



NEW YORK STATE'S

# Children and the Environment

A Report from the  
**Children's Environmental Health Center**  
Icahn School of Medicine at Mount Sinai

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**Mount  
Sinai**

*Children's Environmental  
Health Center*





This report was prepared by the Children's Environmental Health Center of the Icahn School of Medicine at Mount Sinai.

The mission of the Mount Sinai Children's Environmental Health Center is to discover the environmental causes of disease in children and to translate scientific research into public policies and practical solutions that protect children's health. The Center has strong educational programs that are training the next generation of researchers and clinical leaders in environmental pediatrics. We have published a major Textbook in Children's Environmental Health. The Center supports educational programs for parents, the general public and policy makers. In partnership with Mount Sinai's Department of Pediatric, the Center provides diagnostic and treatment services to children who have been exposed to health threats in the environment or who suffer from diseases suspected to be of toxic environmental origin.

The Director of the Mount Sinai Children's Environmental Health Center is Philip J. Landrigan, MD, MSc, FAAP. Dr. Landrigan is Ethel H. Wise Professor and Chairman of the Department of Preventive Medicine, Professor of Pediatrics and Dean for Global health at Mount Sinai. The Center's Deputy Director is Robert O. Wright, MD, MPH, FAAP, Professor of Preventive Medicine and Pediatrics and Vice-Chair of the Department of Preventive Medicine. Ms Katherine Southwick is the Center's Program Manager.

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## Executive Summary and Recommendations

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**T**he children of New York today live longer, healthier lives than the children of 50 or 100 years ago. Thanks to safe drinking water, environmental improvements, vaccines and antibiotics, the ancient infectious diseases that were once the great scourges of childhood have now largely been controlled. Infant mortality has declined by over 90%. Children's life expectancy has doubled.

Despite these great gains, children in New York suffer today from a wide array of chronic diseases. Many of these diseases are on the rise. Evidence is strong and growing that environmental factors contribute to them.

**ASTHMA** has tripled in the past three decades and become the leading cause of emergency room visits, hospitalizations and school absenteeism. It affects 250,000 New York children and is especially common among minority children. Air pollutants, mold and cigarette smoke all contribute to childhood asthma.

**BIRTH DEFECTS** are now the leading cause of infant death. Certain birth defects, such as hypospadias, have doubled in frequency.

**DEVELOPMENTAL DISORDERS** such as ADHD, dyslexia and learning disabilities affect one of every six American children. Autism has increased sharply in prevalence and now afflicts one child in 88.

**PRIMARY BRAIN CANCER** among children has increased in incidence by nearly 40% from 1975 to 2004, according to the National Cancer Institute.

**CHILDHOOD LEUKEMIA** has increased in incidence by over 40%. Benzene, other solvents and pesticides are linked.

**CHILDHOOD OBESITY** has nearly quadrupled in the past ten years, and its sequel, Type 2 diabetes, previously unknown among children is becoming epidemic.

**LEAD POISONING** affects more than 2,200 children in New York State each year. Even at low levels, lead causes brain damage with loss of intelligence, disruption of behavior and shortened attention span.

**Toxic and Untested Chemicals:** Children in New York today are at risk of exposure to more than 80,000 synthetic chemicals. Most of these are new chemicals that did not exist 50 years ago. The Centers for Disease Control and Prevention (CDC) finds measurable levels of scores of new synthetic chemicals in the bodies of virtually all Americans.

A high proportion of the most widely used chemicals have never been tested for safety. Information on possible health effects is not available for half of the most widely manufactured chemicals. Information on developmental toxicity to infants and children is not available for 80%.

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Scientific evidence is strong and continuing to build that toxic chemicals and other hazards in the modern environment are important causes of diseases in children. According to the World Health Organization, environmental exposures are responsible for 35% of all childhood disease and deaths worldwide. Indoor and outdoor air pollution are now established as causes of asthma. Childhood cancer is linked to solvents, pesticides, and radiation. The National Academy of Sciences has determined that environmental factors contribute to 28% of developmental disorders. The urban built environment and the modern food environment are important causes of obesity and diabetes.

