



Environmental Health Activities in Alaska



NCEH in Partnership with Alaska

The National Center for Environmental Health (NCEH) is 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 a budget for 2004 of approximately \$189 million; its mission is to promote health and quality of life by preventing or controlling diseases and deaths that result from interactions between people and their environment.

NCEH and partners throughout **Alaska** collaborate on a variety of environmental health projects throughout the state. In **fiscal years 2000–2003**, NCEH awarded more than **\$3 million** in direct funds and services to Alaska for various projects. These projects include activities related to arctic health, breast cancer, and public health inspections of cruise ships. In addition, Alaska 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 **Alaska**.

Asthma

- **Statewide Asthma Awareness Campaign**—In fiscal year 2003, NCEH funded the **Asthma and Allergy Foundation of America's Alaska Chapter** to conduct a statewide asthma-awareness campaign for families and health-care providers.
- **Asthma Surveillance Enhancement and Asthma Coalition**—In fiscal year 2003, NCEH funded the **American Lung Association of Alaska** to enhance surveillance, build a statewide asthma coalition, and raise public awareness about asthma.

Environmental Public Health Studies Projects

- **Arctic Health Cooperative Agreement**—NCEH is funding a cooperative agreement with the **Alaska Department of Health and Social Services** to work with the **Alaska Department of Education and Early Development** to create curriculum materials that address environmental health issues related to contaminants in traditional foods and with Frontier GeoSciences, Inc., to analyze human hair for trace metals. Frontier will analyze hair samples for four trace metals: total selenium, total cadmium, total mercury, and methylmercury. Funding began in fiscal year 2000 and runs through fiscal year 2004.
- **Evaluating the Relation Between Breast Cancer and Exposure to Environmental Organochlorines Among Alaska Native Females**—This ongoing hospital-based study assessed breast cancer risk among Alaska Native women exposed to chemicals (e.g., pesticides) through their diet. The ultimate goal of the study is to enhance the primary prevention of breast cancer by evaluating the environmental risk factors for this disease. Subjects were women who came to the **Alaska Native Medical Center** for breast biopsy. Researchers collected urine, serum (blood), and tissue samples and obtained blood samples from the Arctic Investigations Serum Bank. Using these samples, researchers will be able to model exposure over time. Enrollment and sample collection for this study are complete. Biologic samples are awaiting NCEH analysis. Researchers have collected and begun to analyze data from interviews. Funding began in fiscal year 1998.
- **Exposure to Environmental Pollutants Among Alaska Native Mothers and Infants**—NCEH is measuring levels of persistent organic pollutants,

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persistent pesticides, and heavy metals in the pregnant women and their newborn infants and investigating associations of individual contaminants with pregnancy outcomes as well as growth and development outcomes in the child's first year of life. NCEH has collected urine, whole blood, and serum from the mothers and cord blood from the infants.

The study is in its fourth year and has enrolled more than 200 women and 90 infants living in **Anchorage** and other sites in Alaska.

Results of the ongoing study will be provided to Alaska Native communities to help them create acceptable strategies for reducing exposure to these chemicals while maintaining their traditional diet. When the infants are 1 year of age, researchers will collect infant dietary surveys and medical records.

- **Using Isotope Ratios to Study Whether Lead Shot Is a Source of Lead Exposure Among Adults in Bethel, Alaska**—Researchers from NCEH and the **Alaska Native Tribal Health Consortium (ANTHC)** hypothesize that lead shot used by the native community in **Bethel** when hunting for food is contaminating the captured food, and subsequently the humans eating the food, with lead.

A recent study that examined blood lead levels in Arctic Canadians found that the participants' lead-isotope pattern did not match the lead-isotope pattern in the region's gasoline but did match the lead-isotope pattern in lead shot from Mexico. The lead shot used in Bethel also originates in Mexico.

Preliminary results from the ongoing Bethel study reveal that maternal blood lead levels are higher in women from Bethel than in women from **Barrow**, where steel shot is used.

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 **Alaska**.

