

THE ENVIRONMENTAL HEALTH OF APPALACHIA AND THE ROLE OF THE ENVIRONMENTAL HEALTH PROGRAM AT ETSU

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Those of us who live in Appalachia are blessed with living in an area of stunning environmental beauty and diversity. Some of the most unique ecosystems in the world exist here. Almost any type of outdoor activity one can imagine can be enjoyed in Appalachia. Amateur and professional naturalists can study a rich variety of flora and fauna. Forests and waterways provide plenty of places to hunt and fish. Hikers have many trails to enjoy, highlighted by one of the most famous routes in the world, the Appalachian Trail. Skiers and snowboarders can enjoy well-maintained commercial ski resorts.

But this unrivaled beauty and abundance of activities bring large numbers of tourists every year and a rapid immigration of people. Although terrestrial and aquatic ecosystems are rich and abundant in Appalachia, they are extremely fragile and easily damaged by such a large influx of visitors and new residents.

Most of us quickly recognize the visible outcomes of damaged ecosystems: declining forests, reduced water quality, fish kills, algal blooms, reduced air quality, and erosion of soil. What many people miss is the link between environmental degradation, human

health, and quality of life. Increased air pollution contributes to allergies, asthma, cancer, and increased spread of respiratory diseases. Reduced water quality contributes to gastrointestinal diseases, increased costs to treat water for potable uses, and loss of water for crops and livestock.

Environmental issues in Appalachia are significant and varied. Air pollution in Appalachia is caused by mining, traffic, agriculture, rapid urbanization, and pollutants transported from outside the region. For example, the Tri-Cities Tennessee/Virginia region has been listed by the U.S. Environmental Protection Agency as an “ozone non-attainment region,” meaning that the standard for ground-level ozone was not met, thus significantly increasing health risks. Many streams in Appalachia have been listed by the EPA as not meeting water quality criteria for pathogens, nutrients, and sediment, thus increasing the exposure risk to people using that water for agriculture, recreation, and consumption. Some areas of Appalachia have been cited as exceeding the national average for cancer, heart disease, and other chronic diseases. The role of environmental degradation and exposure to pollutants

Tourists on the Rough Ridge Trail, Grandfather Mountain, North Carolina. Photo by Charlie Warden.

in causing these diseases is an area of significant research interest. The risks to people from these environmental issues include potential increased infectious disease, cancer, and asthma.

The discipline of environmental health addresses how the environment affects the quality of life and health of individuals and populations. Research and practice of environmental health focus on identifying sources of pollution, linking these sources to human health outcomes, and identifying and implementing ways to reduce these exposures in the home, workplace, and public areas.

One of the keystone moments in the history of environmental health studies was English physician Dr. John Snow's discovery in 1854 that water could transmit diseases such as cholera. Early advances in environmental health were mainly achieved in what we generally term as sanitation. This included water quality and food quality. As the field grew, environmental health scientists recognized the role of air pollution, workplace exposures, and public venue exposures. Because of the large and diverse list of potential environmental issues that affect human health, it is critical that people working on these issues have training in environmental health.

Rural environmental health is focused on the same issues but with some important and unique characteristics. Typically rural populations are smaller and more spread out. This means that many of the technologies used to reduce environmental exposures in more densely populated urban areas are not practical. Water treatment, wastewater treatment, food storage, and workplace exposures require technologies that work at a small scale with lower costs.

The need for practitioners and researchers trained in environmental health is large. Environmental health research and education have been long-standing traditions at East Tennessee State University. The environmental health program was established as a department in 1965 and was a natural transition from the Public Health Sanitarian School, which began in 1957. ETSU's became the first nationally accredited program in 1969, and in August 1971 it awarded the first master of science in environmental health degrees to twenty-one students. In 1977 it became the nation's first

accredited graduate environmental health program. Currently ETSU offers the bachelor of science and master of science in environmental health, the master of public health, and a Ph.D. in environmental health sciences.

Faculty in the department have diverse backgrounds and interests. Faculty expertise, research, and training include solid wastes, indoor air pollution, water quality, sustainable environments, community activism, and community involvement. The curriculum is designed to give students a broad background in the basic sciences and the important environmental health disciplines. Students learn about occupational health, sanitation, air quality, water quality, food quality, and environmental health program administration. All undergraduate students and MPH students must complete a semester-long internship or cooperative education experience working for an industry, government agency, or community organization. Over 90 percent of graduates land jobs in the field or go on for additional education. Doctoral and MSEH graduate students complete a dissertation, thesis, or research project, many of which focus on environmental issues in Appalachia. Students from every state in the U.S. and more than fifty countries have earned degrees in environmental health from ETSU.

The Environmental Health Sciences Laboratory provides a core facility for faculty and students to conduct research and provide routine analysis of environmental samples for the public, industry, and local municipalities. Current research being conducted by faculty and students includes indoor air quality studies, fate and toxicity of nanoparticles in landfills, and surface water quality studies.

The program at ETSU provides trained professionals and research results necessary to solve the large number of environmental health problems in Appalachia. An important focus of the College of Public Health in which the Department of Environmental Health resides is the participation of faculty and students in community service. They work with various entities including migrant workers, small communities, watershed groups, and air pollution action partnerships to educate the public about environmental concerns and help improve the quality of life in Appalachia. ❖

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