



Environmental Health Activities in Ohio



NCEH in Partnership With Ohio

NCEH is the National Center for Environmental Health (NCEH), a part of the Centers for Disease Control and Prevention (CDC). NCEH's work focuses on three program areas: identifying environmental hazards, measuring exposure to environmental chemicals, and preventing health effects from environmental hazards. NCEH has approximately 450 employees and an annual budget for 2003 of approximately **\$182 million**; its mission is to promote health and quality of life by preventing or controlling those diseases or deaths that result from interactions between people and their environment.

NCEH and partners throughout **Ohio** have teamed up on a variety of environmental health projects throughout the state. From **fiscal years 2000 through 2003**, NCEH awarded more than **\$3.3 million** in direct funds and services to Ohio for various projects. These projects include activities related to asthma surveillance and management, children's exposure to toxicants, women dry cleaner workers and cervical cancer, and childhood lead-poisoning prevention. In addition, Ohio also benefits from national-level prevention and response activities conducted by NCEH or NCEH-funded partners.

Identifying Environmental Hazards

NCEH identifies, investigates, and tracks environmental hazards and their effects on people's health. Following are examples of such activities that NCEH has conducted or supported in **Ohio**.

Asthma Activities

- **Developing a Comprehensive Asthma Plan**—In fiscal year 2003, NCEH began funding the **Ohio Department of Health (ODH)** to develop a comprehensive plan for addressing asthma issues. This plan will include the following:

1. creating a surveillance program to provide state and local data on illness, disability, access to medical care, asthma management, and the impact of occupational and environmental factors on asthma;

2. implement-
ing programs
(based on the
Institute of
Medicine's
1999 report on
asthma) to re-
duce children's
exposure to contaminants that scientists have
linked with the development or exacerbation of
asthma;

3. implementing asthma action plans in schools;
4. developing collaborative links among community stakeholders such as the **Ohio Asthma Coalition** and the **American Lung Association of Ohio**; and
5. providing asthma-management training for pharmacists and occupational-asthma training for the client companies of the Bureau of Workers' Compensation.

- **The Rainbow Babies and Children's Hospital Inner-City Asthma Intervention Program**—NCEH is funding the **Rainbow Babies and Children's Hospital** in **Cleveland** to provide asthma education, asthma self-management techniques, and support mechanisms to inner-city families.

To accomplish these goals, Rainbow Hospital employs a social worker to educate and support families of children with asthma.

Rural Health Activities

- **Occurrence and Distribution of Agrichemicals, Antibiotics, and Bacteria in Runoff in the Stillwater River Watershed, Ohio**—NCEH collaborated with the U.S. Geological Survey (USGS) to investigate the distribution and occurrence of nutrients, pesticides, antibiotics, and bacteria in runoff in the **Stillwater River Watershed**. The goal of the study was to characterize the presence of these substances in surface runoff and to investigate whether animal

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density and other agricultural factors affect the quality of nearby surface waters.

To reach this goal, researchers collected water samples at study sites during a runoff-generating storm. USGS has compiled preliminary results and is planning to publish a final report in 2004.

Measuring Exposure to Environmental Chemicals

NCEH measures environmental chemicals in people to determine how to protect people and improve their health. Following are examples of such activities that NCEH has conducted or supported in **Ohio**.

Funding

- **Antiterrorism Funding to Increase State Chemical Laboratory Capacity**—In fiscal year 2003, CDC provided \$375,573 to **Ohio** to assist the state in expanding its chemical laboratory capacity to prepare and respond to chemical terrorism incidents and other chemical emergencies. This program expansion will allow for full participation of chemical terrorism response laboratories in the Laboratory Response Network.

Studies

- **Children's Exposure to Environmental Toxicants**—In collaboration with the **University of Cincinnati**, NCEH is measuring polychlorinated biphenyls (PCBs), pesticides that currently have a U.S. Environmental Protection Agency registered use in the United States, cotinine (a breakdown product of nicotine and a marker of exposure to tobacco smoke in nonsmokers), and mercury in maternal and child samples to evaluate in utero and early childhood exposure to these chemicals and their relation to birth outcomes and the neurocognitive development of the child. Enrollment in the study has been completed, but study results are not yet available because only one baby of a mother/child pair has been born.
- **Women Dry Cleaner Workers and Cervical Cancer**—Research consistently shows an increased risk for cervical cancer among women and for esophageal, intestinal, and bladder cancer among both men and women who work as dry cleaners. At least 90% of U.S. dry-cleaning shops use perchloroethylene (PCE), a recognized animal

carcinogen and probable human carcinogen. The increased risk for cervical cancer among women dry cleaner workers could be due to lifestyle or medical risk factors associated with socioeconomic status. No one has studied how a biological effect of PCE on cervical cancer might occur, nor has the relation between the level of PCE exposure and the extent of effect been explored.

This pilot project in **Cincinnati** compared women dry cleaner workers with women working in laundries, matched by age, length of employment, race, and marital status. Working conditions and wages were similar, but the women dry cleaner workers were exposed to PCE. The main goal of the study was to develop laboratory assays and field methods and to test the practicality of a large-scale study of biological markers in dry cleaners. NCEH measured PCE and metabolites in breath, blood, and urine of study participants and determined genotypes for enzymes that act on PCE. Participants received Pap tests and screening for some cervical conditions.

Study findings included the following: blood is the best matrix for measuring levels of PCE; women dry cleaner workers had much higher levels of PCE than did the women working in laundries; and, for the women dry cleaner workers in this study, exposure to PCE was not related to oxidative DNA damage.

