

**Trouble on the Farm:
Growing Up with Pesticides in Agricultural Communities**

EXECUTIVE SUMMARY

Before World War II, growing up on the farm implied a healthy lifestyle -- lots of clean air, fresh food, and physical activity. Today, with the pervasive use of highly toxic agricultural pesticides, growing up on, or even near, agricultural land means potentially being surrounded by a swirl of poisons -- in the air, in water, on food, and on nearly everything a child touches, from a teddy bear to a parent's embrace.

Children are both more exposed to toxic substances in the environment than adults and more susceptible to many toxic chemicals. The National Academy of Sciences, in a pioneering 1993 report, clearly showed that children bear disproportionately high risks from our nation's use of pesticides on food. Their report focused on children's dietary exposure to pesticides but looked only at children living in non-agricultural areas. For many children, particularly those from agricultural families, food represents only a small portion of their total daily exposure to hazardous pesticides.

Children who live on or near agricultural land, or whose families work in the fields (called "farm children" in this report), come in contact with pesticides through residues from the parents' clothing, dust tracked into the house, contaminated soil in outdoor play areas, food brought directly from the fields to the table, and contaminated well water -- making these children likely to be the most pesticide-exposed subgroup in the United States. Children often accompany their parents to work in the fields, raising their pesticide exposures even higher. Many of the children with the greatest pesticide exposures are from migrant farmworker families, who are poor and usually people of color or recent immigrants. There is an increasingly compelling body of scientific evidence indicating that farm children face particularly significant health risks. Levels of exposure, when measured, have often exceeded federal reference doses or "safe levels," as determined by the United States Environmental Protection Agency (U.S. EPA). The impact of these exposures is far from trivial. There are nearly two million farms in the United States and over one billion acres of cropland.^[1] An estimated five million agricultural workers labor on these farms.^[2] There are more than 320,000 children under the age of six living on farms in the United States while hundreds of thousands more live adjacent to fields and have family members who work on farms.^[3] The overall costs of the human health effects from pesticide exposures are considerable. Economists have estimated that the nationwide health impacts from pesticide use total as much as \$786 million dollars per year.^[4] The large numbers of affected people and the monetary and social costs of exposure are seldom considered when evaluating the costs and benefits of pesticide use.

The federal Food Quality Protection Act of 1996 (FQPA) contains provisions that recognize the vulnerability of all children. Under the FQPA, the U.S. EPA must determine if all tolerances for pesticide residues fully protect children from the hazards of pesticides. The law also requires that all routes of pesticide exposure, including non-dietary ingestion and dermal absorption, be considered in setting food tolerances. Pesticides that act through similar mechanisms of

toxicity must be considered as having cumulative health impacts. Despite the clear provisions of the FQPA, the U.S. EPA has failed to consider all routes of exposure to pesticides, and has particularly failed to include the additional exposures faced by farm children when setting tolerances.

Similarly, EPA's federal regulation to protect farmworkers, the Worker Protection Standard, does not consider that some of those workers may be children and it does not adequately protect even those children who do remain at home from pesticide residues on parents' skin, clothing, and shoes.

Findings

NRDC has previously shown that pesticides should be considered one of the top five environmental threats to children's health.^[5] Multiple exposures to pesticides are not unique to farm children. The food on our tables carries residues of the same pesticides that may have poisoned farm children, and our water is increasingly contaminated from agricultural runoff. Some of the same pesticides used in the fields are used in homes, schools, and day care centers. In this report, we further explore the threats to children's health from pesticides and identify the increased risk to farm children.

Pesticides Around Us

- * All children are disproportionately exposed to pesticides compared with adults due to their greater intake of food, water, and air per unit of body weight, their greater activity levels, narrower dietary choices, crawling, and hand-to-mouth behavior.
- * Fetuses, infants, and children are particularly susceptible to pesticides compared with adults because their bodies cannot efficiently detoxify and eliminate chemicals, their organs are still growing and developing, and because they have a longer lifetime to develop health complications after an exposure.
- * Pesticides can have numerous serious health effects, ranging from acute poisoning to cancers, neurological effects, and effects on reproduction and development.
- * Many pesticides that are never used indoors are tracked into the home and accumulate there at concentrations up to 100 times higher than outdoor levels.^[6]
- * In non-agricultural urban or suburban households, an average of 12 different pesticides per home have been measured in carpet dust and an average of 11 different pesticide

residues per household have been measured in indoor air in homes where pesticides are used.[7]

