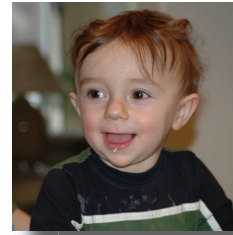


**Why** the growing concern about pesticide residues in food? To what extent does **organic** food expand margins of safety?



Are 5 exposures per day worth the risk?



## MINIMIZING PESTICIDES IN YOUR DIET

### Populations at Risk

Over 90 percent of shoppers buying organic foods are motivated by the goal of reducing exposure to pesticides. They do so for good reasons, especially families with children.

During fetal development and in the first few years of life, infants are much more vulnerable to pesticides than adults. Pesticides are present in the womb, in umbilical cord blood, and can pass through an infant's blood-brain barrier -- a barrier that will protect

the child later in life from exposures to many kinds of chemicals, including pesticides.

#### Exposures Are All Too Common

Americans under 20 consume pesticides in about 200 million servings of food daily. Another 250 million servings of drinking water contain residues. On an average day children are exposed to about five different pesticides through their food and drinking water.

Kids eat more food than adults per pound of bodyweight, and a less varied diet, so when a child consumes food that contains residues, the dose they receive is typically much higher than when adults consume the same food.

Plus, kids cannot as fully, or quickly, metabolize chemicals ingested in food, and so pesticides remain in the child's body longer, posing greater risks.

Other populations at risk for pesticide-induced illness include the elderly, people with compromised immune systems, conventional farm workers, and those sensitive to pesticides. Scientists can rarely declare with certainty that pesticides are the sole cause of any particular disease. But the consensus among public health scientists is that pesticide exposure is one of several risk factors that, in combination with other variables, may trigger mild to serious developmental problems and illness in otherwise healthy people.

### Facts

The USDA's Pesticide Data Program (PDP) has analyzed pesticides in nearly 200,000 samples of food since 1993. PDP focuses on fresh foods and beverages consumed most heavily by children.



Over the past decade, the PDP has found one or more pesticide residue in 75 to 80 percent of the conventional produce tested. PDP tests show that 90 percent or more of conventional apples, peaches, pears and strawberries have residues.

Organic food also sometimes contains pesticides. In 2004 testing, PDP found residues on 16 percent of the organic samples tested. Conventional fruits and vegetables contains residues about four times more frequently than organic produce.



Produce labeled as "IPM-grown" (Integrated Pest Management) or as "No Detectable Residues" (NDR) had significantly fewer pesticide residues than conventional, but substantially more than organic. The one published, peer-reviewed study comparing residues in conventional, IPM and NDR, and organic fresh foods showed that 47 percent of IPM or NDR samples tested by the PDP were positive, compared to 73 percent positive among conventional samples, and 23 percent among organic samples.

## NOT JUST ONE RESIDUE

Many samples of produce tested by PDP contain multiple residues, and remarkably, a few contain 10 or more. In general, soft-skinned fruit and leafy vegetables, like peaches and lettuce, tend to have multiple residues more frequently than foods with thicker skins, shells or peels.

In the 1990s, multiple residues were found in about 46 percent of conventional fruit and vegetable samples, 24 percent of IPM/NDR samples, and 7 percent of organic samples. The 2004 PDP found four or more residues in 11 percent of the samples tested. Over 12 percent of the sweet bell peppers tested had seven or more residues. The average conventional apple had 3.6 residues in 2004. PDP apple testing in 2003 showed that a consumer had about a 2.5 percent chance of selecting an apple with seven or more residues, and a 2.3 percent chance of getting an apple with no residues.



## ENCOURAGING NEWS!

Scientists have carried out the first-ever dietary intervention studies involving organic vs. conventional foods. A 2006 study involved 23 school-aged children and investigated the impact of organic food on exposure to organophosphate (OP) insecticides (the riskiest class of insecticides, used worldwide). The children were tested before going on an organic diet, while on the diet, and then after a return to their conventional diet. The results were encouraging.

All 23 children tested positive for OP toxins in their urine when eating conventional food. The markers of OP insecticide exposure virtually disappeared after just five days consuming organic food. The researchers concluded that an organic diet provides a “dramatic and immediate” protective effect against OP pesticide exposures.

### WHAT ABOUT PESTICIDES IN “CERTIFIED ORGANIC” FOOD?

This doesn't mean that organic farmers are breaking the rules. Pesticides are regrettably everywhere in farming regions. They can drift from nearby conventional farms, move in from irrigation water, and sometimes are bound in the soil.

When residues of synthetic pesticides do show up on organic foods, the levels are, on average, markedly lower than corresponding residues in conventional food. Thiabendazole, a post-harvest fungicide, was found in one organic apple sample 2004 PDP testing. There were 641 samples of conventional apples found to contain thiabendazole, at a mean level 2,100 times higher than in the one organic apple.

Each year the PDP usually finds one or a few conventional samples mislabeled as organic. An organic sweet bell pepper contained 8 residues in 2004 testing. The Organic Center has proposed a mechanism to the U.S. Department of Agriculture to help trigger follow up by certifiers, possibly leading to enforcement actions by the USDA, in such clear-cut cases of mislabeling.

### AN OUNCE OF PREVENTION

**From before conception, and in the first years of development, babies are constantly exposed to multiple pesticides, and in complex combinations with other chemicals. Evidence linking low-dose pesticide exposures to life-long adverse impacts is substantial and growing.**

**Innovative dietary intervention research has shown that among school-aged children, a switch to mostly organic produce, dairy products and grain-based foods virtually eliminates exposures to risky insecticides. With the integrity and health of the next generation on the line, it is easy to understand why many parents opt for an ounce of prevention by seeking out high quality organic foods.**



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Access more information on pesticides and the State of Science Review “**Margins of Safety and Peace of Mind: Pesticides and Organic Food**” at: [www.organic-center.org](http://www.organic-center.org) under “State of Science.”