The Global Health Activities of

CDC'S

NATIONAL CENTER FOR ENVIRONMENTAL HEALTH (NCEH)

The environment in which we live affects us constantly and in a myriad of complex ways. Air, water, food, chemicals, radiation, and many other aspects of the environment - all of these have the potential to affect our health. At CDC's National Center for Environmental Health (NCEH), this complex interaction between humans and environmental hazards is the focus of research studies and innovative laboratory methods. In addition, the Center coordinates CDC's response to requests for emergency assistance related to both natural and man-made disasters.

Examples of how NCEH contributes to CDC's global health objectives in each of five strategic areas are provided below.

Public Health Surveillance and Response

In the Federated States of Micronesia, health officials were concerned about micronutriet deficiency, specifically vitamin A, and developmental delays among young children, possibly due to exposure to lead. NCEH staff helped FSM health officials design and conduct surveys of children and their female caregivers to determine levels of vitamin A. The rates were indeed low; as a result, a vitamin A supplementation program was implemented. Another phase of this surveillance effort found that 15% of the children surveyed had elevated blood lead levels, confirming results found previously among the children who participated in the vitamin A study. The team concluded that children were exposed to lead through the reclaiming of used car batteries. In both cases, the initial surveillance revealed problems that were addressed with appropriate interventions and provided a baseline so that future levels of both vitamin A deficiency and lead exposure can be monitored to evaluate the effectiveness of the actions adopted.

Public Health Infrastructure and Capacity-Building

Accurate and sophisticated laboratory testing is an integral part of public health capacity. Often, the laboratory aspects of public health surveillance and research are particularly demanding, because they involve new techniques that are not commonly used or standardized. NCEH staff play an active role in building this important aspect of the global health infrastructure by assisting laboratories around the world in improving screening and diagnostic methods. For example, as part of an international quality assurance program, NCEH staff provide dried blood spot quality control and performance evaluation materials for screening for a number of metabolic and other neonatal diseases. Another example is the Center's work with laboratories worldwide that test iodine levels as part of global efforts to eliminate iodine deficiency disorders, which affect more than a billion people worldwide. The program helps laboratories monitor the degree of variability and bias in their urinary iodine assays.

As chronic diseases become more prevalent around the world, precise and accurate laboratory measurement of risk factors, such as cholesterol and related lipids is required to address this disease burden. NCEH staff, along with partners at NIH and WHO, provide standardization assistance to laboratories around the world involved in cardiovascular disease research and development.

Disease and Injury Prevention and Control

Part of NCEH's purview includes responding to both natural and man-made disasters and working with partners in stricken areas, both to respond to immediate health needs and to prevent further disease and injury that may result from disrupted living conditions, such as those that follow earthquakes and floods. This work always takes place in tandem with partners in the host country and with other international organizations offering assistance. As a result, one of the most immediate tasks is that of coordinating various responses. For example, Hurricane Mitch – one of the strongest and most devastating hurricanes recorded in 200 years – battered Central America for several days, causing widespread and catastrophic damage. At the request of the American Red Cross, an NCEH team identified immediate housing, health, and food needs and helped to coordinate emergency health care for the affected areas. Similarly, when southern Africa was struck by massive flooding in early 2000, NCEH staff were asked to conduct an inventory of resources in the affected provinces and to assess their varying abilities to respond. The effort led to a long-term plan of operation for health and water/sanitation teams that helped the various organizations provide resources quickly to those areas most in need.

Applied Research for Effective Health Policies

Although environmental health hazards exist for populations around the world, those who live in developing countries often face a combination of greater exposure and fewer resources to detect and combat these hazards. To help remedy both situations, NCEH staff were invited by Bangladesh's Ministry of Health to measure blood lead levels among school children, since the government was planning to switch from leaded to unleaded gasoline. By describing the prevalence and severity of pediatric lead poisoning, the project provided a baseline against which future progress could be measured, NCEH staff helped design the cross-sectional study, and provided training and supplies.

Exchange of Information and Lessons Learned

Like other aspects of public health, the health threats posed by environmental hazards are often poorly understood, making it more difficult to garner support for interventions of all kinds. In India, NCEH helped address this problem by co-sponsoring an international conference with an Indian foundation designed to bring lead poisoning to the attention of the media, government, and general population. Before the conference, NCEH staff had worked with Indian counterparts to conduct surveys to determine children's lead and hemoglobin measurements, using portable blood lead analyzers. This technique, which had not been used in India before, helped increase the technical capacity of Indian colleagues, while providing convincing evidence for the need for a national plan to prevent lead poisoning in India.

WHO Collaborating Centers

- *WHO Collaborating Center for Emergency Preparedness and Response*
- *WHO Collaborating Center for Reference and Research in Blood Lipids*

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