**Economic Costs of Environmental Disease:** Diseases caused by toxic chemicals impose great economic burdens on families, schools, communities, health care providers and society. These diseases are enormously expensive. A recent analysis estimates that the costs of disease of environmental origin in New York's children amount to \$4.35 billion each year. These costs fall on the families of sick children and also on New York's taxpayers by unnecessarily increasing the annual Medicaid budget for and the budgets special education and other programs for children who have been damaged by exposures in the environment.

**Prevention of Environmental Disease:** Diseases in children caused by toxic chemicals and other hazards in the environment can be prevented. These diseases can be prevented when their causes are known. Scientific research provides the evidence-based blueprints we need to discover the causes of disease and to protect children from environmental threats to health. Disease prevention saves lives, enhances children's lives, reduces health care and education costs and increases productivity.

The savings that result from disease prevention can amount to tens of billions of dollars each year. An extraordinarily successful example of evidence-based prevention is the removal of lead from gasoline. This action, taken by US EPA in 1976, was triggered by the discovery that lead can cause brain injury in young children. The removal of lead from gasoline lowered US children's blood lead levels by more than 90%, reduced lead poisoning by more than 90% and raised the average IQ of American children by 2-4 points. Additionally it has produced an economic benefit of about \$200 billion each year since 1980. This benefit is largely the result of the increase in national productivity that followed widespread increases in children's IQ.

**Current Resources in Environmental Pediatrics:** Pediatricians in New York State report they are not comfortable managing environmental aspects of disease, despite the high prevalence of these problems. Only 19.4% New York State pediatricians been trained to suspect the environment as a cause of disease in children. The four-year curriculum of the average American medical school devotes only six hours' teaching time to topics in environmental health. Most physicians do not routinely obtain histories of environmental exposure from children and their families. And because there is currently only one Center of Excellence in Children's Environmental Health in all of New York State, located at Mount Sinai Medical Center in Manhattan, pediatricians, family physicians and other health care providers in most areas of New York have nowhere to refer children who have made ill by environmental exposures.

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## Conclusions

**Children in New York suffer today from a wide array of chronic diseases. Many of these diseases are on the rise.**

**Scientific evidence is strong and continuing to build that toxic chemicals and other hazards in the modern environment are important causes of diseases in children.**

**The costs of diseases of environmental origin in the children of New York amount to about \$4.35 billion each year.**

**Diseases of environmental origin in children are preventable. Prevention of these diseases will improve children's lives and has the potential to generate enormous cost savings.**

**Prevention and treatment of disease of environmental origin in New York's children requires creation of a statewide network of Centers of Excellence in Children's Environmental Health**

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## Recommendations

To improve the prevention and treatment of disease of environmental origin in New York's children, the Mount Sinai Children's Environmental Health Center recommends the creation of a statewide network of Centers of Excellence in Children's Environmental Health. This network should be funded on a permanent and sustainable basis and coordinated through the New York State Department of Health.

The Centers of Excellence that comprise the network should be distributed geographically across the State. To the extent possible, they should be co-located and work in partnership with the highly successful statewide network of Centers of Excellence in Occupational Health and Safety that was established in 1988. This network has diagnosed and treated tens of thousands of adult patients since its formation, has seen a sharp drop in occupational diseases and injuries in New York State over the past 25 years, and was critical in the medical responses to 9/11 and Hurricane Sandy.

This network of Centers of Excellence will provide expert diagnosis and treatment for children across New York who have sustained toxic exposures in the environment or are suffering from diseases suspected to be of environmental origin.

The Centers will serve as sources of specialty referral and consultation for pediatricians, family physicians and other health care providers across New York State. The Centers will educate children, parents, teachers, children's agencies, policy-makers and the public in their regions of New York State about environmental threats to children's health and will empower New Yorkers in all regions of the State to take action against environmental hazards.

Each Center will be comprised of a team of pediatricians, nurses, social workers and health educators who provide a range of services: evidence-based guidance on questions pertaining to environmental factors and children's health; educational outreach; timely messaging on acute health events; and collaboration on community-level issues involving multiple stakeholders.

The network of Centers of Excellence in Children's Environmental Health will work together across New York State, to improve the health of children through research, advocacy and prevention.