

Opportunity Title: EPA Postdoctoral Fellowship for Evaluating Remediation Effectiveness at Contaminated Sediment Sites for Performing Ecological Risk Assessments

Opportunity Reference Code: EPA-ORD-CEMM-ACESD-2023-01

Organization U.S. Environmental Protection Agency (EPA)

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A complete application consists of:

- An application
- Transcript(s) – For this opportunity, an unofficial transcript or copy of the student academic records printed by the applicant or by academic advisors from internal institution systems may be submitted. All transcripts must be in English or include an official English translation. 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 recommendations. Click [here](#) for detailed information about recommendations.

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

Application Deadline 6/23/2023 3:00:00 PM Eastern Time Zone

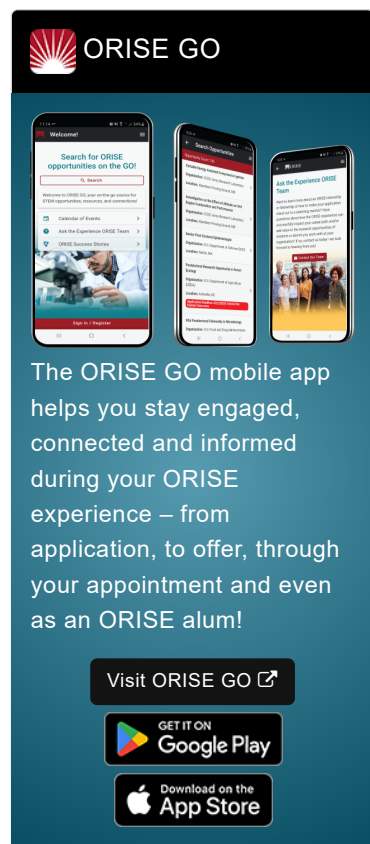
Description ***Applications may be reviewed on a rolling-basis and this posting could close before the deadline.** Click [here](#) for information about the selection process.

EPA Office/Lab and Location: A research project training opportunity is available at the Environmental Protection Agency (EPA), Office of Research and Development (ORD), Center for Environmental Measurement and Modeling (CEMM), Atlantic Coastal Environmental Sciences Division (ACESD) located in Narragansett, Rhode Island.

ACESD conducts research to enhance the understanding of the effects of human activity on land and waters of the Atlantic seaboard. Researchers collect and analyze data to provide tools for diagnosing and predicting the effects of this activity on aquatic resources and wildlife. ACESD provides research support to EPA Program & Regional Offices and state & local governments. For additional information regarding the Atlantic Coastal Environmental Sciences Division, visit the home page at <https://www.epa.gov/aboutepa/about-atlantic-coastal-environmental-sciences-division>.


Research Project: For scientific and regulatory organizations to successfully perform ecological risk assessments and evaluations of remedial effectiveness at contaminated sediment sites it is critical for the exposure concentration to reflect bioavailable concentrations of the contaminants of concern (CoC). Bioavailable concentrations represent the quantity of contaminants organisms are exposed to in the environment. Historically, ecological risk assessments have used measurements like 'total concentrations' that do not realistically reflect actual exposures and may over-estimate exposures. Over-estimations of exposure will result in remediations that clean-up more sediment than necessary causing elevated


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and unnecessary remedial costs and environmental damages. However, measuring bioavailable concentrations of many CoCs is notoriously challenging.

This research project will assess remedy effectiveness at contaminated sediment sites based on the bioavailable concentrations of selected CoCs. Measurements of bioavailability include bioaccumulation studies, toxicity assessments, and passive sampler uptake. CoC to be studied include conventional and novel organic pollutants.

Existing published Superfund datasets will be used to compare the effectiveness of different remedies (e.g., dredging, capping, NMR) versus pre-remedy conditions based on laboratory and field measurements (e.g., bioaccumulation, toxicity, passive sampling). Specifically, the duration of time post-remedy and changes in bioavailable concentrations measured by conventional biomonitoring or passive sampling will be collated and analyzed. These data will be used to develop an objective metric (e.g., remedy effectiveness quotient) allowing environmental scientists and contaminated sediment site managers to compare the effectiveness of different remedies between Superfund sites including sites with environmental justice concerns to assess overall remediation success. There may also be the opportunity to perform collaborative research with U.S. EPA Regional colleagues to develop new datasets.

