The PROTECT program examines exposure to environmental contamination in Puerto Rico and its contribution to preterm birth.

Preterm birth is a major and costly health problem in the United States. Resulting in significant infant and maternal morbidity and mortality, it is the leading cause of neonatal mortality in the US, contributing to over one-third of infant deaths. In 2005, the estimated annual cost associated with preterm birth in the US was at least $26.2 billion.

Why Puerto Rico?

Puerto Rico has been selected as a testsite because it has the highest rate of preterm birth (~20%) among the states and territories of the U.S., and because of the extent of hazardous waste contamination on the island: Puerto Rico has more than 150 contaminated sites that include 14 active Superfund sites. Although Puerto Rico is an island with an unusually high burden of pollution, including a considerable density of Superfund sites, this project is the first to investigate the causal relationships between environmental pollutants and preterm birth in this at-risk population.

What will PROTECT do?

The PROTECT program seeks to better understand the phenomena affecting fate and transport of hazardous substances in karstic (eroded limestone) aquifers and to develop green remediation strategies that attenuate and mitigate exposure to protect human health and ecosystems. Through integrated analytical, mechanistic, epidemiology, fate-transport, and remediation studies, along with a centralized, indexed data repository, the PROTECT program will deliver new knowledge and technology in the area of contaminants as a potential cause of preterm birth. The new knowledge and technology will also be useful more broadly in the overall field of environmental health.

Who is involved?

Supported with $9.9M in funding from the National Institute of Environmental Health Sciences’ Superfund Research Program, PROTECT is a multi-project, multi-institution collaboration that involves four primary institutions: Northeastern University, University of Puerto Rico Medical Sciences Campus, University of Puerto Rico at Mayagüez and University of Michigan, as well as industrial affiliate EarthSoft. PROTECT is a multidisciplinary and interdisciplinary program and involves significant interaction and sharing of samples, testing and results among the disciplines of analytical chemistry, epidemiology, engineering and toxicology.

$26.2 billion
The estimated annual cost associated with preterm birth in the U.S. as of 2005.

20 percent
The approximate preterm birth rate in Puerto Rico, which is the highest rate among U.S. states and territories.