



Minimizing Pesticide Dietary Exposure Through Consumption of Organic Foods

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Choosing Organic Fruits and Vegetables Minimizes Risks of Dietary Pesticide Exposure and Maximizes Healthful Benefits

Choosing organically grown fruits and vegetables can significantly decrease the frequency and level of dietary exposure to pesticides, thus reducing the magnitude of one risk factor that can contribute to a variety of health problems.

Public and private sector efforts to increase fresh fruit and vegetable consumption are clearly among the best investments possible to improve public health in America. Yet those who follow United States Department of Agriculture (USDA) guidelines of five servings of fruits and vegetables daily are likely to ingest six or more pesticide residues on most days, if produce is conventionally grown.

Pesticide risk assessment can rarely prove a direct, causal relationship between pesticide exposure and a particular illness or disease that some individual has suffered. But scientists have concluded that, across the population, pesticide exposure is a risk factor that increases the chance that certain health problems will occur with greater frequency or lead to more serious consequences.

Conventionally grown fresh produce is three to four times more likely to contain one or more pesticides than organic produce, and a given sample of conventional food is also far more likely to contain multiple residues than the corresponding organic food. For this reason, choosing organic fruits and vegetables is the most reliable way to reduce overall pesticide dietary exposure.

Dietary Pesticide Residues Are A Public Health Concern

Pesticide residues are a public health concern. Pesticides are intended to kill or control pests, but many are highly toxic to organisms other than those targeted. In the environment, these include



beneficial insects like pollinating bees as well as birds, fish and earthworms. In mammals, including humans, some widely used pesticides can

alter fetal development, impair immune function, and trigger health problems that can take many years, even decades, to develop.

Though food is not the only source of exposure to the more than one billion

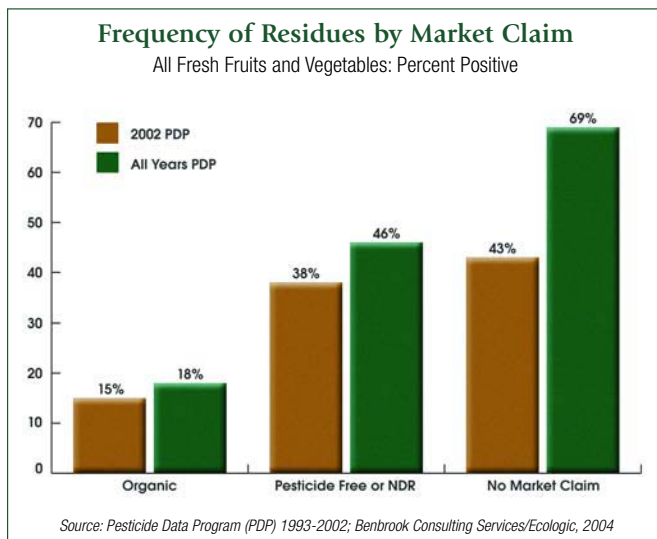
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pounds of pesticides used annually in the United States, pesticide residues are a part of most meals. Almost 80 percent of the 21,807 samples of conventionally grown fresh fruits tested by USDA's Pesticide Data Program (PDP) from 1993-2002 contained one or

more pesticide residues. Nearly one-half of the samples of conventional crops tested by USDA in the last decade contained multiple residues. In 2002 testing, peaches contained an average of 4.2 different residues and celery contained 3.5 residues.

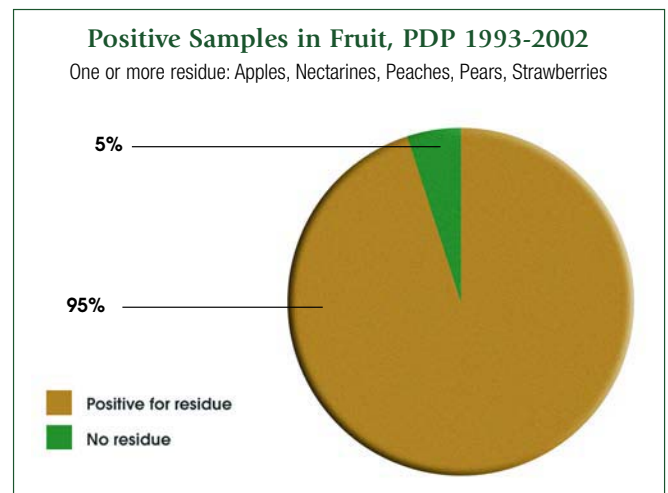


The high incidence of pesticides in the food supply persists despite regulations adopted in the Food Quality Protection Act of 1996. Medical monitoring confirms that nearly every American has been and is continuously exposed to pesticides, even during fetal development.

