

Birnbaum featured at EPA Earth Day event

By Kelly Lenox

NIEHS and NTP Director Linda Birnbaum, Ph.D., commemorated Earth Day April 22 in her keynote address, "Our Environment, Our Health, Our Future," at the U.S. Environmental Protection Agency (EPA) in Research Triangle Park (RTP), N.C.

Birnbaum, a former EPA scientist and senior manager, was greeted by a warm, enthusiastic crowd. John Vandenberg, Ph.D., national director for the EPA Human Health Risk Assessment Program, introduced Birnbaum with a hearty "Welcome home, Linda!" referring to her 19 years of service with EPA.

Environment influences human health

Throughout her talk, Birnbaum emphasized the role environment plays in human health. In spite of progress in fighting infectious disease, environmental factors contribute to 85 percent of human disease worldwide, including the increasing incidence of noncommunicable conditions. Referring to the growing understanding of the role of gene-environment interaction, she noted, "You can't change your genes, but you can change your environment."

The term environment is commonly used to refer to food and diet, industrial and agricultural chemicals, and physical agents, such as ultraviolet radiation. However, Birnbaum reminded the audience that environmental factors also include influences such as the microbiome, or all the microorganisms that live in the body; lifestyle choices; psychosocial stress; and even prescription drugs.

The environment is indoors, too

Birnbaum focused her talk on factors that current research is finding to cause health effects of previously unknown type or degree. These exposures may come from environmental degradation, such as air pollution and dioxin contamination, as well as household substances prevalent in industrialized society, including flame retardants, pesticides, and endocrine-disrupting chemicals like phthalates.

Research into the health effects of naturally occurring substances is enlarging our understanding of their impacts, as well. Birnbaum pointed to a new finding of decreased cognitive function associated with even low levels of arsenic in drinking water (see [story](#)). "These cognitive shifts are similar to what we've seen with lead," she said.

Prevention is the key

As scientific understanding of the contribution of genetic and environmental factors, both individually and together, increases, we have new opportunities to make choices that improve health on a global scale, Birnbaum noted. For example, as we learn more about the impact of indoor air pollution from cookstoves, we can work to develop ones with lower emissions.

Replacement chemicals should also be carefully evaluated. After use of certain flame-retardant chemicals was banned, use of other substances increased. Now, environmental scientists are beginning to find evidence of their adverse health effects as well (see [story](#)). "We have to ask the right questions. Are the newer replacement chemicals any safer?" she said.

In closing, Birnbaum highlighted the NIEHS focus on global environmental health, climate change, and environmental impacts on vulnerable populations. "We have a tremendous opportunity to protect human health," said Birnbaum. "Prevention is the key."

The event was hosted by the Cutting Edge Speakers Series Committee and the EPA-RTP Management Council.



"Innovation and collaboration will be key to solving our 21st century environmental challenges and protecting human health," said Birnbaum. (Photo courtesy of Brian Hoffman)

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