

# How safe is our produce?

WE ANALYZED PESTICIDE LEVELS IN 27,000 FRUIT AND VEGETABLE SAMPLES. MANY ARE TOO HIGH.

The odds are two in five that a young child who eats a U.S. peach will get too much of the toxic pesticide methyl parathion.

The government and agribusiness boast that the U.S. food supply is the "safest in the world," but it is surprisingly easy for children to eat fresh fruits and vegetables with unacceptable levels of some especially toxic pesticides.

In a first-of-its-kind study of Department of Agriculture data, Consumers Union analyzed not only the amounts of pesticides on produce but also how toxic those pesticides are. The results suggest that what you choose to eat can make a real difference in the amount of toxic residues you consume.

The findings are especially pertinent to children, who eat far more produce per pound of body weight than adults and who are more sensitive to some effects of pesticides. With some fruits and vegetables, kids who eat a single serving can exceed the safe daily limit of certain pesticides. Other highlights:

- There are vast differences in the pesticide residues that different fresh foods contain. In general, processed foods had lower residue levels than fresh (see the chart on page 30).

- The pesticides on virtually all tested produce are within legal limits. But many of those limits are at odds with what the government now deems safe for young children.

- Just one widely used insecticide, methyl parathion, accounts for the lion's share of the total toxicity of the foods we analyzed. Its use is increasing on some crops, such as green beans, despite the availability of effective, less toxic alternatives.

- Domestic produce had more, or more toxic, pesticides than imported produce in two-thirds of the cases.

- DDT and other pesticides banned decades ago still linger in soil and show up regularly in residue tests.

The findings suggest that parents might want to be careful about the types and amounts of fruits and vegetables they serve their children—while still making sure they get plenty of healthful produce. While peeling can greatly reduce pesticide residues on many fruits and vegetables, it can't eliminate them.

At the moment, federal regulators are in the midst of taking a new, more careful look at widely used pesticides, as prescribed by a landmark 1996 food-safety law. Our findings suggest they should focus on the few specific pesticide uses that contribute

a disproportionate share of the toxicity of residues in our food supply.

### How toxic?

Our study is based on a treasure trove of data collected by the Department of Agriculture. Every year, the USDA checks the types and amounts of pesticides in thousands of samples of fruits, vegetables, and a few other products—domestic and imported, fresh and processed. The foods selected vary from year to year, but most have one thing in common: Young children eat a lot of them. Before testing, samples are prepared as they would be at home: Oranges and bananas are peeled, apples and peaches are rinsed, and so forth. The information is the most comprehensive the government collects on the pesticide residues people are actually ingesting.

We analyzed the results of the testing done between 1994 and 1997 on 27 food categories, covering some 27,000 samples (a sample is about five pounds of produce).

Ounce for ounce, some pesticides can be thousands of times more toxic than others. When it comes to pesticides on foods, the biggest concern is a person's long-term exposure. Many compounds may affect the developing nervous system. Some are suspected of causing cancer. Some may interfere with endocrine activity. For our analysis, we devised a toxicity index that integrates all of these health risks and reflects the actual amounts of pesticides detected on produce.

### Highest scores

Of the 27 foods the USDA tested in the four years we analyzed, seven—apples, grapes, green beans, peaches, pears, spinach, and winter squash—stand out as having a toxicity score up to hundreds of times higher than the rest.

In part, this is because farmers use more pesticides on these crops. For instance, the USDA tests detected 37 different chemicals on its samples of apples—a crop with numerous pests and high cosmetic standards—compared with only 10 on broccoli.

Also, the crops with a high toxicity score are typically treated with more-toxic pesticides and are often eaten unpeeled.

Other foods had a very low score. These include apple juice, bananas,

broccoli, canned peaches, milk, orange juice, and canned or frozen peas and sweet corn. The pesticides found in these products are either less toxic, used in much smaller quantities, applied longer before harvest, or removed or destroyed during peeling or processing.

A high toxicity score doesn't automatically mean a food is unsafe to eat. Your personal risk depends on your age, your susceptibility to the effects of a compound, how often you eat a particular food, and how much of it you eat relative to your body size.

But the differences in toxicity scores do matter. For foods with the highest scores, even an adult can ingest pesticide residues that exceed what the government deems safe. We consider a score of 100 or more of concern (a variation of 20 points or less isn't meaningful). In general, the lower the score, the lower the overall long-term risk.

### Problem pesticides

Several foods in our analysis frequently provided excessive amounts of insecticides (see chart below). Three chemicals stood out as problems:

**Methyl parathion.** One of the most potent members of a family of insecticides known as organophosphates, it accounted for almost all of

the toxicity score of domestic peaches and frozen green beans and much of the toxicity score for apples and pears.

