

Opportunity Title: EPA Developing Natural Groundwater Tracers to Evaluate In-situ Remediation Fellowship

Opportunity Reference Code: EPA-ORD-NRMRL-GWERD-2019-04-A

Organization U.S. Environmental Protection Agency (EPA)

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How to Apply **This is a repost of a previous posting. If you previously submitted your application to this reference code without the “-A” at the end, then you do not need to reply. Example: If you applied to “EPA-ORD-NERL-IO-2020-13” you do not need to reapply to “EPA-ORD-NERL-IO-2020-13-A”.**

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 6/15/2020 3:00:00 PM Eastern Time Zone

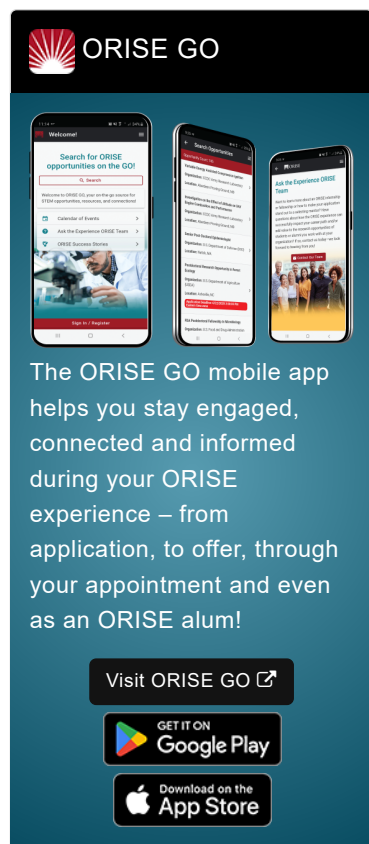
Description ***Applications may be reviewed on a rolling-basis and this posting could close before the deadline.** Click [here](#) for information about the selection process.

EPA Office/Lab and Location: A research opportunity is currently available at the Environmental Protection Agency (EPA), Office of Research and Development (ORD), National Risk Management Research Laboratory (NRMRL), Groundwater, Watershed, and Ecosystem Remediation Division (GWERD) located in Ada, Oklahoma.

Research Project: The research participant will have the opportunity to learn about EPA research on in-situ groundwater remediation and the tools used to access the long-term performance of groundwater cleanup technologies at hazardous waste sites.


Activities may include:


- Reviewing literature related to the geochemistry of Rare Earth Elements (REEs) in the environment, evaluating existing models and protocols for their application as geochemical tracers, and identification of specific properties of these elements.
- Investigating mechanisms controlling the fate and transport of REE in groundwater and surface water.
- Investigating the transport and retention of REE in saturated porous media through laboratory-based packed-column experiments.
- Use state-of-the-art high resolution ICP-MS instrumentation for analyzing parts per trillion concentrations of REE.
- Evaluating chromium and sulfate isotope data from selected sites.
- Preparing samples and measuring stable isotope ratios of sulfur in




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environmental samples using isotope ratio mass spectrometry.

- Writing, reviewing, and presenting data at regional, national, and international conferences.
- Communicate findings to the public.

The research participant will develop and refine research skills, such as: state-of-the-science methods for sampling groundwater monitoring wells; participate at real-world contaminated sites; collect & characterize samples from complex natural systems; use state-of-the-art high resolution ICP-MS instrumentation for analyzing parts per trillion concentrations of REE; conduct lab-based experiments to help constrain observations from field systems; integrate multiple data sets into research products. This is a unique opportunity to participate in research that bridges the gap between complex natural systems and ideal laboratory-based systems.

Learning Objectives:

- Understanding how environmental variables (pH, ionic strength, mineral surfaces etc.) affect fate and transport of REE in porous media.
- Understanding the conditions that promote and retard transport of REEs in saturated and unsaturated porous media.
- Learning methods of environmental sample collection and characterization using state-of-the-art methods.
- Writing concise and impactful peer-reviewed journal articles.

Anticipated Appointment Start Date: Spring/Summer 2020. 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 three additional years upon EPA recommendation and 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.

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





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Qualifications The qualified candidate should have received a doctoral degree in one of the relevant fields, or be currently pursuing the degree and will reach completion by the start date of the appointment. Degree must have been received within five years of the appointment start date.

Preferred skills/experience:

- Research background on the geochemistry of trace metals, including Rare Earth Elements, and stable isotope applications is preferred.
- Lab-experimental skills on batch adsorption and packed-column experiments, along with material property characterization experience using XRD, FT-IR, SEM, XPS, Raman spectroscopy, IRMS, ICP-MS, AFM, and/or X-ray Absorption Spectroscopy, is preferred.
- Experience with statistical tools such as principal component analysis is preferred.
- Experience with geochemical modeling is also preferred.

- Eligibility Requirements**
- **Citizenship:** U.S. Citizen Only
 - **Degree:** Doctoral Degree received within the last 60 months or anticipated to be received by 9/1/2020 11:59:00 PM.
 - **Discipline(s):**
 - **Chemistry and Materials Sciences** ([1](#) )
 - **Earth and Geosciences** ([21](#) )
 - **Engineering** ([1](#) )
 - **Environmental and Marine Sciences** ([3](#) )
 - **Veteran Status:** Veterans Preference, degree received within the last 120 month(s).