federal environmentalist

A TRUE TALE

In 1949, when Richard Jackson, MD, MPH, was an infant, his 27-year-old father died of polio, leaving behind a very young wife and three children. "I truly believe," he says now, "that growing up after that personal tragedy motivated me to enter this field. The first merit badge I earned as a Boy Scout was in Public Health." Dr. Jackson's awareness of threats posed to the environment probably started in childhood. He grew up in New Jersey in the 1950s, a state known for its industrial base; his home was just a stone's throw from a polluted river. After graduating from St. Peter's College, Dr. Jackson attended Rutgers Medical School in New Jersey for two years. During the course of his training, the first autopsy he observed was of an ex-employee of an asbestos manufacturer. When the pathologist opened the man's abdomen, it looked like someone had filled it with plaster; the diagnosis was mesothelioma, an asbestos-related cancer. "I still remember that as he was doing the autopsy, the pathologist said to me: 'This is the third one of these I've seen this year. There must be something going on at a local plant.'"

Richard Jackson, MD, MPH

Because Rutgers was a two-year medical school, he transferred to the University of California at San Francisco (UCSF), graduated, and began a pediatric residency. Dr. Jackson took time off to work for the Centers for Disease Control and Prevention (CDC) as an officer in the Epidemic Intelligence Service (EIS), a two-year, postgraduate program of service and on-the-job training for health professionals interested in the practice of epidemiology. He says it was that experience that made him fall in love with public health. Assigned to New York as a state epidemiologist, Dr. Jackson found himself dealing firsthand with several now-infamous outbreaks of the mid-seventies: Legionnaire's disease, swine flu and Lyme disease. Right around that time he was detailed to India to work on smallpox eradication. Dr. Jackson traveled for three months in and around the border between India and Bangladesh, seeking but never finding a case of smallpox. "Near

Federal Environmentalist Checkpoint

Are you willing to be on the front lines, if necessary, in a disaster situation?

Do you enjoy working in the outdoors?

Would you be happy working in concert with many public health agencies — both in the United States and abroad?

If so, read on

eradication of the disease was exactly what everyone at the EIS hoped would happen," he says. "After that experience, I realized that I wanted to pursue a career in public health. I was hooked."

At the end of his EIS service, Dr. Jackson completed his pediatric residency, received an MPH from the University of California at Berkeley and went to work for the California Department of Health. Because he loved the outdoors, he was looking for a way to link his interest in the environment with his interest in human health and pediatrics, so it was no surprise that his first project addressed the health of children as affected by the environment.

In 1994, Dr. Jackson was named Director of the National Center for Environmental Health (NCEH), one of the centers within the CDC. Despite his numerous responsibilities, he is still a pediatrician at heart and has an ongoing and keen scientific interest in the public health effects of pesticides and other toxic substances, particularly as they may affect children. "It's a child's job to immerse herself in her environment," he says. "It's an absolutely normal part of human development that children taste, touch, smell and come into close contact with the world around them." His mission is to assure that that world is as safe as possible.

"At the NCEH, we are involved globally almost as much as we are domestically. No matter where and how we work, we are committed to safeguarding the health of the American public, both in the United States and abroad."

Profiling the job

Environmental health science is an interdisciplinary field that examines the ways in which biological, chemical and physical environmental agents affect human health. Environmental scientists work with government agencies, private organizations and community groups to identify and solve health problems. The field of EHS offers a broad selection of career opportunities that include risk assessment, waste management, engineering, ecological science, epidemiology and other biologically-oriented disciplines relating to the effects of the environment on humans. These effects are part of wider issues associated with water and air quality, sanitation, occupational safety and health, hazardous wastes, radiation and toxic substances.