"Organophosphates are all designed to be neurological poisons," explains Dr. Philip Landrigan, chairman of the department of community and preventative medicine at Mount Sinai School of Medicine in New York. "They work fundamentally the same in humans as in insects."

In late 1998 the Environmental Protection Agency (EPA), which regulates pesticides, released a preliminary risk assessment of methyl parathion that concluded it posed an "unacceptable risk" as currently allowed to be used.

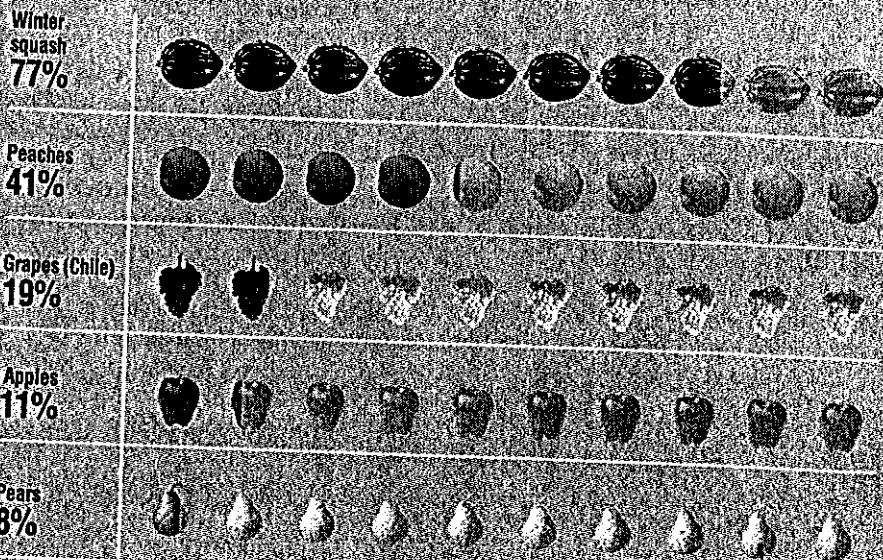
Children are being exposed to unacceptable levels of the chemical, our study found. In 1996, the last year fresh peaches were tested, two in five U.S.-grown peach samples contained methyl parathion. Residue levels were so high that single servings consistently exceeded the EPA's current safe daily limit for a 44-pound child—the average 5-year-old.

National figures show that farmers are now using less methyl parathion on peaches than they did in 1996, but they're using more on apples and green beans.

**Dieldrin.** This carcinogenic pesti-

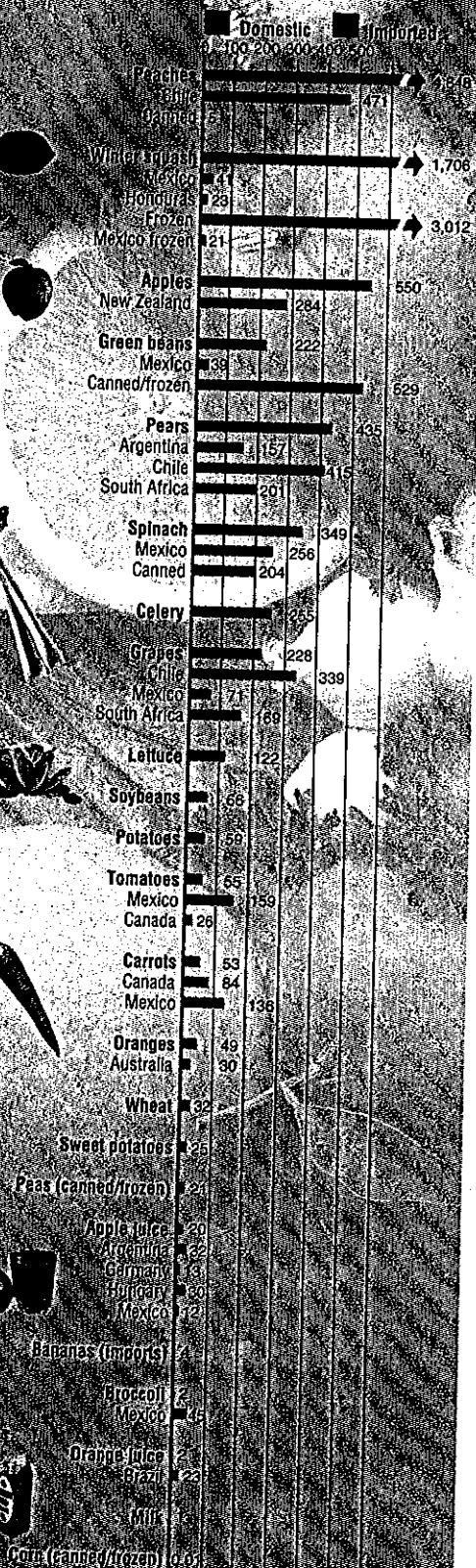
## Your child's odds

Here's how often a 44-pound child—the average 5-year-old—eating a serving of these foods gets more than the official safe daily limit of a pesticide. Foods are domestic unless noted.



