Pesticides and organic foods

Should we worry about pesticides in food?
Pesticides are chemicals (insecticides, herbicides, fungicides, and rodenticides) used to kill agricultural and livestock pests. They can be found in many different types of foods, from fresh fruits and vegetables to processed grain products. Insecticides are also used to kill mosquitoes and other vectors of human disease. Because many insecticides can be toxic to the human brain, we worry about pesticides in the food supply. Washing and peeling can help lower levels of pesticides consumed, but not in all cases and more studies are needed.[1,2]

Although pesticide levels in the U.S. food supply are generally below existing federal limits, scientists and regulators are still concerned about exposure, especially during pregnancy and early childhood. Many pesticides can be passed through the mother's blood to the baby during pregnancy. A growing body of evidence shows that exposures during this critical period of brain development are associated with adverse health outcomes such as poor reflexes and poor performance on cognitive tests. There is also some health concern over certain fungicides and herbicides, although research on these is currently limited.

Several large studies are examining the effects of pesticide exposures during pregnancy and early childhood in places like California and New York City where pesticides are used extensively for agriculture or household pest control. These studies have produced several important discoveries about pregnancy exposures and their effects. Findings show that children born to mothers with high levels of certain insecticides in their blood or urine perform poorly on movement, intelligence, and behavioral tests compared to children born to mothers with lower levels.[3,4,5,6,7] These findings persist even after other factors affecting children's brain development, such as maternal education, are taken into account.

Does "organic" mean the food is pesticide free?
An organic label does not guarantee a food is pesticide free. Many foods (and soils, animals, and humans) around the world have measureable levels of organochlorine insecticides such as DDT, hexachlorobenzene, and chlordane, even though they are banned in most countries, including the U.S. These are called "persistent pesticides" because they take hundreds of years to degrade.

Some pesticides legally used in agriculture or household pest control have been detected in foods labeled "organic." Researchers at the Rollins School of Public Health measured low levels of organophosphorus and pyrethroid insecticides in certified organic foods taken from Atlanta residents' homes.[8] Other U.S. studies have also found pesticides in organic foods, although generally at lower levels than in conventional foods.[9] Food may be contaminated at the store, when it is purchased and transported home, or at home when it is prepared for consumption. Experimental studies show that pesticide residues from kitchen surfaces can also contaminate foods.[10,11]

Are there "organic" pesticides?

Production, marketing, and use of pesticides is controlled by the U.S. Environmental Protection Agency (EPA). EPA and USDA maintain a list of pesticides allowable under the National Organic Program. These include naturally and microbially-derived pesticides (e.g. acetic acid) and a limited number of low-toxicity synthetic substances (e.g. boric acid and elemental sulfur). The pesticide of last resort for organic producers is Bt, which has been incorporated into conventional crops through genetic engineering and may be losing its effectiveness due to emerging insect resistance.

Is "organic" production safer for farm workers and their families?

Studies show that farm workers and their families can be more highly exposed to pesticides than the general population.[12] The workers can be directly exposed in the workplace and they can also bring pesticides home on their shoes, work clothes, or skin if they do not wash and change first. Agricultural workers typically live, either temporarily or permanently, close to or actually on the farms where they work. Studies show that levels of pesticides in house dust in their homes can be higher than in non-agricultural homes.[13, 14] Although studies cannot say for sure yet whether organic farming is safer for farm workers and their families, it is highly likely that organic farming reduces pesticide exposures compared to conventional farming.

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