

Environmental Health Threats to Children: A Look at the Facts

Children's Changing Environment

Children in America today inhabit a world that is fundamentally different from that of two generations past. The traditional infectious diseases have largely been eradicated. Infant mortality is greatly reduced. The expected life span of a baby born now in the United States is more than two decades longer than that of a child born at the beginning of the twentieth century.

But children today face hazards in the environment that were neither known nor suspected only a few decades ago. At least 75,000 new synthetic chemical compounds have been developed and dispersed into the environment; fewer than half of these compounds have ever been tested for their potential toxicity to humans and fewer still have been assessed for their toxicity to children. Children's exposures to lead, pesticides, PCBs, and toxic air pollutants are widespread.

The Unique Environmental Exposures and Special Vulnerability of Children

- ◆ Children are more heavily exposed to environmental toxins than adults. Pound-for-pound, children breathe more air, drink more water, and eat more food than adults. Thus, they are more exposed to whatever toxins are present in those media. Children's exposures are further increased by the fact that they tend to play close to the ground and to engage in repeated hand-to-mouth activity.
- ◆ Children are less able to metabolize and excrete most toxic substances.
- ◆ Children's rapidly developing organ systems—the central nervous system, reproductive organs, immune system, and lungs—are highly susceptible to toxic insult.
- ◆ Because children have more future years of life than adults, they are more susceptible to chronic, multistage diseases such as cancer or neurodegenerative disease that may be triggered by early exposures.

The New Pediatric Morbidity

Children's exposures to newly developed chemical toxins, in combination with the triumph of vaccines and antibiotics, have changed the face of childhood illness. The classic infectious diseases have largely been conquered. They have, however, been replaced by chronic, complex, handicapping conditions that affect multiple organs. In children, these diseases are largely unknown and have not been adequately studied. But environmental factors are strongly suspected to play an etiologic role, and these urgently need to be investigated.

Air Pollution and Asthma

Asthma incidence and mortality among both children and adults have increased substantially over the past decade in the United States. These increases are particularly evident in urban localities. In New York, Chicago, Los Angeles, and other major cities, asthma has become the leading reason for children's admission to the hospital.

Urban air pollution, especially ground-level ozone and fine particulates, appear to be important contributors to the upward trend in asthma. Indoor air pollution, including insect dust and environmental tobacco smoke, is an additional trigger.

Childhood Asthma Facts

- ◆ 600 children die each year from asthma, and 150,000 are hospitalized.
- ◆ From 1980 to 1993, the death rate for childhood asthma in the United States increased by 78%.
- ◆ Nearly 5 million American children have asthma.

Childhood Cancer

Each year in the United States, an estimated 8,000 children up to age 14 are diagnosed with cancer. Leukemia and brain tumors are the most common malignancies in childhood. Cancer is the second most common cause of death after injuries in American children.

The death rate from childhood cancer has declined dramatically in recent years in the United States—thanks to the advent of vastly improved approaches to cancer treatment. But the occurrence of new cases of cancer among children—the incidence rate—has been steadily increasing. This upward trend has been most strongly evident for acute lymphoblastic leukemia and brain cancer, the two most common forms of cancer among American children.

These increases in the incidence of childhood cancer have not been explained. However, they are too rapid to reflect genetic changes. Nor is better diagnostic detection a likely explanation. The strong probability exists that environmental factors are playing a role. It is essential that research to identify the specific environmental causes of childhood cancer be undertaken and that the pace of this research be accelerated.

Childhood Cancer Facts

- ◆ 8,000 American children are diagnosed each year with cancer.
- ◆ Incidence rates for childhood cancer have been increasing steadily for two decades:
 - Acute lymphoblastic leukemia is up 10.7%.
 - Brain cancer (glioma) is up 30%.
 - Osteogenic sarcoma (a form of bone cancer) is up 50%.
 - Testicular cancer (in young men) is up 60%.