Funding

- **Antiterrorism Funding to Increase State Chemical Laboratory Capacity**—In fiscal

year 2003, CDC provided more than \$780,000 to **Alaska** 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. NCEH has begun to fund laboratory development and the purchase of state-of-the-art equipment in Alaska's state public health laboratory to develop a network of chemical laboratories and transfer technology to measure chemical agents.

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

Studies

- **Exposure to Polychlorinated Biphenyls (PCBs) Among Residents of Unalakleet**—In October 2003, at the request of the **Alaska Division of Public Health**, NCEH analyzed 25 serum samples of **Unalakleet** residents who were thought to have been exposed to PCBs from the former U.S. Air Force North River Radio Relay site. This request was in direct response to community concerns about possible exposure to PCBs, and all activities were conducted under the medical and public health authorities of the **Alaska Division of Public Health**. Results, which were reported within 2 weeks, showed no elevated PCB levels in the residents tested. These findings helped public health officials quell residents' fears about exposure to PCBs.
- **Risk Factors Associated with Respiratory Syncytial Virus (RSV) Infection Among Alaska Native Infants and Children**—In this study, conducted in collaboration with CDC's National Center for Infectious Diseases, NCEH measured cotinine levels in about 200 children as an index of exposure to environmental tobacco smoke (ETS). Cotinine is a metabolite of nicotine, and a biologic indicator, or marker, of exposure to ETS and has been considered a risk factor for RSV.

Results of the study, which were published in the journal *Pediatrics* in 2003, showed no positive association between the presence of smokers in the children's households and children's serum cotinine levels and wheezing, chronic bronchitis, or cough. The percentage of households with smokers in this study (45%) was similar to that found in a national survey, in which approximately 44% of children 4–11 years of age were reportedly subject to smoke exposure in the home. Children exposed to household cigarette smoke in this study may have had more intense exposure than did children in the national survey, although exposure levels were similar for both case- and control-children and for wheezing and nonwheezing children.

- **Alaska Mothers-to-be and Smokeless Tobacco**—In collaboration with the Office on Smoking and Health at CDC's National Center for Chronic Disease Prevention and Health Promotion, NCEH is planning to examine levels of addictive, toxic, and carcinogenic compounds in smokeless tobacco used by pregnant women in **Alaska**; biomarkers of exposure; and pregnancy outcomes for these women. The study protocol is in development.
- **Smoking Cessation Among Alaska Native Women**—This proposed study is a planned, intensive, smoking-cessation effort to be undertaken as part of the Smoke-Free Families initiative to stop smoking during and beyond pregnancy. The study will evaluate approximately 500 women who will be counseled at their first prenatal visit and again at the 6th and 8th months of pregnancy. NCEH will measure levels of cotinine in study participants. Measurement of biomarkers such as cotinine is essential to accurately assess the results of smoking-cessation programs. These data also will provide new information about the extent of exposure in this population. A final project proposal is in development.

Services

- **Helping State Public Health Laboratories Respond to Chemical Terrorism**—NCEH is working with **Alaska's** public health laboratory to prepare state laboratory scientists to measure chemical terrorism agents or their metabolites in people's blood or urine. NCEH is transferring

analytical methods for measuring chemical terrorism agents (including cyanide-based compounds and other chemicals) to Alaska. Additionally, NCEH has instituted a proficiency-testing program to determine the compatibility of analytical results from Alaska with those of NCEH.

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 is an example of such an activity that NCEH conducted or supported in **Alaska**.

- **Public Health Inspections of Cruise Ships**—NCEH established the model Vessel Sanitation Program in 1975 to combine cruise ship industry cooperation with CDC's ability to aggressively protect the health of travelers. The program assists the industry in developing and implementing comprehensive sanitation programs to minimize risks for gastrointestinal diseases. Every vessel that has a foreign itinerary and carries 13 or more passengers is subject to two unannounced inspections each year. In 2003, the Vessel Sanitation Program conducted 34 inspections of cruise vessels with stops in **Alaska**. Since the program's inception, rates and outbreaks of diarrheal diseases among passengers have continued to decrease because of environmental sanitation inspections.

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 threaten 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 poisoning, and mold exposure), biomonitoring to determine whether and how much of selected chemicals in the environment get into people, childhood lead poisoning, emergency preparedness for and response to 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 disposal of chemical weapons, 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.