- **Epidemic Parenteral Exposure to Volatile Sulfur-Containing Compounds at a Hemodialysis Center**—Several patients who received treatment at a dialysis center in **Youngstown** on August 30, 2000, became acutely ill during dialysis. To identify risk factors for illness, NCEH performed a cohort study. Results suggested that intravenous exposure to volatile sulfur-containing compounds could have caused the outbreak. Improper maintenance of the reverse osmosis unit likely led to anaerobic conditions conducive to the growth of sulfate-reducing bacteria, which likely produced these volatile sulfur-containing compounds. Inhalation of disulfides produces similar symptoms; however, NCEH is not aware of other reports of parenteral exposure to disulfides. This investigation demonstrates the importance of appropriate disinfection and maintenance of water-treatment systems in hemodialysis centers.

- **Ohio Turtle Study**—Turtles are considered “environmental sentinels,” and thus provide early notification of potential exposure to some chemicals in people. For the human-exposure component of this study, NCEH first measured urinary concentrations of lead and mercury in 60 people who ate turtle meat. NCEH later measured urinary concentrations of dioxins, furans, coplanar and noncoplanar PCBs, and organochlorine pesticides in 12 people who ate turtle meat. No high levels of mercury or lead were found; data for the remaining chemicals are being analyzed.
- **Age-Related Eye Disease Study (AREDS)**—Age-related macular degeneration (AMD) and cataracts are the leading causes of blindness in the United States. The prevalence of both diseases increases dramatically after age 60, but the importance of other risk factors in the development or progression of either disease is unclear. The National Eye Institute is conducting AREDS, a 10-year, multicenter study (one center is in **Ohio**) to investigate the natural history of these diseases and the role of various risk factors in their development and progression. The study is examining the effects of nutritional supplementation on preventing and controlling these diseases through a randomized, placebo-controlled clinical trial of 4,757 participants aged 55–80 years. NCEH measured serum samples for levels of carotenoids; lipids; zinc; copper; and vitamins A, E, and C. Study results showed no statistically significant effect of treatment in reducing the risk for the progression of age-related lens opacities. For those participants with no AMD, there was no statistically significant difference between treatment groups for at least moderate visual acuity loss. Further, no statistically significant serious adverse effect was associated with treatment.
- **Lipid Standardization Program (LSP)**—NCEH provides standardization support to one lipid research laboratory in **Ohio** that is involved in epidemiologic studies and clinical trials investigating risk factors and complications associated with cardiovascular disease. LSP, supported by CDC’s Lipid Reference Laboratory (the cornerstone of the National Reference System for Cholesterol to which these lipid measurements are traceable), provides quarterly analytical performance challenges and statistical assessment reports to allow program participants to monitor performance, thus ensuring the accuracy and comparability of study results and findings.

Preventing Health Effects From Environmental Hazards

NCEH promotes safe environmental public health practices to minimize exposure to environmental hazards and prevent adverse health effects. Following are examples of such activities that NCEH has conducted or supported in **Ohio**.

- **Childhood Lead-Poisoning Prevention**—The **ODH Childhood Lead-Poisoning Prevention Program** has received NCEH funding since 1992. In Ohio, the number of children younger than 6 years of age who have been screened for blood lead levels has increased 36% from 1997 to 2002—from 74,456 to 101,144, respectively. In addition to more children being tested, the number of children younger than 6 years of age with elevated blood lead levels has decreased 47%—from 12,342 in 1997 to 6,549 in 2002. Ohio was among the first states to make all blood lead levels reportable, and 97% of the data are reported electronically by private and public laboratories to the health department. Ohio also was among the first states to implement primary prevention activities where nurses are trained to conduct “newborn home visits” to look for potential lead exposures. Ohio also enacted a new state law to require targeted universal screening and to authorize health departments to write orders for abatement and prohibit habitation until the hazard is abated.
- **Response to the August 2003 Blackout**—CDC’s Epi-Aid response to the August blackout in **Ohio** (as well as Michigan and New York) was

Services

- **Blood Lead Laboratory Reference System (BLLRS)**—BLLRS is a CDC standardization program designed to improve the overall quality of laboratory measurements of lead in blood. In **Ohio**, 12 laboratories participate in BLLRS. This program allows these laboratories to evaluate their performance on laboratory tests. CDC provides BLLRS materials free of charge to these laboratories four times a year.

conducted to document the associated public health impacts of the event. CDC is evaluating the response activities of public health; emergency management; and other officials at the local, state, and federal levels. CDC is preparing guidelines for health departments based on the findings; these guidelines are focused on preparedness and response to infrastructure emergencies. The results of the Epi-Aid will produce two publications in the *Morbidity and Mortality Weekly Report (MMWR)*: a brief *MMWR* summary documenting key public health events and responses to events during the blackout and a more detailed *MMWR* surveillance report with recommendations for improving state and local preparedness for future events.

Resources

NCEH develops materials that public health professionals, medical care providers, emergency responders, decision makers, and the public can use to identify and track hazards in the environment that pose a threat to human health and to prevent or mitigate exposure to those hazards. NCEH's resources cover a range of environmental public health issues, including air pollution and respiratory health (e.g., asthma, carbon monoxide, and mold issues), biomonitoring to determine whether and how much of substances in the environment are getting into people, childhood lead poisoning, emergency preparedness and response for chemicals and radiation, environmental health services, environmental public health tracking, international emergency and refugee health, laboratory sciences as applied to environmental health, radiation studies, safe chemical weapons disposal, specific health studies, vessel sanitation, and veterans' health.

For more information about NCEH programs, activities, and publications and other resources, contact the NCEH Health Line toll-free at 1-888-232-6789, e-mail NCEHinfo@cdc.gov, or visit the NCEH Web site at www.cdc.gov/nceh.