



# Environmental Health Activities in California



## NCEH in Partnership With California

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 more than 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 **California** have teamed up on a variety of environmental health projects throughout the state. From **fiscal years 2001 through 2003**, NCEH awarded more than **\$8.8 million** in direct funds and services to California for various projects. These projects include activities related to asthma, biomonitoring planning, and childhood lead-poisoning prevention. In addition, California 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 **California**.

- **Addressing Asthma From a Public Health Perspective**—In September 2002, NCEH began funding **California's** Addressing Asthma From a Public Health Perspective program. This program pursues a regional approach to implementing major components of California's Strategic Plan for Asthma. The program, now named California Breathing, recognizes the need to build on existing regional infrastructure to describe asthma in California, build a statewide partnership for advancing public policy, and address disparities

in asthma hospitalizations and deaths among African Americans.

- **Pesticide Exposure Assessment**—

In 2001, NCEH began working with the **California Department of Health Services** to learn more about the pesticide levels in women in U.S. farming communities. CDC recently improved the methods used to measure pesticides, and the samples collected in **Imperial County** were some of the first samples in the United States to be tested with these new methods. These samples will help us begin to understand whether women who live in Imperial County are different in their pesticide exposures than are women in the general U.S. population.

- **Environmental Public Health Tracking**—NCEH is currently funding three activities in the state of **California** that contribute to building the National Environmental Public Health Tracking Program. Two linkage demonstration programs are funded with the state department of health, and the **University of California at Berkeley** is funded to serve as a Center for Excellence for the National Environmental Public Health Tracking Program.

### 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 **California**.

### Funding

- **Antiterrorism Funding to Increase State Chemical Laboratory Capacity**—In fiscal year 2003, CDC provided more than \$1.5 million to **California** to assist the state in expanding

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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. NCEH also continues to fund laboratory development and the purchase of state-of-the-art equipment in California's state public health laboratory in support of developing a network of chemical laboratories and of transferring technology to measure chemical agents.

- **Biomonitoring Planning Grant**—In fiscal years 2001 and 2002, NCEH awarded grants to **California** to develop a plan for implementing a biomonitoring program for the state. In this way, the state could make decisions about which environmental chemicals within its borders were of health concern and could make plans for measuring levels of those chemicals in the California population.

## Studies

- **Ascertaining Exposure of Pregnant Women to Environmental Tobacco Smoke**—This study of pregnant women living in **San Diego County** was conducted in collaboration with the **California Department of Health Services** during the period 1999–2001. Biological samples (blood, urine, and umbilical cord blood) were collected from each participant at the time pregnancy was confirmed, at 15–19 weeks' gestation, and at delivery. All samples will be analyzed for cotinine, a major metabolite of nicotine and a marker of exposure to environmental tobacco smoke (also called ETS, passive smoke, or secondhand smoke).

The purpose of the study was to describe the pattern of exposure to both active smoking and ETS during pregnancy in the study population and to compare the validity (relative to biomarker information) of two proposed smoking-behavior questions that could be posed to pregnant women at the time of delivery. This is important because California is the only state that does not have questions on its birth registry about exposure to tobacco through either active or passive smoking.

- **Cigarette Nicotine Delivery**—Many smokers believe that smoking light or ultralight cigarettes

is safer than smoking full-flavor cigarettes; however, considerable evidence exists that people who smoke light cigarettes take in as much nicotine as do people who smoke high-yield cigarettes. However, data on exposure levels to various tobacco toxins are limited. This 3-week crossover study was conducted in collaboration with the **University of California at San Francisco**. Participants were volunteers who were active smokers.

The study compared their smoking behavior and exposure to tobacco-smoke toxins while volunteers smoked their usual brand of cigarettes for 1 week, while they smoked cigarettes of a different yield for 1 week, and while they smoked their usual brand again for 1 week. Half of the study participants were those who normally smoked full-flavor cigarettes; the other half were those who typically smoked light cigarettes. In addition to ascertaining cigarette-puffing behaviors, scientists measured levels of nicotine, carbon monoxide, various tobacco carcinogens, and markers of exposure to tar.