Although death rates from childhood cancer are down and survival rates are much higher due to spectacular advances in treatment, the increasing incidence of childhood cancer threatens to undermine those achievements.

Lead Poisoning

Blood lead levels among preschool children in the United States have been reduced by 94% since 1976. The principal cause of this decline is the removal of lead from gasoline.

Despite that decline, 940,000 young children are at an increased likelihood of loss of intelligence, shortened attention span, failure in school, and delinquent and criminal behavior. Lead poisoning in childhood is also suspected to increase the risk of drug abuse later in life.

Childhood Lead Poisoning Facts

- ◆ 940,000 American preschool children have elevated blood lead levels.
- ◆ Lead paint in older housing is the principal source of lead exposure today. Fifty million housing units in the United States contain lead.
- ◆ Drinking water is a widespread source of lead exposure.
- ◆ Damage to the brains of young children from lead exposure causes lifelong dysfunction.

Endocrine Disruptors

Over the past five years, evidence has been growing that a variety of environmental contaminants, particularly the chlorinated organic hydrocarbon compounds, can have adverse health effects because of their ability to alter the functions of hormones within the body. These effects, which include cancer, reproductive disorders, neurologic impairment, and immune dysfunction, have been observed in experimental animals exposed to specific chemicals in the laboratory, in wildlife populations in several broadly contaminated ecosystems such as the Great Lakes, and, to a more limited extent, in humans.

The developing nervous system of children appears to be particularly vulnerable to endocrine-disrupting chemicals, as evidenced by a variety of behavioral alterations in women who have consumed PCB-contaminated fish. Children's developing reproductive organs are also at risk, since endocrine disruptors are suspected of being responsible, at least in part, for recently observed increases in the incidence of cryptorchidism and testicular cancer, as well as for the doubling in the incidence of hypospadias recently reported by the CDC.

Endocrine Disruptor Facts

- ◆ Children are widely exposed to endocrine disruptors in the environment, especially DDT, PCBs, and chlorinated pesticides such as chlordane.
- ◆ The incidence of hypospadias in newborn boys has doubled, with endocrine disruptors being a likely cause.
- ◆ The incidence of testicular cancer in young men has increased by 60%, with endocrine disruptors being a likely cause.
- ◆ The incidence of breast cancer is up in women. The risk of breast cancer is related to women's body burdens of DDT and PCB.
- ◆ Fetal exposure to PCB reduces intelligence.
- ◆ Endocrine disruptors may be a factor in the increasing incidence of premature puberty in young girls.

Tobacco

Each year, tobacco kills 350,000 Americans. Tobacco is a major threat to the health of children, who are at risk from both active smoking and passive exposure to cigarette smoke.

Smoking among children typically starts early. Ninety percent of all cigarette smoking begins before the age of 18 years.

More than 70 percent of all American high school students have tried cigarettes. Seventeen percent are regular smokers. Over the past decade, the number of boys who start smoking has declined. But there has been a steady increase in the number of girls and young women who smoke.

Passive smoking is also a hazard to children. Children exposed to passive smoke have more bronchitis, more pneumonia, and more viral respiratory infections than nonexposed children. The frequency of infection is a direct consequence of the amount of smoke in the home. Children who live with two smoking parents have more respiratory infections than children who have only one smoking parent. Maternal smoking has a stronger effect on children's respiratory infections than smoking by the father. The lowest rates of lung infection and asthma are found in the children of parents who do not smoke at all.

Smoking during pregnancy poses a serious danger to the unborn child. Study after study has shown that among women who smoke, the likelihood of giving birth to a premature, low-birth-weight infant is substantially higher than among women who do not smoke. Women who smoke are also at increased risk of a pregnancy ending in miscarriage.

Women who smoke often have a more difficult time conceiving than nonsmoking women of the same age. And their risk of not becoming pregnant at all—of sterility—is elevated. Finally, the children of parents who smoke have a higher than normal risk of death from sudden infant death syndrome (SIDS).

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