

Children and Landscape Hazards

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Today, every child in the world faces chemical challenges never before experienced in human history. Nearly 70,000 chemicals are traded in international commerce, and most of these were first designed in the last century. Thousands of additional compounds are released to the environment as pollutants, combustion by-products or wastes. Children are routinely exposed to mixtures of synthetic chemicals in air, water, food, soil, and consumer products, and their exposure to these mixtures are neither monitored nor regulated by government.

Today, almost 500 synthetic chemicals—most created since World War II—are detectable in human tissues. Pesticide residues, for example, were recently found in the urine of nearly all children examined in Minnesota and Washington studies.¹ PCB's, dioxins, furans, nicotine, flame-retardants, metals, solvents, and some pesticides are found in human breast milk.² Discovery that lead concentrates in babies' teeth prompted further tests of its effect on learning, intelligence and behavior. Following nearly 25 years of debate, lead was eventually banned from gasoline and paints.³ This history suggests that our bodies may be storing more chemicals than we can now detect. It also suggests that once health risks are recognized, exposures may continue for generations while scientists and lawyers debate what should be done.

Trends in Children's Health

Consider the following trends in children's health:

- Nearly 5 million U.S. children suffer from asthma, and rates have increased rapidly over the past several decades.⁴
- Childhood cancer rates have increased gradually and with consistency for many forms of the disease, while increasing most rapidly for leukemia (ALL) and cancers of the central nervous system (brain tumors).⁵
- Birth defects continue to be the primary cause of infant mortality. Nearly 1 of every 28 babies is born with a birth defect.⁶
- Nearly 17% of children less than 18 years in age have been diagnosed with at least one developmental disorder.⁷
- Between 3-5% of children in the U.S. have Attention Deficit and Hyperactivity Disorder (ADHD) and the incidence may be on the rise. Visits to office-based physicians for pediatric ADHD-related concerns increased by 90% between 1989 and 1996. The use of stimulants such as Ritalin to treat ADHD in children rose 14% during this same period.⁸
- The nervous systems of more than one million children are irreversibly damaged from exposure to lead, primarily from exposure to deteriorating paints.⁹

Hazardous Chemical Production and Release

Today's chemical burden in the environment is growing by almost any measure. Forces propelling these trends include: a growing population, expanding economies, warfare, terrorism, growing international trade, increasing use of energy, increasing use of synthetic chemicals, and ever rising levels of human consumption. Today, hundreds of billions of pounds of hazardous substances continue to be released to

air, water and land each year or they are intentional ingredients in consumer products such as pesticides, fuels, paints and solvents. Many of these make their way into the lives of children and pregnant women.

Land Use and Landscape History

Past history of land use often holds important clues to understanding a child's potential chemical exposure. Orchards in production during the early 20th century may have soils contaminated by lead and arsenic, formerly applied as fungicides. And many former orchards are now residential communities. Landfills are often covered with soil and replanted, and former industrial sites are sometimes torn down. If these landscapes are converted to residential, school or recreational facilities, they may pose a special threat to children's health. Most hazardous waste or contaminated sites are not easily recognized or publicized, leaving everyone with the need to be vigilant about where they choose to live. Power plants, sprayed croplands, recreation areas, golf courses, nurseries, shipyards, fuel storage facilities, military bases, bus depots and industrial sites may all pose hidden threats to the health of children.

The list of hazardous waste sites has grown steadily over the past several decades, while the number of restored or cleaned sites has grown sluggishly. Once a site is found to be contaminated, fierce local political debate usually follows, as the dampening effect on surrounding property values is recognized. The public list of sites in need of clean-up will always be smaller than it should be.

Thousands of contaminated sites—both private and public—await clean-up. The Department of Defense recently estimated that it would take 70 years and \$20 billion to clean up former defense facilities contaminated by radioactive, hazardous and toxic substances.¹⁰ A recent EPA study found that nearly 350,000 children in New England states live within one mile of a National Priority List Superfund Waste Site; and 262 schools lie within one mile of these facilities.¹¹ Several studies have found increased health risks to children who live in close proximity to hazardous waste sites. Studies of individual hazardous waste sites in the U.S. and Europe have shown increased risk of congenital malformations and reductions in birth weight among infants born to parents living near hazardous waste sites.^{12 13} And nearly 25% of Americans live within 4 miles of a hazardous waste site.¹⁴

Common Sense Solutions

The trends in respiratory diseases, neurological disorders and cancer described previously are deeply disturbing. When considered together with knowledge of children's routine exposure to hazards described in the pages that follow, it is apparent that we need to manage the environments of children more cautiously. A child's daily exposure to hazardous chemicals could be far lower than it is today. Importantly, it is not necessary to identify each chemical in a child's environment to offer substantial protection. Knowing the primary sources of exposure to the most hazardous chemicals, and avoiding them is sufficient to accomplish real risk reduction in the very near term.

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