A key mission of EHS is tracking the way a population's health is affected by the environment. In the past, information garnered from monitoring the physical environment — chemicals in the air, water and food — and information gathered from monitoring the health of the nation were isolated sets of information. "The need to create a communications network that pulls this data together is urgent, so that people can actually see the impact of one subset on the other." Other disciplines need to be incorporated as well. People come into EHS from engineering, industrial hygiene, medicine, epidemiology and toxicology, to name just a few academic backgrounds. In some ways, it is a "big tent" that invites in many people not traditionally considered environmental health professionals, such as urban planners, architects, building and school designers and road builders. Yet, Dr. Jackson believes, they are all environmental health specialists in their own right, and their importance has to be recognized. "After all," he says, "how you design and build roads has as much to do with safety and air pollution as it does with moving people from place to place."

The NCEH, in particular, focuses on preventing illnesses that result from the interaction between populations and their environments. In addition to its primary environmental mission, the NCEH's public health responsibilities include prevention and treatment of birth defects and disabilities, laboratory science, and domestic and international emergencies. To implement its mission effectively, the NCEH works in partnership with numerous organizations and agencies, including federal, state and local health departments, environmental agencies, philanthropic foundations, and groups within industry and the community.

NCEH personnel consult, both globally and domestically, on humanitarian relief efforts for disasters such as war, hurricanes, earthquakes and floods, and technological disasters that include accidental releases into the atmosphere of radiation, chemical and biological agents.

Did you know? Founded in 1951 by public health professor Alexander Langmuir, the Epidemic Intelligence Service (EIS) was first designed to act as an elite biological-warfare countermeasures unit of the Centers for Disease Control and Prevention (CDC).[1]

"Urban planners, architects, building and school designers, and road builders are all environmental health specialists in their own way, and we must recognize their importance. After all, how you design and build roads has as much to do with air pollution as it does with moving people from place to place."

Richard Jackson, MD, MPH

Children and the environment

Children's issues remain close to Dr. Jackson's heart. Many of the same environmental factors that affect adults affect children, he says, but they are more daunting to children. Because of a child's sensitivity, exposures early in life to substances such as lead, pesticides and mercury can adversely affect the development of both the body and brain, and might ultimately lead to reduced attention span, learning disabilities and behavior problems. These toxins have also been linked to lower IQs.[2]

"Fortunately, we're moving in the right direction with this problem," says Dr. Jackson, who recently completed, "The National Report on Human Exposure to Environmental Chemicals," the first comprehensive study of environmental chemicals in humans. In that study, through a collaborative effort of environmental, legal and public health professionals, blood and urine samples were obtained from 3,800 children and adults in 12 locations across the U.S., and screened for 27 chemicals. The results confirmed a continuing drop in lead levels nationwide, decreasing from more than 15 micrograms per deciliter in the 1970s[3] to less than 3 micrograms per deciliter today (any level over 10 micrograms per deciliter is elevated per CDC standards).

The continuous decline in blood-lead levels in children is good news for all age groups, says Dr. Jackson. "An emphasis on the reduction of environmental chemicals makes sense for all members of the population, even if they are at lesser direct risk than children. Children eat, drink and breathe three to four times as much per pound of body weight as do adults. Therefore, if you set an allowable pesticide level, or any toxin level, to protect a child, you end up protecting the entire population."

A day in the life

Dr. Jackson is familiar with the daily life of a public health professional from two perspectives. As an active research epidemiologist earlier in his career, he dealt head-on with major disease outbreaks. Currently, as Director of the NCEH, his primary responsibilities include policy formation, education and agency administration as well as direct engagement with public health initiatives.

"From where I sit, the medical practitioners who do best in public health are the ones who have excelled in a clinical setting," he says. "The skill sets that make you a good pediatrician, veterinarian or nurse are much the same as the attributes required for the public health profession — an ability to quickly size up a problem, come up with a potential solution, communicate with people, and zero in on the essential scientific, medical, clinical or psychological issues in a given situation."