Infants, Children and Pregnant Women are Most Vulnerable

A reduction in dietary pesticide exposure is particularly crucial for infants, children and expectant mothers, three segments of the population that are most susceptible to the ill effects of pesticide exposure.

From conception through the first years of life, children are much less able than adults to detoxify most pesticides, and they are highly vulnerable to endocrine disruptors and developmental neurotoxins. A growing body of scientific data links prenatal pesticide exposure (where the pesticide residues in a mother's diet cross the placenta during fetal development) and exposures during the first years of a child's life to a variety of health issues, including low birth weight, birth defects, abnormal neurological development and reproductive problems. Nearly three-fourths of fresh fruits and vegetables consumed most frequently by infants and children in the United States contain pesticide residues.



The current state of science continues to indicate that eating organic foods can support healthy development in young children and also lower the frequency of some health and reproductive problems that tend to strike later in life. Because such a small number of foods accounts for most pesticide dietary exposure, selecting organic produce can provide a significant public health benefit.





Organic Farming Techniques Reduce Pesticide Residue

Widely accepted organic farming principles, and the certification rules governing organic farming in most countries, prohibit the use of nearly all synthetic pesticides, including chemical weed killers, insecticides and most fungicides used to control plant diseases.

Highly sensitive pesticide residue testing carried out by USDA shows that conventional fresh fruits and vegetables are:

- three to four times more likely on average to contain residues than organic produce;
- eight to 11 times more likely to contain multiple pesticide residues than organic samples;
- shown to contain residues at levels three to 10 times higher, on average, than corresponding residues in organic samples.

Organic fruits and vegetables offer consumers an option proven to significantly reduce dietary exposure to pesticides.

For many people on most days, consumption of organic fruits and vegetables will virtually eliminate dietary exposure to pesticides. This will, in turn, reduce the frequency and magnitude of one risk factor that can contribute to a variety of diseases and health problems.



Most-Contaminated Crops Include Some That Children Eat Frequently



A few conventional fruits and vegetables stand out as most heavily contaminated with pesticides, including some foods that are frequently consumed by infants and children. Multiple pesticide residues are commonly found in these nine fruits and vegetables. Samples with no residues are uncommon, and in some cases, rare.

Fruits & Vegetables

- Apples*
- Cherries*
- Nectarines*
- Peaches*
- Pears*
- Strawberries*
- Celery*
- Spinach*
- Sweet bell peppers*



The pesticide risk reduction benefits of seeking out and consuming certified organic apples, pears, peaches, nectarines, strawberries, cherries, celery, spinach and sweet bell peppers are particularly significant, especially for woman of childbearing age and infants and children.





The Organic Challenge

While USDA organic standards do not permit the use of toxic and persistent synthetic pesticides, residues of synthetic pesticides sometimes appear during tests of organic produce.

Pesticides are ever-present and mobile across agricultural landscapes. Pesticides applied on conventional crop acreage sometimes drift in the air and settle onto the plants growing on nearby organic farms. Some insecticides are very stable in the soil and are still picked up by certain plants years after use on conventional crops. Irrigation water also moves across agricultural landscapes, picking up pesticide contamination along the way.

However, when residues of synthetic pesticides do appear on organic foods, the levels are statistically lower than corresponding residues in conventional food. In general, the pesticide residues found in imported organic produce raise more significant risk concerns than the residues found in U.S.-grown organic samples. On average, from 1994-2002, residues found in USDA testing of imported organic samples posed relative risks six times greater than residues found on domestic organic samples.

Since the testing period was prior to implementation of the USDA National Organic Program final rule on October 21, 2002, some samples may not have been grown in full compliance with the requirements of the National Organic

Program. The Organic Center will analyze future PDP data to determine if the risk of pesticide residues on imported organic produce has decreased with the final rule in use.

Conclusions

The degree to which eating organic rather than conventionally produced food reduces pesticide dietary risks is a function of the frequency of residues in food, the number of residues in a given sample of food, the levels of residues present in food, and the toxicity of pesticides found in conventional and organic food.



Extensive data is available to quantify most of these differences. For vulnerable population groups, especially infants and children, the differences are significant and promise measurable public health benefits.

Reducing the frequency and levels of pesticides in food will build consumer confidence in the safety of fresh produce and is a solid step in the right direction in promoting healthier dietary consumption patterns.

The public will continue to hear conflicting claims about whether there is any reason to worry about pesticide residues in the diet. While scientists work toward more complete and accurate pesticide dietary risk assessments, reducing pesticide exposures across the population remains a sure way to reduce pesticide risks, whatever those risks ultimately prove to be.



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