

National Institutes of Health
The National Institute of Environmental Health Sciences



The National Institute of Environmental Health Sciences (NIEHS) is one of 27 Institutes and Centers of the National Institutes of Health (NIH), which is a component of the U.S. Department of Health and Human Services (HHS). The NIEHS is located in Research Triangle Park (RTP), North Carolina. RTP is a science and technology hub created by the state of North Carolina between Raleigh, Durham and Chapel Hill.

Mission Statement

The mission of the NIEHS is to reduce the burden of human illness and disability, by understanding how the environment influences the development and progression of human disease. To have the greatest impact on preventing disease and improving human health, the NIEHS focuses on enhancing the understanding of environmental triggers of chronic diseases, developing prevention and intervention strategies to reduce adverse health effects of hazardous exposures, and providing information to decision makers to reduce uncertainty associated with risk.

Key Scientific Initiatives

Since 1966, NIEHS has been an important source of health

research advances, and meaningful information to the public and decision makers.

The current focus of NIEHS research includes:

- Molecular Mechanisms of Exposure-Disease Relationships
- Endocrine Disruptors and Reproductive Disorders
- Exposure Biology Program
- Environmental Public Health Research
- Climate Change
- Hazardous substances research, including effects of air pollutants, metals, and synthetic chemicals

The Institute funds environmental health studies at institutions across the United States, as well as within its own facility in RTP. The vast majority of the Institute's budget is awarded for laboratory research, studies with people, and training programs that are conducted at universities, hospitals, businesses and organizations around the country and in other lands. The Institute is also home to the National Toxicology Program (NTP), the nation's premier toxicity and carcinogenicity testing strategy.

The pioneering work of NIEHS researchers and grantees has shown the deadly effects of asbestos exposure, the developmental impairment of children exposed to lead, and the health effects of urban pollution. Federal and state regulatory, environmental, and public health agencies use NIEHS research findings to calculate new standards to protect health. Recent examples include EPA's new air quality standards for particulate matter, FDA's advisory on the laxative component phenolphthalein, and CDC's lowering of the action level for blood lead. The breadth of the work and focus on environmental causes of disease makes NIEHS a unique part of the National Institutes of Health.

Some of the most active areas of research are:

- Breast cancer and the environment
- Gene-environment interaction and genetic susceptibility
- Childhood environmental health, including respiratory diseases, birth defects, and autism
- Environmental public health research
- Alzheimer's and Parkinson's disease



Current Scientific Directions

Alzheimer's and other neurologic disorders.

Toxins in the environment may play a role in the development of Alzheimer's and Parkinson's disease, amyotrophic lateral sclerosis (Lou Gehrig's Disease), autism, and other neurologic disorders. NIEHS research seeks to determine what role solvents, pesticides and metals may play.

Women's health. NIEHS scientists played a leading part in the discovery of the first breast cancer susceptibility gene, BRCA1. Now they are examining environmental components of osteoporosis, which cripples many women and often leads to hip fractures. Investigators are also studying the postmenopausal release of lead from bone, which can result in osteoporosis.

Exposure Biology Program. Just as you can spot measles by its rash, scientists are working to use indicators called biomarkers to better measure the body's exposure to and up-take of toxins. Ideally, these measurements could be made by sensitive, non-invasive tests. Ideally, too, they could provide early warnings of exposures, predict the likely development of diseases, and help doctors intervene and prevent or limit these diseases. This groundbreaking research effort will enable us to understand how environmental agents may influence our body chemistry, thereby supporting development of earlier and more effective prevention and intervention strategies.

Environmental Public Health Research.

NIEHS has been a leader in understanding how poverty and chemical, physical and social environments interact to affect health outcomes. The Institute has also been an innovator in promoting partnerships between community groups and researchers, to address local, real-world environmental health concerns. Through sustained support, NIEHS has become a trusted source for high-quality environmental health information and a champion of community environmental health.



National Toxicology Program (NTP).

The NTP is a federal, interagency program, administered by NIEHS, whose mission is to evaluate the health and safety risk of chemicals and other environmental agents, by developing and applying tools of modern toxicology and molecular biology. Current NTP initiatives are examining the effects of cell phone radiation, endocrine disruptors, and nanomaterials, as well as developing new approaches to advance high throughput screening of chemicals, reduce the number of animals used in research, and examine how individual susceptibility influences response to an environmental exposure.

Climate Change. NIEHS is a key player in the U.S. Climate Change Science Program, which has recently assessed the potential health impacts of climate change. Challenges and possible effects include unusual or unexpected weather, higher ozone concentrations, and increases in food- or water-borne diseases. In addition, some individuals and communities may be disproportionately affected by climate change, including the elderly, the poor, children and people with chronic medical conditions. However, the U.S. has well-developed public health infrastructures and environmental programs that protect our air and water, which can help minimize the impacts.

Birth and developmental defects, sterility, breast and testicular cancers.

Some studies suggest average male sperm counts have sharply declined over the decades. Breast cancer and testicular cancer appear to have increased. NIEHS research seeks to discover how chemicals in the environment, including pesticides that mimic the hormone estrogen, might cause or stimulate these diseases.

Metal Toxicity. Research by NIEHS and others has shown that exposure to lead can cause health problems such as lower IQ, high blood pressure, fertility problems, muscle and joint pain, and memory and concentration problems. As a result, lead has been removed from paints, gasoline and cans used for food. Other NIEHS-funded research showed that mothers who eat mercury-contaminated fish may have children with fine motor difficulties, sensory problems and cognitive deficits. Drinking water contaminated with arsenic can disrupt the endocrine system by blocking steroid hormones such as estrogen and testosterone. Recent studies also have shown that hexavalent chromium in drinking water causes cancer in laboratory animals.

Pesticides and health.

NIEHS places special emphasis on agricultural exposures. Natural materials, such as grain dust, can induce chronic respiratory symptoms such as Bronchitis. Agricultural chemicals have increased food production to meet the needs of rising populations here and abroad, but can pose serious health risks at high exposures.

For more information
on The National Institute of
Environmental Health Sciences,
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