



Healthy Environments for Children Alliance

A world-wide alliance to reduce environmental risks to children's health that arise from the settings where they live, learn, play, and sometimes work by providing knowledge, increasing political will, mobilizing resources, and catalyzing intense and urgent action.

Issue Brief Series: Pesticides

The use of pesticides has revolutionized global food production, increasing crop yields throughout the world to help alleviate hunger, providing access to a nutritious and abundant food supply. They also support public health, in particular through vector control, for example, in the control of malaria. To protect human health, many governments, particularly of industrialized countries, have long regulated pesticide application, storage, and disposal, as well as levels of pesticide residue present in foods. However, seminal research in the 1990's suggested these regulations did not explicitly consider children's unique vulnerability to pesticide exposure.

With their widespread and sometimes improper use, the world population can be unnecessarily exposed to pesticides. Use of pesticides has increased over recent decades with more than 2.6 million metric tons of pesticide active ingredients used annually. Pesticides are used in a variety of settings such as farms, houses, schools, parks, hospitals and other places in the community. These chemicals can enter the body through eating, drinking, breathing and absorption through the skin. Certain populations of children, for example, children of agricultural workers are especially vulnerable to poisoning from pesticides. A fetus can be exposed in utero when their mothers use pesticides, work in sprayed fields, or work near spraying operations. While breast-feeding is the best choice for infant nutrition, it is possible that mothers exposed to excessively high levels of pesticides can retain chemicals in their breast milk, thereby exposing their children.

Exposure to high levels of pesticides may lead to acute effects, such as headaches, dizziness, weakness, and nausea. These flu-like symptoms may not be reported by the exposed individual if he or she does not recognize the connection between the symptoms and the exposure. For example, in many countries symptoms of pesticide poisonings are mistaken for malaria symptoms and treated as such. Healthcare professionals often receive only limited training in occupational and environmental health, and in pesticides-related illnesses in particular. More severe pesticides poisoning can cause respiratory distress, convulsions, coma and death. It is estimated that there are between one million and five million pesticide poisonings each year, resulting in 20 thousand deaths worldwide. The exact number of child poisonings from pesticides is not known but is assumed to be large.

Chronic, low-level exposures can affect the skin, eyes, nervous system, cardiovascular system, respiratory system, gastrointestinal tract and liver, kidneys, reproductive system and blood. Recent research has examined the effect that some pesticides may have on the endocrine (hormone) systems of children. Such endocrine disrupting chemicals or EDCs can mimic or inhibit normal hormones, which may affect the physical and neurological development of children and adolescents. Many persistent organic pollutants (POPs) are pesticides. For example, POPs like aldrin, chlordane, DDT, and dioxins persist in the environment, accumulate in fatty tissue, and pose risk to human health. These and other POPs are in the process of being banned in adherence to a global treaty.

... a Global Concern

- Millions of people are exposed to pesticides in the Eastern Mediterranean, an increasingly agricultural region. In Egypt, over 1 million children between the ages of 7 and 12 help with cotton pest management, exposing them to pesticides. Pesticides were the leading cause of deaths from poisonings in children in Iran, according to a study conducted there.
- A serious problem in Africa is that of children working in agriculture, sometimes applying pesticides. Over 13 thousand children in West Africa alone work applying pesticides in cocoa production.
- A study in Central America showed a near tripling of pesticide imports between 1992 and 2001, with a total of more than 46 thousand tons of pesticide imports. The same study showed a positive correlation between increases in pesticide poisoning incidence and increases pesticide imports.

Acting to safeguard children's environments can save millions of lives, reduce disease and provide a safer, healthier world for our children's future.

See the *Healthy Environments for Children Alliance Framework for Action*

Children's Vulnerability to Pesticides

Behavioral: Very young children explore, taste and touch objects and crawl on the ground, thereby ingesting and absorbing pesticides if the areas and items they explore are contaminated. As children begin to walk, develop climbing skills and grasp objects, pesticides left within their reach pose a danger. Children with pica, a tendency to eat non-food items, are at particular risk of ingestion of pesticides in contaminated items, such as soil or other objects that they tend to eat.

Physiological: A child's size and weight affect pesticide poisonings because, relative to their size, children eat, drink and breathe more than adults. Children's bodies metabolize, detoxify and eliminate substances differently than adults' bodies do. The central nervous system undergoes its period of most rapid development from the fetal stage through the first six years of life, so young children are especially vulnerable to pesticides that act as neurotoxins. The dermal area of an infant per unit of body weight is greater than that of an adult, allowing for greater vulnerability to dermal absorption. Children's breathing zones are closer to the ground, exposing them to inhalation of pesticides that linger at floor level.

Developmental: Children's systems can be permanently damaged if exposed to toxins during certain crucial periods of development. A child also typically has more years of life than an adult in which to develop health effects from pesticide exposures. Infants and children often eat different foods from adults and usually eat a less varied diet than adults do. For example, children typically drink large quantities of milk and tend to rely heavily on foods such as fruits and juices. If children's typical foods contain elevated levels of pesticides, these will expose children at greater levels than adults.

Actions at Every Level Make the Difference

National and local governments, community organizations, educators, agricultural workers, health professionals, parents, family members and children themselves must work together to prevent such exposures. Governments need to recognize the special vulnerability of children to pesticides and develop food safety and pesticides regulations that explicitly consider this vulnerable sub-population. National investment and international cooperation is needed for research on cumulative effects, long-term studies, and risk assessments based on children's vulnerabilities.

At Home

- Reduce use of pesticides in and around the home.
- Avoid purchase of repackaged or unsafely packaged pesticides.
- Use agricultural or other outdoor use pesticides in appropriate outside places, only, not inside the home.
- Always keep pesticides in their original packaging.
- Store pesticides out of the reach of children.
- Read, make sure you understand and follow the instructions that come with pesticides.
- Keep first aid supplies available and emergency contact information readily on hand, such as telephone numbers for emergency treatment and poison control centers.
- Pest-proof your home by eliminating the things pests need to survive - food, water, and harborage. If you must use pesticides, try traps, baits or gels instead of spray formulations.
- Avoid use of pesticides and repellents on infants and young children.

At School

Teachers, staff and administrators have an important role to play in teaching children about pesticides exposure, as well as modeling good examples.

- Reduce use of pesticides in schools and in school yards.
- If they are needed, apply pesticides only when children are out of the facility. Advise parents beforehand and post signs during and after spray operations.
- Seek alternatives to pesticides for controlling pests in and around food storage, preparation or eating places.
- Instruct teachers and staff in the safe use and storage of chemicals in the school.
- Remove clutter that may harbor roaches, rodents and other pests.
- Fix leaky pipes, clogged drains, and clogged gutters immediately.
- Caulk crevices and gaps that can provide entry for pests into the school building. Fix broken screens and add sweeps to doors.

In the community

Local governments, community leaders, and non-governmental organizations can improve handling of pesticides.

- Advocate for pesticide use reduction and safe pesticide practices through legislation, social pressure and policy-setting.
- Establish poison control centers and increase local clinic capabilities to recognize and manage pesticide poisonings.

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