

Gillings Innovation Labs

Identifying Sources of Water Pollutants in NC Discovering where microbes originate can help protect public health

Traditional measures of water contamination were designed to identify pollution, but are not able to specifically distinguish among different sources of pollution. Paradoxically, effective management efforts and accurate risk analyses rely on knowledge of water contamination sources. The need to distinguish origins of water pollution is especially pronounced in areas subject to land application of human or animal waste products, as this method of waste disposal may be associated with health risks in neighboring communities. Investigating this issue can provide a stronger basis for environmental management and public health policies.



GOAL

To identify the sources of water contamination by human pollutants and swine waste in North Carolina, to strengthen environmental health and management services and policies

PARTNERS

The Rural Empowerment Association for Community Help (REACH), located in Duplin County, North Carolina, and other community partners



IMPACT! Decreasing Pollution and Disease

The ability to validate tools that track waste materials in the environment is critical to evaluating health impacts for communities near land application sites, and for strengthening environmental resource management services and policies.



• Validating swine-specific microbial markers ... using NC swine lagoon and other waste samples

Urgency in North Carolina

sources for these pollutants in NC will require:

• Validating human-specific microbial markers ... using NC sewage and other waste samples

In North Carolina, land application sites of human and animal wastes

are typically located in rural areas that often have limited access to health

and human services. Developing a better approach for pinpointing the

• **Field testing swine and human microbial markers** ...including examination of local surface waters adjacent to land application sites for disposal of swine lagoon water or sewage sludge

Tracking Sources of Pollution

This innovation lab focuses on the development of a novel microbial source tracking technique to identify sources of water contamination. The new approach allows scientists to look for known pollutant characteristics, without the cost and complications inherent in building the large representative database normally used for comparing contamination sources. Resource managers will be able instead to evaluate water samples for microorganisms known to be associated with a particular source of contamination.

Leadership



Jill Stewart, PhD, assistant professor, environmental sciences and engineering leads a research team that is currently collaborating with community organizations in North Carolina. Volunteers familiar with the study sites will help with collections at sampling locations.

Anticipate. Accelerate.