

DEPARTMENT OF HEALTH AND HUMAN SERVICES  
NATIONAL INSTITUTES OF HEALTH

Fiscal Year 2013 Budget Request

Statement for the Record

House Subcommittee on Labor-HHS-Education Appropriations

Linda S. Birnbaum, Ph.D., D.A.B.T., A.T.S.

Director, National Institute of Environmental Health Sciences

March 2012

Mr. Chairman and Members of the Committee:

I am pleased to present the President's budget request for the National Institute of Environmental Health Sciences (NIEHS) of the National Institutes of Health (NIH). The Fiscal Year (FY) 2013 NIEHS budget of \$684,030,000 includes a decrease of \$725,000 from the comparable FY 2012 level of \$684,755,000.

## INTRODUCTION

As the Dutch philosopher Desiderius Erasmus so succinctly put it: Prevention is better than cure. In most instances, disease is a result of a combination of age, genetics, and environment. But unlike age and genetics, environment is something that we can affect in order to prevent illness. As an environmental public health institute, the NIEHS is entrusted with the mission to prevent human suffering and illness by creating and sharing the knowledge necessary for understanding the role of the environment in disease, and thereby enable people to lead healthier lives. NIEHS continually strives to lead public health prevention efforts by providing research science and translation to inform decisions and policies at the individual, community, national, and global levels that prevent hazardous environmental exposures and thus reduce disease and disability. Many of the most challenging diseases—and most costly in terms of both human suffering and economic resources—are being shown to have strong environmental components. Diseases such as cardiovascular disease and stroke, that cause 1 in 3 deaths in America each year,<sup>1</sup> have been associated with exposure to

---

<sup>1</sup> Roger VL, et al. Heart disease and stroke statistics—2012 update: a report from the American Heart Association. *Circulation*. Dec.15, 2011:e12. Published online at: <http://circ.ahajournals.org/content/early/2011/12/15/CIR/0b013e31823ac046.citation>

environmental agents such as air pollution and second-hand smoke. An estimated nearly 70 percent of Americans over the age of 20 are overweight or obese; for children the figure is over 30 percent.<sup>2</sup> New research, including studies funded by the NIEHS, shows that obesity and its common companion diabetes are complex disorders that are affected not just by food consumption and physical exertion, but also by environmental factors including exposures to environmental contaminants during early life.<sup>3</sup> Greater understanding of the role of such exposures and concomitant efforts to prevent them could dramatically change the trend of this increasing public health epidemic. And the list goes on. Strong associations have been shown between exposure of pregnant mothers to chemicals, including polybrominated diphenyl ethers added to products as flame retardants, and a range of neurodevelopmental disorders, learning disabilities, and behavioral effects in their children.<sup>4</sup> NIEHS continues to commit significant efforts to increasing our understanding of these health effects and how they might be prevented. On a global level, the problem of respiratory illnesses resulting from exposure to indoor air pollution represents an area ripe for intervention. Toxic smoke from burning biofuels in cookstoves kills nearly 2 million people each year, largely women and children, according to the World Health Organization. NIEHS is part of the Global Alliance for Clean Cookstoves, a public-private initiative working to eliminate exposure to harmful cookstove smoke. This is a tractable prevention problem with a potentially huge payoff in public health.

---

<sup>2</sup> Roger VI, et al. Heart disease and stroke statistics—2012 update: a report from the American Heart Association. *Circulation*. Dec.15, 2011:e14. Published online at: <http://circ.ahajournals.org/content/early/2011/12/15/CIR/0b013e31823ac046.citation>

<sup>3</sup> Janesick A, Blumberg B. Endocrine disrupting chemicals and the developmental programming of adipogenesis and obesity. *Birth Defects Res C Embryo Today*. Mar,93:34-50, 2011.

<sup>4</sup> Herbstman JD, et al. Prenatal exposure to PBDEs and neurodevelopment. *Environ Health Perspect*. 2010 May;118(5):712-9. Epub 2010 Jan 4.

## **NIEHS STRATEGIC PLANNING**

Looking at this long list of environmentally related diseases raises the question, “How can one institute have an impact on research and disease prevention in all these areas?” To answer this question, NIEHS is striving to maximize its impact and leadership in the environmental health sciences through a comprehensive and inclusive strategic planning process focused on identifying key strategic goals for the next five years. Through this process, NIEHS hopes to achieve its vision of providing a catalyst for leading the field of environmental health sciences in applying state-of-the-art biomedical research to the most important issues surrounding environmental impacts on health.

Six broad-based themes of this plan have been established, through ongoing dialogue with research scientists and stakeholder groups. “Fundamental Research” investigates basic biological pathways of how our bodies function, to set the stage for asking more in-depth questions about the effects of the environment on biological systems. “Exposure Research” focuses on the study of environmental exposures themselves, internal and external to the body. And since NIEHS recognizes that information is only effective if it can be translated into sound decisions, “Translational Science” is identified as a key theme covering research that moves a basic science observation into a public health or medical application. NIEHS also affirms its commitment to “Health Disparities and Global Environmental Health” in recognition of the fact that individuals and communities that are socioeconomically disadvantaged also tend to suffer inequalities in both health and environmental burdens. Under

“Training and Education,” NIEHS recognizes the need to develop the next generation of top-notch, innovative, and dedicated environmental health scientists and professionals. Finally, to fulfill its mission and statutory mandate to disseminate information, NIEHS is committed to developing a full range of research translation and communication tools and creative stakeholder partnerships. This “Communications and Engagement” theme is vital for realizing the institute’s mission to promote public health and prevent environmentally related disease and disability. Two crosscutting themes, “Collaborative and Integrative Approaches” and “Knowledge Management” will be implemented across the other themes to ensure the success of the goals throughout the strategic plan.

