Environmental Health Sciences

A preeminent leader in the field, the Department of Environmental Health Science is dedicated to understanding the impact of environmental exposures on human health, particularly as they relate to cancer and the nervous, cardiovascular, and pulmonary systems, with a particular focus on vulnerable populations.

Unique among departments at Columbia University Mailman School of Public Health, Environmental Health Sciences has both laboratory-based basic science and community-based research programs. Our renowned faculty are engaged in studies that carefully measure how environmental factors can improve—or damage—health at the population level.

Examples of our work

- Researching the impact of indoor and ambient air pollution on maternal and child health; and the role that the environment plays in causing cancer
- Studying the effect of metal exposure, such as lead and arsenic, on the nervous, cardiovascular, and pulmonary systems; effects of climate change on disease transmission and on mortality and morbidity
- Understanding the basis of the asthma epidemic; the effects of maternal exposure to PAH, BPA, and other toxicants on the developing fetus, and how those exposures contribute to the long-term health of the child

MISSION

Our mission is to protect and improve health by identifying, evaluating, and disseminating knowledge about the impact of environmental exposures on human health and disease. Academic programs and research activities across disciplines develop public health professionals who will have a role in solving the local, national, and global issues presented by these environmental challenges.

HISTORY

Founded in 1960 as the Division of Environmental Health Sciences, the Department was established at a time when awareness of the consequences of environmental exposures to human health was first coming to light. The Mailman School’s early entry into this emerging field has kept us in the vanguard for more than 50 years.
The Department supports faculty investigators from a wide range of disciplines and doctoral and master’s students, along with postdoctoral fellows, in creating a vibrant community that generates ongoing scholarly activities to solve some of the greatest human health issues of our day. As Chair, Tomás Guilarte, PhD, who was awarded the inaugural Leon Hess Endowed Professorship, the first endowed chair in the history of the Department, leads with strong vision to ensure that essential scholarship thrives. This atmosphere is further backed by a cadre of outstanding senior faculty who are committed to our mission: excellence in research and teaching while providing guidance to junior faculty.

Select projects and research

- The Columbia Center for Children and Environmental Health played an instrumental role providing data that has led to tighter regulation of the pesticide chlorpyrifos. The same mother-child birth cohort study has explored the effect of PAH, BPA, and other exposures in utero and early childhood on obesity, cognitive abilities, and other childhood outcomes.

- Studies in Bangladesh and the U.S. supported by the Superfund Research Program have made significant contributions to our understanding of the health effects of arsenic on cardiovascular disease in adults and intelligence and motor function in children and the impact of nutrition on arsenic metabolism and toxicity.

- Research on the toxic effects of lead and manganese on the brain have identified novel mechanisms by which these toxic metals affect neurological and mental function.

- Studies have validated a biomarker of brain injury and inflammation that can be used to non-invasively image and quantify neurotoxicant-induced brain injury and assess the effectiveness of therapeutic strategies.

- Investigations are focused on the mechanism by which climate change is altering the patterns of infectious disease transmission, such as influenza.

- NYC-based neighborhood studies have provided insight into the root causes of the local asthma epidemic. Recent investigations of bed bug exposure are helping us understand the pest’s role in asthma prevalence.

- Two projects in India and Ghana are quantifying health benefits from interventions that reduce exposures to household air pollution from inefficient cookstoves during pregnancy and early childhood. These studies include an arm to evaluate exposure and another to distribution cleaner stoves and assesses the potential benefits of their use.

- The Columbia Center for Environmental Health in Northern Manhattan has provided a venue for creating collaborative projects that extend throughout the campus and engage and benefit our local community.