

## Impact of Different Pesticides on Human Health

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### Abstract

Pesticides are designed to kill and because their mode of action is not specific to one species, they often kill or harm organisms other than pests, including humans. The World Health Organization estimates that there are 3 million cases of pesticide poisoning each year and up to 220,000 deaths, primarily in developing countries. The application of pesticides is often not very precise, and unintended exposures occur to other organisms in the general area where pesticides are applied. Children, and indeed any young and developing organisms, are particularly vulnerable to the harmful effects of pesticides. Even very low levels of exposure during development may have adverse health effects.

Pesticide exposure can cause a range of neurological health effects such as memory loss, loss of coordination, reduced speed of response to stimuli, reduced visual ability, altered or uncontrollable mood and general behavior, and reduced motor skills. These symptoms are often very subtle and may not be recognized by the medical community as a clinical effect. Other possible health effects include asthma, allergies, and hypersensitivity, and pesticide exposure is also linked with cancer, hormone disruption, and problems with reproduction and fetal development.

Pesticide formulations contain both "active" and "inert" ingredients. Active ingredients are what kill the pest, and inert ingredients help the active ingredients to work more effectively. These "inert" ingredients may not be tested as thoroughly as active ingredients and are seldom disclosed on product labels. Solvents, which are inert ingredients in many pesticide formulations, may be toxic if inhaled or absorbed by the skin.

Children are at greater risk from exposure to pesticides because of their small size: relative to their size, children eat, drink, and breathe more than adults. Their bodies and organs are growing rapidly, which also makes them more susceptible; in fact, children may be exposed to pesticides even while in the womb.

### Introduction

There are various ways to group pesticides, including classification based on the pests they control. Some example, insecticides combat insect growth or survival, herbicides act against plants, weeds, and grasses, rodenticides tight against rats and other rodents, avicides act against bird populations, fungicides attack fungi, and nematicides combat nematodes . The global pesticide market divided according to the type of pesticide is as follows: 42.48% herbicides, 25.57% insecticides, 24.19% fungicides, and 7.76% other types of pesticides .

Pesticides grouping can also rely on their chemical structure. Organophosphorus (chlorpyrifos and diazinon), carbamates (carbaryl and aldicarb), organochlorine (DDT and aldrin), pyrethrins and pyrethroids (cyfluthrin and cypermethrin), benzoic acids (dicamba), triazines (atrazine and simazine), phenoxyacetic derivatives (2,4-D), dipyridyl derivatives (diquat and paraquat), glycine derivatives (glyphosate), and dithiocarbamates (maneb and ziram) .(1,2)

Pesticides that bear similar chemical structures exhibit similar mechanism of toxicity and physicochemical properties, as well as comparable fate and transport properties. This chapter will deal with pesticides according to their chemical group. Pesticides belonging to different chemical classes but which have similar toxic effects, such as the ability to induce oxidative stress and act as endocrine disrupters will be treated as well.(3,4)

### Discussion

People can be exposed to pesticides in three ways: In Breathing (inhalation exposure). In Getting it into the mouth or digestive tract (oral exposure). In Contact with the skin or eyes (dermal exposure). Pesticides can enter the body by any one or all three of these routes. Inhalation exposure can happen if you breathe air containing pesticide as a vapor, as an aerosol, or on small particles like dust. Oral exposure happens when you eat food or drink water containing pesticides. Dermal exposure happens when your skin is exposed to pesticides. This can cause irritation or burns. In more serious cases, your skin can absorb the pesticide into the body, causing other health effects. Some pesticides evaporate more easily than others so they are more likely to be inhaled. Some break down quickly on surfaces; (5,6) others last longer. A pesticide applied as a liquid spray may drift more easily than dry granules. A pesticide sealed in a trap is less likely to be eaten accidentally by a child or a pet. A dry pesticide plowed into the soil can be dangerous to groundwater, but is not as likely to drift through the air. All these factors affect the potential risk of human exposure and are considered when DPR makes rules for pesticide use.

Pesticides affect different people differently. Children may be more sensitive to some pesticides than adults. Compared to adults, they breathe in more air and eat more food relative to their body size, increasing their exposure. When they play on floors or lawns or put objects in their mouths, they increase their chance of exposure to pesticides used in yards or lawns. Also, their developing bodies may not break down some chemicals as effectively as adults. People of any age with asthma or other chronic diseases may be more likely than healthy individuals to get sick after pesticide exposure. Some individuals are also more sensitive to the odor or other irritant effects of certain pesticides. But no matter what their individual sensitivities, people in the greatest danger of pesticide illness are those whose exposure is highest, such as workers who mix or apply pesticides. People who use pesticides in their homes may also be overexposed and become ill, especially if they do not carefully follow the directions on the product label.(7,8) People living near agricultural fields are more likely than urban residents to be exposed to farm chemicals (although their exposure may not necessarily be high enough to cause harmful effects).

### Conclusion

Taking into consideration the health and environmental effects of chemical pesticides, it is clear that the need for a new concept in agriculture is urgent. This new concept must be based on a drastic reduction in the application of chemical pesticides, and can result in health, environmental, and economic benefits .as it is also envisaged in European Common Agricultural Policy (CAP) (9,10)

We believe in developing pesticide-free zones by implementing a total ban at local level and in urban green spaces is easily achievable. Furthermore, alternative procedures to the current model of food production should be implemented in new agricultural policies targeting sustainable development and protection of the consumers' health. Despite the difficulties of establishing an innovative concept, the transition to a new cleaner and safer agricultural model is necessary.

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