## **RECENT ACCOMPLISHMENTS**

The NIEHS strategic plan highlights areas of leadership that will build on an impressive list of recent research accomplishments. For example, NIEHS-funded researchers recently published the first study documenting how exposure to perfluorinated compounds (PFCs), widely used in manufactured products such as non-stick cookware, was associated with lowered immune response to vaccinations in children.<sup>5</sup> Other recent research funded by NIEHS has shown that even moderate air pollution, at levels generally considered safe under current federal regulations, increases the risk of stroke by 34 percent.<sup>6</sup>

---

<sup>5</sup> Grandjean P, Wreford Anderson E, Budtz-Jorgensen E, Nielson F, Molbak K, Weihe P, Heilman C. Serum vaccine antibody concentrations in children exposed to perfluorinated compounds. *JAMA*. 2012; 307:391-397. Doi:10.1001/jama.2011.2034.

<sup>6</sup> Gregory A, et al. Ambient air pollution and the risk of acute ischemic stroke. *Arch Intern Med*. 2012;172(3):229-234.

NIEHS is also committed to helping those impacted by environmental exposures. In the aftermath of the Deepwater Horizon disaster, many questions remain about the long-term impact on the health of Gulf Coast residents and communities. NIEHS is leading a trans-NIH effort to create a network of community and university partnerships that seeks to identify personal and community health effects stemming from the Deepwater Horizon oil spill and to enhance community resiliency to potential disasters. The five-year, \$25.2 million program will support population-based and laboratory research, which will ultimately develop the scientific evidence base needed to promote health and well-being for people living along the Gulf Coast who are at greatest risk for potential adverse physical, psychological, and behavioral health effects. In addition, research will seek to develop new strategies to enhance capacity to respond to future disasters and prevent or minimize adverse health effects arising from them. Ultimately, research findings from the Deepwater Horizon Research Consortia should contribute to the evidence base needed to improve preparedness and response aimed at minimizing disaster-related health impacts.

Ultimately, NIEHS remains committed to its overall mission to discover how the environment affects people's health, in order to promote healthier lives.

**Linda S. Birnbaum, Ph.D., D.A.B.T., A.T.S.**

**Director, National Institute of Environmental Health Sciences**

Linda S. Birnbaum, Ph.D., is the director of the National Institute of Environmental Health Sciences (NIEHS), part of the National Institutes of Health, and the National Toxicology Program (NTP). As NIEHS and NTP director, Birnbaum funds biomedical research to discover how the environment influences human health and disease. The Institute also supports training, education, technology transfer, and community outreach.

A board certified toxicologist, Birnbaum has served as a federal scientist for 31 years. Prior to her appointment as NIEHS and NTP director, she spent 19 years at the Environmental Protection Agency where she directed the largest division focusing on environmental health research. Birnbaum started her federal career with 10 years at the NIEHS — first as a senior staff fellow in the National Toxicology Program, then as a principal investigator and research microbiologist, and finally as a group leader for the Institute's Chemical Disposition Group.

Birnbaum has received many awards and recognitions. In October 2010, she was elected to the Institute of Medicine of the National Academies, one of the highest honors in the fields of medicine and health. She was elected to the Collegium Ramazzini, and received an honorary Doctor of Science from the University of Rochester and Distinguished Alumna Award from the University of Illinois. Her

awards include the Women in Toxicology Elsevier Mentoring Award, the Society of Toxicology Public Communications Award, EPA's Health Science Achievement Award and Diversity Leadership Award, and 12 Science and Technology Achievement Awards, which reflect the recommendations of EPA's external Science Advisory Board for specific publications. Birnbaum is also an active member of the scientific community. She was vice president of the International Union of Toxicology, the umbrella organization for toxicology societies in more than 50 countries; former president of the Society of Toxicology, the largest professional organization of toxicologists in the world; former chair of the Division of Toxicology at the American Society of Pharmacology and Therapeutics; and former vice president of the American Aging Association.

She is the author of more than 700 peer-reviewed publications, book chapters, abstracts, and reports. Birnbaum's own research focuses on the pharmacokinetic behavior of environmental chemicals, mechanisms of action of toxicants including endocrine disruptors, and linking of real-world exposures to health effects. She is also an adjunct professor in the Gillings School of Global Public Health, the Curriculum in Toxicology, and the Department of Environmental Sciences and Engineering at the University of North Carolina at Chapel Hill, as well as in the Integrated Toxicology Program at Duke University. A native of New Jersey, Birnbaum received her M.S. and Ph.D. in microbiology from the University of Illinois at Urbana-Champaign.