## How they scored

Toxicity scores for USDA-sampled foods show that domestic produce often fared worse than imports. A score of 100 or more is worth concern; a variation of 20 points or less isn't meaningful. Scores are for the most recent year sampled.



Each score is based on three factors: how many samples of a food contained individual pesticides and the average amount and toxicity of each pesticide. The toxicity component measures a pesticide's acute toxicity (the ability to cause immediate effects) and chronic toxicity (the ability to cause long-term effects with continued exposure).

cide was taken off the market in 1974. But it continues to pose as much risk as many chemicals still in use because it takes decades to disappear from the soil.

In 1997, the only year the USDA tested winter squash, dieldrin showed up in three-quarters of the frozen squash samples. Two-thirds of the positive samples had enough dieldrin per individual serving to exceed the safe daily limit for a young child. In all, the odds are 77 percent that a serving has too much of some pesticide.

Dieldrin, unlike methyl parathion, is absorbed into the pulp of the vegetable rather than being concentrated on or near the skin. That makes it impossible to wash off. Crops especially prone to absorb dieldrin include root vegetables and members of the cucurbit family, such as squash, melons, and cucumbers. Farmers can avoid the problem by not planting these crops in soil contaminated with dieldrin.

**Aldicarb.** Of all pesticides currently in use, it's the most acutely toxic. Growers stopped using aldicarb in 1990, but some potato growers in Washington state and Idaho resumed in 1996. And use is increasing.

The USDA found aldicarb in about 6 percent of the potatoes it tested in 1997. Because of the potential for immediate toxic effects, the agency tested 160 individual potatoes from these positive samples. About 1 in 20 had more than the safe limit for a young child.

Like dieldrin, aldicarb permeates produce and can't be washed off.

### Protecting children

How can some foods consistently exceed safe limits of pesticides when the USDA tests found almost no samples with more of any chemical residue than the law allows?

One answer is that current residue limits are based on outdated standards not specifically designed to protect children, given the way their bodies process the chemicals and the amounts and types of food they eat.

Children's diets are different from those of adults. One-year-olds, for instance, eat three times as many fresh peaches, per pound of body weight, as adults, and more than four times as many apples, bananas, and pears. All this means it's easier for children to ingest relatively large amounts of pesticides.

For instance, the USDA tests found that some apples contained as much as 10 micrograms of a popular organophosphate pesticide called chlorpyrifos. A 154-pound adult eating such an apple would ingest only half of the current safe daily dose, whereas it would put a 44-pound child 67 percent over his or her safe limit.

And there's growing evidence that children are far more sensitive than adults to the effects of pesticides because their nervous systems are changing and developing so rapidly.

This isn't recent news; in 1993, a committee of experts from the National Academy of Sciences issued a major report on pesticides in children's diets, which recommended that U.S. pesticide laws be overhauled to make foods safer for children.

According to the committee's report, data suggest that low-level exposure to organophosphate pesticides "may have subtle, but measurable effects on neurologic function" in children.

### New legislation

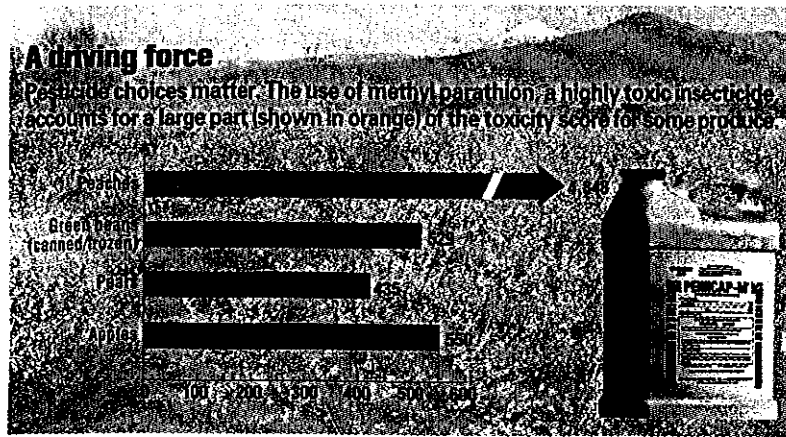
That report triggered landmark legislation, the Food Quality Protection Act, passed unanimously by Congress in 1996. It requires the EPA to take a careful look at all pesticides and tighten exposure limits to make them safer for young children.

