Technology to Improve Understanding of Arsenic
Some drinking water is shockingly high in contamination

Measuring the Effect of Arsenic

Tens of millions of people in the world (including about 60 million in South Asia and South East Asia) have dangerously high exposure to arsenic in their drinking water. Most of this arsenic is naturally-occurring; some is from industrial output. Chronic exposure to arsenic is associated with several types of cancer as well as peripheral vascular diseases, cardiovascular diseases, hypertension, and diabetes mellitus. Little is known about the concentrations of toxic arsenic metabolites in target tissues (including the urinary bladder and lung) which ultimately determine the development and outcomes of disease.

Three Aims

- **Instrumentation and Methodologies**
  This Innovation Lab will develop instrumentation and methodologies to analyze critical chemical forms of arsenic in target human tissues.

- **Methods and Samples**
  Researchers will validate the new methods using samples from the laboratory and from population studies.

- **Pilot Studies**
  The new methods used in pilot studies involving tissues from people exposed to inorganic arsenics will be applied to improving public health.

Increasing Research Capacity

The lab will be used to develop methods for the analysis of arsenic metabolites in biological matrices and to apply these methods in studies of exposure to arsenic in human populations. The new analytical laboratory will use an optimized atomic absorption spectrometer, bringing new research capacity to the UNC Gillings School of Global Public Health.

Leadership

Miroslav Styblo, PhD, is an associate professor of nutrition, UNC Gillings School of Global Public Health, and nationally recognized authority on biochemistry and toxicology of arsenic. His team combines experts in environmental health, medicine, biochemistry, toxicology and analytical chemistry of metals and metalloids. From the lab to the field, results will be translated into population-based studies with direct impact on those affected by arsenic exposures.

IMPACT!
Improving Risk Assessment

At least 13 million Americans are exposed to arsenic in drinking water at levels that exceed the U.S. EPA Maximum Contaminant Level and the level recommended by the World Health Organization. The long-term goal is to improve risk assessment and treatment of diseases associated with exposures to arsenic.

GOAL
To develop biomarkers of susceptibility for the adverse effects of chronic exposures to inorganic arsenic.

PARTNERS
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