The research participant will review scientific literature, analyze, and manipulate large datasets related to biomonitoring and passive sampling performance and interpretation. The research participant will have the opportunity to conduct field and laboratory research. Results of these activities will be reported in presentations at national and international conferences and in peer-reviewed manuscript(s).

Learning Objectives: The research participant will have opportunities to further develop skills in planning, conducting, and communicating scientific research in the context of significant real-world environmental problems. The participant will also have opportunities to present research findings at major national and international conferences and to interact with a broad group of scientists at the U.S. EPA and other federal agencies as well as in the private sector and academia. The research participant is expected to exercise independent initiative and judgment at all levels of their research, including planning, execution, data collection, writing, reporting and presentation.

Mentor(s): The mentor for this opportunity is Robert Burgess (Burgess.robert@epa.gov). If you have questions about the nature of the research please contact the mentor(s).

Anticipated Appointment Start Date: April 3, 2023. All start dates are flexible and vary depending on numerous factors. Click [here](#) for detailed information about start dates.

Appointment Length: The appointment will initially be for one year and may be renewed up to four additional years upon EPA recommendation and

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subject to availability of funding.

Level of Participation: The appointment is full-time.

Participant Stipend: The participant will receive a monthly stipend commensurate with educational level and experience. Click [here](#) for detailed information about full-time stipends.

EPA Security Clearance: Completion of a successful background investigation by the Office of Personnel Management (OPM) is required for an applicant to be on-boarded at EPA.

ORISE Information: 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. Participants do not become employees of EPA, DOE or the program administrator, and there are no employment-related benefits. Proof of health insurance is required for participation in this program. Health insurance can be obtained through ORISE.

ORISE offers all ORISE EPA graduate students and Postdocs a free 5 year membership to the National Postdoctoral Association (NPA).

The successful applicant(s) will be required to comply with Environmental, Safety and Health (ES&H) requirements of the hosting facility, including but not limited to, COVID-19 requirements (e.g. facial covering, physical distancing, testing, vaccination).

Questions: Please see the [FAQ section](#) of our website. After reading, if you have additional questions about the application process please email ORISE.EPA.ORD@orau.org and include the reference code for this opportunity.

Qualifications The qualified candidate should be currently pursuing or have received a doctoral degree in one of the relevant fields (Chemistry, Civil Engineering, Environmental Engineering, Chemical Engineering, Chemical Oceanography, Geochemistry, Environmental Sciences). Degree must have been received within five years of the appointment start date.

Preferred skills:

- Laboratory and field experience with preparing environmental samples (e.g., waters, sediments, tissues, passive samplers) for chemical extraction and analytical analysis by GC/MS, GC/ECD, HPLC/MS, AAS, ICP and other analytical tools is preferred.
- Familiarity with the preparation and deployment of passive samplers, and analysis and interpretation of passive sampling data is highly preferred.
- In addition, familiarity with environmental toxicity testing and bioaccumulation is preferred.
- A thorough understanding of equilibrium passive sampling including preparation, deployment, recovery, extraction and chemical analysis, data analysis including the use of performance reference compounds

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- (FRCs), and reporting.
- Experience with sample preparation and the operation of analytical instrumentation including GC/MS, GC/ECD, HPLC/MS, AAS, ICP would also be an advantage.
- Research experience in the marine sciences, geochemistry, environmental sciences, oceanography, ecology, biology and chemistry along with the capability to work independently as well as part of a group is critical.
- Field experience in sample collection (e.g., water, sediment, organisms, passive samplers), the ability to swim and familiarity with small boats is helpful.

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| Eligibility | • Citizenship: U.S. Citizen Only |
| Requirements | • Degree: Doctoral Degree received within the last 60 months or currently pursuing. |
| | • Discipline(s): |
| | ◦ Chemistry and Materials Sciences (2 👁) |
| | ◦ Earth and Geosciences (4 👁) |
| | ◦ Engineering (3 👁) |
| | ◦ Environmental and Marine Sciences (6 👁) |
| | ◦ Life Health and Medical Sciences (3 👁) |