The agency has already lowered its estimates of the safe daily limit for 19 of some 40 organophosphate pesticides, including methyl parathion and chlorpyrifos. (But the residue limits on foods don't yet reflect this change—which is another reason almost all peach samples with methyl parathion residues exceeded the estimated safe daily intake per serving for young children.)

By August, the EPA must decide whether to further restrict or ban certain pesticides, including all the organophosphates. It can outlaw specific applications of a pesticide to a food or reduce the residues allowed to remain on foods. It can also increase the required interval between spraying and harvest, to give chemicals time to break down before anyone ingests them.

### Domestic vs. imported

The manufacturers of chemicals and the farmers who use them, fearing unfair foreign competition, frequently argue that the government



shouldn't overly restrict pesticides. Writing on behalf of the American Farm Bureau for its web site, W.E. Spencer, an Arizona citrus farmer, predicted that if the government restricts pesticides too much, "The United States—similar to its dependence on foreign oil—will have to rely on foreign producers using pesticides banned in this country to stock the produce bins and grocery aisles at the local supermarket."

This scenario isn't likely. Imported produce must comply with U.S. regulations on allowable levels of pesticide residues. And federal regulators are unlikely to prevent American growers from using pesticides, provided they don't leave unacceptably high residues on foods.

In the USDA database for 1994 to 1997, there were 39 cases where enough foreign produce was tested to allow for a meaningful comparison with its domestic counterpart. In 26 of those comparisons, the toxicity score of U.S. produce was higher—in the case of peaches, 10 times higher. In fact, of the crops with the highest toxicity scores, U.S. produce almost always outscored its imported counterpart.

### Recommendations

Based on our analysis, Consumers Union has asked the EPA to restrict or ban specific pesticide uses that expose children to residues above safe limits.

For virtually all of these uses, there are less toxic ways of controlling pests. But switching will be difficult, and perhaps costly, for farmers long accustomed to using certain chemicals on their crops. The government should provide financial and educational support for this transition. It should also direct more research toward finding safer ways

of managing pests now controlled by the most-toxic pesticides.

The USDA should sample key crops periodically to track trends. Ideally, it would also increase the number of foods tested each year.

For consumers, there are several ways to minimize exposure to pesticides. One thing you should *not* do is stop serving fresh produce, which

provides a host of vital nutrients. Instead, consider taking these steps:

- Avoid giving children large amounts of the foods with the highest toxicity scores.
- Peel those foods with a high toxicity score, such as apples, peaches, and pears. That usually removes much of the toxic residue. Washing with very diluted dishwashing detergent also helps.
- Consider buying organically grown produce, which is increasingly available. When we tested organic fruits and vegetables (see our January 1998 report "Greener Greens?"), we found that they had few or no toxic pesticide residues. Ⓞ

### ► For more information

Our study, "Do You Know What You're Eating? An Analysis of U.S. Government Data on Pesticide Residues in Foods," is available at [www.consunion.org](http://www.consunion.org).

## What Popeye didn't know

Spinach is a persnickety vegetable to grow. "You have to protect the whole leafy substance of the plant from attack," says Tim Hartz, extension specialist on vegetable crops at the University of California. "And the market demands a totally unblemished leaf. How often have you been able to grow a spinach plant to maturity in your home garden that doesn't have some holes in it?"

The crop's unusually short growing season means that pesticides may not have a chance to break down before harvest. All this can create toxicity problems.

And problems there are. In our analysis of USDA pesticide data, the findings are among the most different. Pesticides on 11 types of spinach overall, the toxicity scores for spinach were among the highest we calculated for both imported and U.S.-grown produce.

One of the spinach samples had been sprayed with a pesticide that was over

the safe daily limit for a 44-pound child eating a single serving.

The USDA tests also found more illegal pesticides on spinach—15 in all—than on any other crop. In all, 12.5 percent of spinach samples had illegal residues in 1997, down from 24 percent in 1996. Virtually all of the violations were for pesticides that are approved for use on some crops, but not on spinach.

The Food and Drug Administration investigated these violations. "We didn't consider the residues high enough for spinach not to be safe to eat," says agency spokeswoman Judy Foulke. The agency concluded that the chemicals had likely gotten onto the spinach inadvertently rather than having been applied deliberately.

All of which suggests that, with leafy green vegetables, especially you should wash leaves thoroughly in water or very diluted dishwashing detergent before you eat them or consider buying organic.