INSTITUTE for CHILDREN'S ENVIRONMENTAL HEALTH

CHILDREN'S ENVIRONMENTAL HEALTH BASICS

What is children's environmental health?

Broadly speaking, environmental health refers to any health impact environmental exposures may have on adults and children, starting with fetal development. These environmental exposures can come through our air, water and food. For example, toxic exposures may emanate from industrial or medical waste incinerators, chemical fertilizers on our lawns or insecticides in our homes, lead-based paint on our walls, pesticide residues in our food and water, endocrine-disrupting chemicals and carcinogens in our personal care products, as well as in building materials in homes, schools, hospitals and offices, and even bioaccumulative and persistent organic pollutants in breast milk itself. Recent studies suggest that the health impacts of these exposures can include asthma, birth defects, hypospadias, behavioral disorders, learning disabilities, autism, cancer, impaired immune systems, neurological impairments, and reproductive disorders.

Environmental health is also inextricably linked to many other social, environmental and economic factors. Disparities in exposure to hazardous air pollutants, contaminated drinking water and soil are associated with race/ethnicity and family income because minorities and low-income families often live closer to industrial sites or more polluted areas where land and housing costs are lower. In addition, issues such as gun violence, land use, building permits and site plans, transportation, and access to health care clearly influence the overall environmental health of communities. Furthermore, since the health of humans is completely connected to the overall health of our ecological systems – including the health of all other species and the health of forests, prairies, wetlands, rivers, lakes and oceans – environmental health is ultimately about the health of our planet, which gives and sustains all life.

Why is this more of a problem now?

Since the petrochemical industry started around World War II, about 80,000 new chemicals have been manufactured and released into our environment. Of the 15,000 in common use, the vast majority have not been tested individually for human health impacts and none of them have been tested in combination. Each year about 1500 new chemicals are introduced. Because many of these chemicals bioaccumulate in fatty tissue, they are found in higher quantities in dairy and meat products. In addition, many of these chemicals migrate easily through the air and water and through the globalized consumer market. For example, chemicals such as DDT which was banned in the U.S. years ago still persist in our environment and in our bodies.

Some of these synthetic chemicals are also found to be passed on from pregnant mother to fetus and through breast milk to nursing infant. Recent research studies suggest that exposures to certain chemicals at certain doses during particular developmental windows in fetuses and young children may contribute to a range of health concerns. Some of these health concerns may not show up clearly until later in life, such as reproductive disorders, learning disabilities, Parkinson's disease and various cancers.

For these reasons, no one is immune from these exposures, even non-industrialized populations. Instead, it is estimated that we all carry several hundred chemicals in our bodies that did not exist just 50 to 60 years ago.

Another recent phenomenon in modern life that seems to effect health is the depletion of the ozone layer. Studies show this is related to increases in malignant melanoma and weakened immune systems in humans. In addition, the rise in air pollution caused by industrialization and the greater use of planes, cars and trucks contributes to asthma and other respiratory ailments – in fact, asthma has doubled in the past decade and tripled for children under five.

Why are children particularly susceptible?

Children eat, breathe and drink far more than adults based on proportional body weight. For example, they drink seven times more water and take in twice as much air as adults on average. They also ingest half of their lifetime pesticide intake mostly through eating food by the age of five. In addition, children behave differently from adults. They spend more time on the ground – on carpets, lawns and floors that may have been treated with pesticides or other synthetic chemicals. Plus, they have many more hand-to-mouth transfers, and touch objects and surfaces more frequently without washing their hands, thereby increasing their exposures. In addition, many of their biological systems – endocrine, neurological, hormonal and immune – are still developing well into their teenage years, and exposures to some of these chemicals at certain developmental windows can compromise those systems for a lifetime.

How are these concerns currently being addressed?

In 1962, the renowned scientist Rachel Carson warned about the problematic health effects of toxic chemical exposures in her groundbreaking book *Silent Spring*. Her views, however, were mostly met with criticism and controversy. Until very recently, politicians and researchers alike have been slow to make the connection between health and the environment.

With the National Academy of Science's publication of "Pesticides in the Diets of Children and Infants" in 1993, however, many sectors of society have become increasingly aware of the relationship between environmental exposures and the significant rise in childhood cancers, weakened immune systems, asthma, learning disabilities, attention deficit disorders, birth defects, behavioral disorders and other health concerns. In fact, a number of organizations and

institutions in government, academia and the non-profit sector are now devoting considerable time to these efforts.

Some are working on legislation and regulatory policies that take into account children's unique susceptibilities to exposures. Others are spearheading scientific research on the health effects certain chemicals may have on neurological development and other biological systems. Still others are working on consumer issues and catalyzing grassroots campaigns, such as eliminating dioxin and mercury in our medical waste stream and mitigating disproportionate pollution exposures in low income and minority neighborhoods. Some are working with industry to ensure greater corporate accountability for the possible health impacts of their products and support for the production of less-toxic alternatives. Others are helping to educate pediatricians and health care workers, while still others are partnering primarily with parents, teachers, youth, health-affected groups or religious communities.

This diverse range of dedicated groups and individuals is beginning to form a new movement – an environmental health movement. According to Michael Lerner, president of Commonweal, a health and environmental research institute, this may be one of the major movements of this century – one that integrates the core concerns of human rights and civil rights groups, environmental justice organizations, the women's movement, children's advocacy groups, religious and spiritual communities, the labor movement, social development constituencies, medical and public health constituencies, the mind-body health movements and progressive corporate interests. This burgeoning movement is motivated by the health of future generations and the planet and is, at its core, a children's environmental health movement.

ICEH's unique role in this growing movement is to incubate and foster collaborative initiatives to address these pressing children's environmental health concerns. By serving as a resource for science-based information and working with a broad range of organizations and institutions, ICEH helps to ensure that we have a healthy, just and sustainable future for generations to come.