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CHILDREN'S ENVIRONMENTAL HEALTH CENTER OF THE HUDSON VALLEY
PROTECTING CHILDREN AGAINST ENVIRONMENTAL THREATS
www.ChildrensEnvironment.org

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Pesticides in Food

What are pesticides and how do they end up in our food?

The Federal Insecticide, Fungicide, and Rodenticide Act defines "pesticide" as (1) any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest, (2) any substance or mixture of substances intended for use as a plant regulator, defoliant, or desiccant, and (3) any nitrogen stabilizer.

The American Academy of Pediatrics has declared food as the main source of children's exposure to pesticides. Although the majority of pesticides used on U.S. farms do not show up in our food, the Centers for Disease Control found that 93% of US residents contained the metabolites of the neurotoxic insecticide chlorpyrifos in their bodies. Most pesticides used today are "systemic" pesticides, which are taken up by the roots and distributed throughout the plant. Because of this, washing our fruits and vegetables does not protect us from whatever pesticide residues remain in each crop. According to the Pesticide Action Network, fumigant pesticides that are applied before planting crops in order to clear the soil of weeds, insects, and fungi, can drift into neighboring farms and communities and thus harm rural families, farmers, and farmworkers.

What is the extent of the issue?

The Environmental Working Group's analysis of tests by the USDA found that nearly 70% of samples of conventionally grown produce were contaminated with pesticide residues. USDA tests found a total of 230 different pesticides and pesticide breakdown products. Americans consume a mixture of pesticides every day. The Pesticide Action Network has linked pesticide food residue data from the USDA with toxicological profiles for each chemical. For example, 54 pesticides are found on spinach, 5 of which are linked to cancer. Apples contain 47 pesticide residues, including 16 suspected endocrine disruptors.

What can result from exposure to pesticides?

It is important to note that pesticides include a wide family of chemicals with various active ingredients, which are suspected to cause many adverse health effects. Pesticides also contain other chemicals such as solvents, surfactants, and preservatives which may have different toxic and even carcinogenic effects.

According to *The International Journal of Environmental Research and Public Health*, pesticide exposure is connected to poor semen quality, reduced male fertility, hormone-dependent cancer risks (i.e. breast cancer), and possibly prostate cancer. A recent study conducted at Harvard and published in JAMA found an association between consuming high pesticide residue foods and fertility problems in women. Other studies have suggested that pesticides are not only linked to cancer but have detrimental effects on the immune, nervous, respiratory, endocrine, and reproductive systems.

The fetus is vulnerable to toxins that cross the placenta and can trigger epigenetic changes. This can raise the risk of neurodevelopmental disorders such as autism, birth defects and cancer. Infant's and children's immature organ systems are less able to break down and excrete toxic compounds. Children eat and drink more than adults in proportion to their body size which puts them at a higher risk for disease.

What are the World Health Organization, the U.S. Food & Drug Administration and Environmental Protection Agency doing?

The WHO reviews evidence and develops internationally-accepted maximum residue limits in order to protect food consumers from the adverse effects of pesticides. The main objectives are to ban pesticides that are most toxic to humans and remain for the longest time in the environment by setting maximum limits for pesticide residues in food and water. The WHO works along with the Food and Agriculture Organization (FAO) to assess the risks of pesticides to humans through exposure and residues in food. After assessing the level of risk, limits for safe intake are established, to ensure that the amount of pesticide residue people are exposed to will not result in adverse health effects.

The FDA's website contains information to help individuals prevent foodborne illness and reduce the possible health risks that may be connected with natural toxins, pesticides, chemical contaminants, and metals. The EPA is responsible for evaluating pesticides in order to ensure that they are safe for human health and the environment if they are used as per their label instructions. The EPA is responsible for any changes to the tolerance limits on the amount of pesticide chemical residue a food can safely contain.

What can you do to keep your children safe? Is buying organic the answer?

Organic products are typically more costly than their non-organic counterparts due to lower crop yields and inefficient use of land. Current literature does not provide a straightforward answer as to the preferred method of farming (organic vs. conventional). While it cannot be concluded that organic products are of higher nutritional quality, there are reasons to believe that exposure to and ingestion of pesticides may be detrimental to human health.

Children have greater susceptibilities to the potential toxicities of pesticide residues, and are at greater risk of illness from exposure. Eating organic foods may reduce the exposure to pesticide chemical residues. A 2015 study by the University of Washington confirmed that individuals who consume organic produce have lower quantities of organophosphate insecticides in their urine samples. If buying organic produce is not an option financially it is recommended that the individuals choose conventional foods lower in pesticide residues, which are clearly summarized in the Environmental

Working Group's "Dirty Dozen" and "Clean Fifteen" lists:

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The bottom line:

Two-thirds of all conventionally grown produce has detectable pesticide residues. Research has shown that pesticides are linked to cancer, hormone disruption, cognitive problems, and behavioral problems. Those who are most at risk include young children, pregnant women and people living near and working on farms. Adults who consume produce with high levels of pesticide residues may have affected reproductive health including sperm damage and difficulty conceiving. In order to avoid pesticides in your food, consider buying local and organic products when possible. If purchasing organic products isn't an option, buying less-contaminated conventional produce and thoroughly cleaning your produce can lower the probability of contamination.

Sources

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