* In an early 1990s nationwide survey of urinary pesticide residues in the general population, metabolites of two organophosphate pesticides, chlorpyrifos and parathion, were detected in 82 percent and 41 percent, respectively, of the people tested.[8]

* In a rural community, all 197 children tested had urinary residues of the cancer-causing pesticide pentachlorophenol, all except six of the children had residues of the suspected carcinogen p-dichlorobenzene, and 20 percent had residues of the normally short-lived outdoor herbicide 2,4-D, which has been associated with non-Hodgkins lymphoma.[9]

Pesticides in Agricultural Areas

* Children living in farming areas or whose parents work in agriculture are exposed to pesticides to a greater degree, and from more sources than other children.

* The outdoor herbicide atrazine was detected inside all the houses of Iowa farm families sampled in a small study during the application season, and in only 4 percent of 362 non-farm homes.[10]

* Neurotoxic organophosphate pesticides have been detected on the hands of farm children at levels that could result in exposures above U.S. EPA designated "safe" levels.[11]

* Metabolites of organophosphate pesticides used only in agriculture were detectable in the urine of two out of every three children of agricultural workers and in four out of every ten children who simply live in an agricultural region.[12]

* On farms, children as young as 10 can work legally, and younger children frequently work illegally or accompany their parents to the fields due to economic necessity and a lack of child care options. These practices can result in acute poisonings and deaths.

Recommendations

There are many actions we can take today to reduce the unjust exposure burden borne by farm children, and thereby protect all children from one of the five greatest environmental threats to their health. A summary of NRDC's recommendations follows, including several

actions recommended by farmworker groups over the years. (See Chapter 7 of this report for a fuller description.)

Regulatory Protection

- * Pesticide tolerance decisions under the FQPA should consider all the exposures faced by farm children and set food tolerances low enough to protect these children from cumulative health risks.

- * U.S. EPA must use an additional safety factor of at least tenfold as required by FQPA to be sure to adequately protect farm children if there is uncertainty about their exposures, or about the toxicity of the pesticide to fetuses, infants, and children.

- * The farm Worker Protection Standard should be reevaluated to better protect children who accompany their parents to work in the fields, as recommended by the federal Children's Health Protection Advisory Committee.

- * Phase out Category I acutely toxic pesticides, and phase out use of the most hazardous neurotoxic organophosphate and carbamate pesticides, endocrine disrupters, and carcinogens, while developing and promoting alternative pest management practices.

Research Needed

- * Improved reporting systems are necessary for tracking pesticide use and pesticide-related illnesses as recommended by the American Medical Association.[\[13\]](#)

- * Pesticides should not be registered for use unless there is an established sensitive and accurate scientific method for measuring residues of that pesticide and its metabolites in food, water, and human blood or urine.

- * Regional public laboratories capable of precisely and accurately measuring low-levels of environmental toxicants in environmental media and human tissues should be established. Such laboratories would allow improved surveillance, exposure assessment in research studies, and the ability to respond rapidly to environmental disasters.

* Research should focus on the exposures and health status of farm children, with involvement of communities and farmworker groups in the study design. More data will allow more informed decision-making.

Practical Actions

* Subsidized day care should be provided for working families with young children. Farm workers must receive a living wage and benefits, so that their children are not forced to work in order to survive.

* Workers must be informed about the identity of chemicals they may be exposed to, and the known or potential health effects of these chemicals. Only with full knowledge can they take action to protect themselves and their families.

* Pesticide use in and around schools and day care centers should be reduced by requiring that all schools and day care centers have integrated pest management (IPM) programs and by creating buffer zones around schools located in agricultural areas. Parents and teachers must be informed about pesticide use. Hazardous pesticides should not be used in such facilities at all.

* Expanded integrated pest management (IPM) programs and organic farming will ultimately help most in reducing pesticide exposures for our children and grand children.

If farm children are not protected from pesticides, then the U.S. EPA is failing to implement the law, and our society is failing to protect its future. The food on our tables comes at a cost that remains hidden from many people. Although farm children are on the front lines, bearing the brunt of pesticide exposures, other children are not far behind. If we adequately protect farm children, the most exposed children in our society, then we will better protect all children.