and containers, they do not address possible risks of "normal use" exposure. If, as some scientific evidence suggests, pesticides aren't safe, why doesn't legislation ban the sale of these household chemicals, or at least require full disclosure of the health risks they impose on consumers?

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Legislative Issues

The federal government requires direct scientific evidence of biohazard status for each industrial and household product before a public cautionary statement about that product can be released. Currently, there are 70,000 such products, with between 1,000 and 2,000 new chemicals being put into commercial use each year, all of which are inadequately tested prior to marketing. The result of this inadequate testing is that public cautionary

statements about pesticides and other chemicals are rare. Although these products are certainly or potentially hazardous, we are told that the evidence regarding pesticide toxicity is "inconclusive." There simply hasn't been enough research carried out to *prove* the adverse health effects of pesticides on humans, particularly at the lower pesticide levels to which most people are exposed. Thus, the chemicals are deemed "innocent until proven guilty."

Following the demonstration of significant toxicity, chemicals may be removed from the market. However, by then it is often simply too late. For example, DDT was banned only *after* beneficial organisms were destroyed, resistant insect species developed, and significant human health effects observed. In June 2000, the EPA, together with the manufacturer of the widely used pesticide Dursban (known also as the chemical *chlorpyrifos*) agreed to prohibit Dursban for most household purposes. Dursban is found in more than 800 products including Ortho lawn insect spray, several pet-care products, and some varieties of Raid, and is one of the most poisonous pesticides on the market. Dozens of lawsuits have been filed by people who have experienced health problems after being exposed to Dursban.

Obviously, it makes sense to require evidence that a chemical product is safe *before* allowing it into the consumer market. The government should be preventing public health and safety crises rather than simply reacting to them. As long as we continue to purchase and use these products, we're supporting these risky legislative practices. The government should work to prevent crises rather than react to them.



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Conclusion

We have a choice about whether or not to use pesticides. There exist safe, effective alternatives to pesticide use⁵, including the option of pulling weeds by hand. Perhaps we can learn to be more tolerant of some pest damage or weeds. In any case, it is clear that we need to rethink our use of pesticides. We do not need to continue supporting an industry that is willing to put our families' health at risk until the chemicals sold by that industry are *proven* dangerous. The existing evidence clearly suggests that pesticides pose a significant health hazard, and recent legislative decisions indicate a dawning acknowledgement of that danger. But the government is moving sluggishly on this issue. One of the most important things we as citizens can do is to encourage our state and federal representatives to take a more proactive and protective stance on chemical-use legislation.

¹ Weiss, B. (1997). Pesticides as a source of developmental disabilities. *Mental Retardation and Developmental Disabilities Research Reviews*, 3, 246-256.

² Montague, P. (1999). Cause for precautionary action. *Rachel's Environment & Health Weekly*, 665, <http://www.rachel.org/bulletin/index.cfm>.

³ Montague, P. (1999). Pesticides in the news. *Rachel's Environment & Health Weekly*, 660, <http://www.rachel.org/bulletin/index.cfm>

⁴ LeCouteur, D.G., McLean, A.J., Taylor, M.C., Woodham, B.L. and Board, P.G. (1999). Pesticides and Parkinson's Disease. *Biomedicine and Pharmacotherapy*, 53, 122-130.

⁵ For further information, see the web site developed by The Northwest Coalition for Alternatives to Pesticides (www.pesticide.org).

How do pesticides cause health problems?

We are exposed to pesticides from a variety of sources. We eat fruits and vegetables that have been sprayed; meat, eggs, and dairy products (including milk and cheese) that come from animals that have grazed in pesticide-treated areas; and fish that are caught in contaminated waters. We use pesticides on our bodies or hire pest-control professionals to treat our homes and gardens.

Pesticides affect their intended and unintended targets in several ways. Many of these chemicals act as *hormone-disrupters*.

Hormones are naturally occurring substances that are critical to normal nervous-system function. Because the active ingredients in many pesticides disrupt hormone function, various aspects of nervous-system activity may be altered. The pesticide chemicals attach to receptors, thereby preventing the necessary hormones from attaching: the hormone is therefore unable to do its job. In addition, alterations to the receptor cell's DNA can result when the pesticide attaches.

Reproductive-system abnormalities, developmental and learning disabilities, compromised immune function, and several forms of cancer are all possible outcomes of exposure to hormone disruptors.

Pesticides are stored in fats and other tissues, which means that pesticide levels build up over time in our bodies—they are "bioaccumulative." During prenatal development, the chemicals enter the placenta, affecting embryo and fetal growth. Pesticides are also present in breast-milk. In fact, studies show that breast milk can contain levels of toxins that are greater than the levels in the mother's blood; breast-fed infants, therefore, can be exposed to significant concentrations of the chemicals.

Some pesticides are *neurotoxic*, that is, they directly kill nerve cells. This mechanism is believed to contribute to the development of Parkinson's Disease. While Parkinson's is also thought to have a genetic component (a family history of Parkinson's increases one's risk for the disease), what may actually be inherited is a metabolic deficiency. In other words, the enzymes that normally break down and detoxify chemicals like pesticides fail to function properly.