As a research epidemiologist, Dr. Jackson would typically begin his day reviewing updates of disease surveillance reports or handling calls from the public, media and elected officials. Some days might be largely devoted to the planning of studies related to a specific outbreak, such as a cluster of birth defects in an area with contaminated water. "In those cases, I'd work with fellow researchers or practicing physicians, or perhaps environmental specialists and field staff to develop and test questionnaires in the field." Often the data yielded by these questionnaires would form the basis of a policy directive or departmental public statement. "The bigger the issue, the more time it takes, the more people it involves, the more talk it generates and the more research it requires to move something forward and generate some kind of public benefit," Dr. Jackson notes.

As Director of the NCEH, Dr. Jackson works about 60 hours a week, by his own estimate. Consider his account of a recent day: "In the morning, I opened a meeting of invited experts grappling with the question of how to prepare for nuclear and radiologic terrorism. In the afternoon I attended a seminar presented by two of our staff members who have been working in Afghani refugee camps, overseeing nutritional assessments, cause-of-death assessments, and immunization efforts. Afterwards, I spoke to a group about reshaping our physical environments to reduce pollution and promote exercise and physical activity."

Though based in Atlanta, Dr. Jackson is generally in Washington one day a week, working with HHS officials, or agencies such as the Environmental Protection Agency (EPA) and National Institutes of Health (NIH), environmental advocacy groups, and legislators. Meetings with a state health department or university might take up another day. He also travels frequently, giving lectures and presentations throughout the country.

On a visit to New Mexico, Dr. Jackson met with state university students and professors to discuss local CDC instruction programs for students from disadvantaged communities. "There are real health disparities in our population and CDC is very committed to increasing the numbers of minorities, in this case Hispanics and Native Americans, in public health," he says. He then met with the formal advisory board of the School of Public Health to discuss general public health issues, funding, training, and terrorism response. The next morning he delivered the plenary address at a meeting of the New Mexico Public Health Association.

"I'm lucky enough to have a job where I can use all my training," he says. "This is highly multidisciplinary work which includes epidemiology, toxicology, medicine, chemistry, mathematics, political science, communication and public speaking and — the most challenging and gratifying of all — management of other people. I love to learn, and I find that nothing I learn ever goes to waste."

career at a glance

Richard Jackson, MD, MPH

2000–Present	**Adjunct Professor** Department of Environmental & Occupational Health, The George Washington University
1998–Present	**Adjunct Professor** Department of Environmental & Occupational Health, Rollins School of Public Health, Emory University
1994–Present	**Director** National Center for Environmental Health, Centers for Disease Control and Prevention
1986–Present	**Assistant Clinical Professor** Department of Medicine University of California, San Francisco
1992–1994	**Chief** Division of Communicable Disease Control, California State Department of Health Service
1991–1992	**Chief** Hazard Identification and Risk Assessment Branch, Office of Environmental Health Hazard Assessment, Public Health Administrator I, California Environmental Protection Agency
1990–1991	**Chief** Hazard Identification and Risk Assessment Branch, Public Health Medical Officer III, California State Department of Health Services
1988–1990	**Acting Chief** Office of Environmental Health Hazard Assessment, Public Health Medical Officer III, California State Department of Health Services
1985–1988	**Chief** Hazard Evaluation Section, Public Health Medical Officer III, California State Department of Health Services
1985–1986	**Acting Chief** California Occupational Health Program, Public Health Medical Officer III, California State Department of Health Services
1982–1985	**Chief** Community Toxicology Unit, Public Health Medical Officer II, Services, Epidemiological Studies Section, California State Department of Health Services
1979–1982	**Chief** Pesticide Unit, Public Health Medical Officer II, Medical Epidemiologist, Epidemiological Studies Section, California State Department of Health Services
1975–1977	**Epidemic Intelligence Service (EIS) Officer** U.S. Public Health Service, Centers for Disease Control and Prevention
1976	**Special Epidemiologist** World Health Organization, Smallpox Eradication Program

1 http://www.cdcfoundation.org/eis/
2 http://www.childenvironment.org/reports/tty_2000-05-02_hr.htm
3 http://epbiwww.cwru.edu/mmwr/vol46/mm4607.html#article1