- **Reducing Exposure to ETS Among Underserved Children With Asthma**—Exposure to tobacco smoke contributes to and exacerbates the symptoms of asthma among children. The purpose of this ongoing study is to implement and evaluate interventions intended to motivate **Los Angeles**-area parents and other caregivers of children with asthma to establish smoke-free households. The predominantly Hispanic and African-American children, aged 2–14 years, are from low-income households. NCEH laboratory scientists measured urinary levels of cotinine in these children. In addition to evaluating the effectiveness of targeted educational interventions designed to reduce exposure to ETS, other goals were to improve the children's pulmonary function, lessen their asthma symptoms, reduce asthma-related hospitalizations, and improve parents' knowledge about the relation between exposure to ETS and childhood asthma.
- **Assessing Exposure to ETS Among Infants**—NCEH is conducting two studies to assess exposure to ETS among infants by measuring levels of cotinine in their urine. One study includes infants whose mothers were enrolled in

the Women, Infants, and Children Supplemental Food Program in **San Diego County**. The other study includes infants enrolled in a clinic-based program in the same region. The purpose of both studies is to evaluate the effectiveness of a behavioral counseling program designed to reduce maternal and infant exposure to ETS in the home. Another goal is to examine the effects of this intervention program on the smoking behavior of mothers in the study. The laboratory data will provide biological confirmation of the effectiveness of the intervention and also provide information on levels of exposure to cotinine in the infants, who are a highly vulnerable population.

- **Reducing Exposure to ETS Among Latino Children With Asthma**—This ongoing study was done to evaluate the effectiveness of an intervention program to reduce exposure of children aged 3–17 years to ETS in their homes. Two hundred Latino families living in the **San Diego** area are participating in the study. The study looks at parental reports about exposure to ETS and outcomes of the interventions and compares these factors with levels of cotinine measured several times during the study. Another study goal is to examine changes in how parents manage their children’s asthma once an intervention program is instituted.
- **Organophosphate (OP) Pesticides**—As part of a prospective birth cohort study called CHAMACOS (for the **Center for Health Assessment of Mothers and Children of Salinas**) conducted by the **University of California at Berkeley**, NCEH measured levels of pesticides in the urine of approximately 500 pregnant women. To date, the researchers have evaluated the relation between a mother’s exposure to these pesticides and certain birth outcomes, such as gestational age, birth length and weight, and head circumference. The data suggest that a woman’s exposure to the pesticides during her pregnancy can significantly decrease her child’s gestational age. Additionally, OP pesticides were measured in the urine of children of study women when the children were 6 months and 12 months of age. The analyses suggested that two factors can significantly increase the exposure of these children to OP pesticides:

living near an agricultural field and having parents who are farmers or farm workers.

## Services

- **Helping State Public Health Laboratories Respond to Chemical Terrorism**—NCEH is working with **California**’s public health laboratory to prepare state laboratory scientists to measure chemical terrorism agents or their metabolites in people’s blood or urine. To date, NCEH has conducted training for these scientists on operating state-of-the-art laboratory instruments and on using specific methods to analyze these agents. Additionally, NCEH has transferred methods for measuring nerve agents, cyanide, and trace metals to the state laboratory and has instituted a proficiency testing program to test the comparability of analytical results from the state lab and NCEH.
- **Blood Lead Laboratory Reference System (BLLRS)**—In **California**, 15 laboratories participate in NCEH’s standardization program to improve the overall quality of laboratory measurements of blood lead levels. This program assists laboratories nationwide in evaluating their performance on these critical laboratory tests. CDC provides BLLRS materials to the laboratories four times a year without charge.
- **Lipid Standardization Program (LSP)**—CDC provides standardization support to 16 lipid research laboratories in **California** that are involved in one or more ongoing lipid metabolism longitudinal studies or 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 over time and thus ensure 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. Follow-

ing are examples of such activities that NCEH has conducted or supported in **California**.

- **Childhood Lead-Poisoning Prevention—The California Department of Health Services Childhood Lead-Poisoning Prevention Branch** provides screening services, medical and environmental follow-up, and educational outreach services to the community. The branch has received NCEH funding since 1992.

In California, the number of children younger than 6 years of age who have been screened for blood lead levels has increased 18% from 2000 to 2001—from 12,717 to 15,040, 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 5%—from 1,475 in 2000 to 1,402 in 2001. The most important thing that California has done in the last year is to require universal laboratory reporting of blood lead levels to the state.

- **Environmental Health Specialists Network (EHS-Net)**—EHS-Net is a collaborative project of CDC, eight CDC Emerging Infections Program sites (including **California**), and the U.S. Food and Drug Administration. Members of EHS-Net are gathering information from food-service establishments to learn more about food-handling practices and how they relate to foodborne illness—both what happens to cause foodborne outbreaks and why foodborne outbreaks occur.

## 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](mailto:NCEHinfo@cdc.gov), or visit the NCEH Web site at [www.cdc.gov/nceh](http://www.cdc.gov/nceh).**