APHL Environmental Public Health Fellowship Past Projects

**Purpose:** To publicize past unfunded environmental public health laboratory project ideas to facilitate collaborations between laboratories working on similar innovative projects.

If you would like further information or to be connected to the public health laboratories that proposed the following projects, please email eh@aphl.org.

2015:

1. **Shellfish Biotoxins Measurement**
   Modernize state public health laboratory’s current shellfish biotoxins testing procedures and develop new methods for emerging toxins in the state’s shellfish harvesting areas. This would include researching new toxin testing methods such as Receptor Binding Assay, ELISA, HPLC-MS/MS, and MALDI-TOF and to extend diarrhetic shellfish poisons to include Azaspiracid and lipophilic toxins of interest.

2. **Biomonitoring Analysis and Epidemiology**
   Analyze metals, phthalate metabolite and creatinine using inorganic and organic techniques. Real world public health connections would be made through strategy and outreach epidemiological field work.

3. **Prenatal and Early Childhood Manganese Exposure and Educational Achievement**
   Quantify the extent of newborn environmental chemical exposure and correlate it to educational indicators such as high school and college graduation and GPA. Metals quantification would be achieved by modifying the CDC biomonitoring method for Cd, Pb, Mn, Hg, and Se in whole blood to include the extraction of metals from blood spots. Little is known about Mn.

4. **Heavy Metal and Polychlorinated Biphenyls in Human Blood and Urine**
   Test for heavy metal and polychlorinated biphenyls in human blood and urine using the appropriate instruments, handling techniques for clinical samples, sample preparation and analysis methods, and data collection and analysis techniques.

5. **Method Development for Microcystins and Perfluorinated Compounds**
   Develop and validate methods for analysis of microcystins in water through ELISA and LC-MS/MS and perfluorinated compounds in serum by LC-MS/MS.

6. **Actinide Radionuclide Maximization Project**
   Further develop current testing procedures for actinide radionuclides (thorium, uranium, plutonium, americium). Measurement of these radionuclides is challenging due to several separation steps, but is essential for public health protection.

2013:

1. **Biomonitoring Program Expansion**
   Method development to measure hydroxylated metabolites of polybrominated ethers and polychlorinated biphenyls in dried blood spots.
2. **Method Development and Validation for the Detection of Several Classes of Persistent Organic Contaminants in Human Blood**

   No description available.

3. **Perfluorinated Compounds Method Development**

   Transfer, develop and validate the perfluorinated compounds analysis method from fish tissue to human serum to provide exposure information for human populations in areas with water and fish contamination.

2012:

1. **Biomonitoring Analytical Techniques**

   Utilize mass spectrometric analysis for measuring organic (GC-MS) and inorganic (ICP-MS) toxicants in human physiologic samples, specifically metals in blood, trace elements and arsenic in urine, and cyanide and volatile organic compounds in physiologic specimens.

2. **Expanding Biomonitoring Capabilities**

   Develop and optimize analytical methods to measure organic and inorganic toxicants and their metabolites in human samples beyond the initial 17 urinary and blood metals and ten volatile organic compounds in blood. This project adds seven metals of interest, the speciation of arsenic and chromium in urine by ICP-DRC-MS, and method development for three hydroxyl-PAH metabolites.

2010:

1. **Development and Implementation of Emergency Response Methods Using Alpha Spectrometry, Gamma Spectrometry, and Gas Proportional Counting**

   Establish rapid analytical methods for radium-226 and strontium-90 in water and develop rapid preparation methods for soils radionuclides such as uranium-238, 235 and 234, americium-241, plutonium-238, 239 and 240, and strontium-90. The analyst will learn how to use advanced radioactivity measurement instruments and state-of-the art column technique for elemental separation and techniques for test sources preparation.