Opportunity Title: Assessing the Use of Hydrophobic and Hydrophilic Polymers for Passive Sampling Munitions
Opportunity Reference Code: EPA-ORD-NHEERL-AED-2018-11

Organization U.S. Environmental Protection Agency (EPA)

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How to Apply A complete application consists of:

- An application
- Transcripts – Click here for detailed information about acceptable transcripts
- A current resume/CV, including academic history, employment history, relevant experiences, and publication list
- Two educational or professional references

All documents must be in English or include an official English translation.

If you have questions, send an email to EPArpp@orau.org. Please include the reference code for this opportunity in your email.

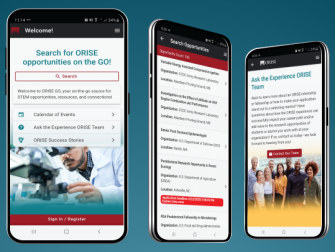
Description The use of equilibrium passive sampling with low density polyethylene (LDPE), polyoxymethylene (POM) and polydimethylsiloxane (PDMS) for measuring PCBs, PAHs, dioxins/furans, DDTs and other hydrophobic contaminants in the water column and sediment interstitial waters has gained scientific and regulatory acceptance. A principle advantage of equilibrium passive sampling is the ability to measure the freely dissolved concentration (Cfree) of hydrophobic organic contaminants. The Cfree has been shown to be a very good surrogate for the bioavailable concentration of hydrophobic contaminants. Consequently, Cfree can be a very useful tool for making informed environmental management decisions.

The use of equilibrium passive sampling for measuring the Cfree of moderately hydrophobic munitions has not been fully explored. This is despite the existence of many aquatic sites around the United States where munitions are known to be present in contaminated sediments. The use of hydrophilic polymeric materials has been explored for munitions but this approach generates semi-quantitative measures of concentration. A major data gap in environmental decision making is not having a valid and confirmed equilibrium passive sampling method for quantitatively measuring the Cfree of munitions.

The objective of this research project is to evaluate the use of hydrophobic and hydrophilic organic polymers as equilibrium passive samplers for measuring the Cfree of munitions in the water column and sediment interstitial waters. Research activities will include: (1) assessing a range of hydrophobic and hydrophilic polymers for sorption of munitions, (2) determining polymer-water partition coefficients (KPs) for promising polymers, and (3) laboratory studies examining partitioning of target contaminants in field sediments using promising equilibrium passive sampling polymers.

Under the guidance of a mentor, the research participant will participate as part of a research team, including attending and contributing to team meetings and discussions and keeping the team apprised of their own research activities. In addition, the research participant will receive guidance to maintain and organize good laboratory practices of their own data and of team data including physical samples, laboratory notebooks, and electronic files.

The participant will have opportunities to further develop skills in planning, conducting, and communicating scientific research in the context of a significant real-world environmental problem. The research participant will also have opportunities to present their research findings at major scientific conferences and to interact with a broad group of scientists at the U.S. EPA and elsewhere. The research participant is expected to exercise independent initiative and judgment at

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all levels of their research including planning, execution, data collection, writing, reporting and presentation.

This program, administered by ORAU through its contract with the U.S. Department of Energy (DOE) to manage the Oak Ridge Institute for Science and Education (ORISE), was established through an interagency agreement between DOE and EPA. The initial appointment is for one year, but may be renewed upon recommendation of EPA and is contingent on the availability of funds. The participant will receive a monthly stipend commensurate with educational level and experience. Proof of health insurance is required for participation in this program. The appointment is full-time in the Narragansett, Rhode Island area. Participants do not become employees of EPA, DOE or the program administrator, and there are no employment-related benefits.

Anticipated Appointment Start Date: April 1, 2019

Qualifications

The qualified candidate must have received a doctoral degree in chemistry, chemical, civil or environmental engineering, chemical oceanography, environmental sciences or a related field. Degree must have been received within five years of the appointment start date.

Preferred skills:

- Experience with preparing environmental samples (e.g., waters, sediments, tissues) for chemical extraction and analytical analysis by GC/MS, GC/ECD, HPLC/MS and other analytical tools
- Thorough working knowledge of all aspects of equilibrium passive sampling including preparation, deployment, recovery, extraction and chemical analysis, data analysis including the use of performance reference compounds (PRCs), and reporting
- Research experience in the marine sciences, environmental sciences, ecology, biology and chemistry
- Ability to work independently as well as part of a group
- Field experience in sample collection (e.g., water, sediment, organisms)
- Ability to swim, and familiarity with small boats

Eligibility Requirements

- **Degree:** Doctoral Degree received within the last 60 month(s).
- **Discipline(s):**
  - **Chemistry and Materials Sciences** (9 👁)
  - **Earth and Geosciences** (2 👁)
  - **Engineering** (3 👁)
  - **Environmental and Marine Sciences** (13 👁)
  - **Life Health and Medical Sciences** (6 👁)