Understanding Environmental Impact on Human Health

**The Need:** There is increasing public interest and concern over matters of human health and environmental quality. Of particular relevance to North Carolinians is better understanding of the effects of agricultural and military-deployment related chemicals on human health as well as the role of the environment in causing cancer.

**Serving the Need:** Research in the College of Agriculture and Life Sciences Department of Environmental and Molecular Toxicology explores the adverse effects of chemical contaminants on living systems and enables scientists to predict and prevent adverse effects to human health.

For example, studies conducted in the lab of Dr. Ernie Hodgson have focused on the effects of several different chemicals on human health, including herbicides, insecticides and jet and diesel fuel. Several of these studies are designed to complement the Agricultural Health Study being carried out by the National Cancer Institute, the National Institute for Environmental Health Sciences and the U.S. Environmental Protection Agency.

Studies published by Hodgson and his colleagues are widely recognized as important in human health risk assessment of pesticides and of chemicals believed to be involved in Gulf War-related illnesses.

Cancer is the focus of research conducted by Dr. Rob Smart, also of the Department of Environmental and Molecular Toxicology. Cancer is the second-leading cause of death in North Carolina, and approximately one out of three North Carolinians will be diagnosed with cancer in their lifetimes. Cancer susceptibility is determined by complex interactions between age, environment and an individual’s genetic make-up.

Smart’s research examines the interplay between the environment and genetics in the production of cancerous cells. His team is involved in the development and use of genetically modified mice to characterize the function of genes involved in cancer susceptibility. This work could uncover important implications for human cancer.

**Impact beyond North Carolina:** Toxicology research taking place in the College is making broad strides toward better understanding the interactions between the environment and human health and could lead to advances in the prevention of human diseases.

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