Opportunity Title: EPA Fellowship on Investigating Emerging Contaminants in Water, with Emphasis on Poly- and Perfluoroalkyl Substances and their Treatment
Opportunity Reference Code: EPA-ORD-CESER-BIL-2024-01

Organization U.S. Environmental Protection Agency (EPA)

Reference Code EPA-ORD-CESER-BIL-2024-01

How to Apply ***Connect with ORISE...on the GO!*** Download the new ORISE GO mobile app in the Apple App Store or Google Play Store to help you stay engaged, connected, and informed during your ORISE experience and beyond!

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 8/2/2024 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: Two research opportunities are currently available at the Environmental Protection Agency (EPA), Office of Research and Development (ORD), Center for Environmental Solutions and Emergency Response (CESER) located in Cincinnati, Ohio. If selected for the opportunity, the participant will need to relocate to the appropriate EPA facility. The relocation costs are not reimbursable. The opportunity is not 100% remote, but limited telework may be considered at the mentor's discretion.

Research Project: Per- and polyfluoroalkyl substances (PFAS) contamination of water is a significant issue in the United States and a high priority for the Agency. High pressure membrane processes (i.e., reverse osmosis, RO) membranes are able to effectively remove a wide range of emerging contaminants of concern such as per– and polyfluoroalkyl substances (PFAS), with rejections generally above 90%. However, the process may generate a brine or waste stream. If the residual waste containing PFAS is discharged without proper management, it can potentially contaminate surface water or groundwater. The current research aims to evaluate the effectiveness of reverse osmosis (RO) residual treatment technologies to prevent secondary contamination resulting from PFAS discharges to the environment. Granular activated carbon (GAC) and anion exchange (AEX) are considered to be two of the most viable technologies for removing PFAS from the residual waste. However, the varying quality of residual waste due to diverse field applications of RO systems could be a significant challenge. Under the guidance of a mentor,

the research participant will conduct bench and pilot-scale studies to improve our understanding of the effectiveness of sorption, exchange, membrane, and degradation technologies and to identify key challenges in treating RO residual waste. The findings will allow us to estimate the implementation costs for systems at various scales, and ultimately help us identify cost-effective system and process configurations for treating RO residuals.

Under the guidance of a mentor, research activities may include:

• Conducting literature reviews on emerging contaminants and treatment technologies to identify knowledge gaps and research needs
• Conducting theoretical analyses or modeling to develop conceptual understanding and predict expected outcomes
• Developing experimental methods and protocols, as well as the design of bench and pilot-scale experiments
• Carrying out experiments to evaluate the effectiveness of various treatment routes while meeting the required quality standards
• Collecting laboratory and field samples
• Conducting analytical activities and analyzing data collected from experiments
• Communicating with project stakeholders within and outside of the Agency to identify their needs and expectations and manage their involvement throughout the project
• Sharing research findings and publishing research articles in peer-reviewed journals

Learning Objectives: Learning objectives for this opportunity include:

• Acquiring broader and deeper knowledge of PFAS treatment
• Participating in various technical trainings to develop skills and knowledge in the field of drinking water treatment
• Developing analytical skills in operating instruments, performing maintenance, and conducting calibrations in accordance with quality assurance plans
• Enhancing technical communication skills to effectively convey information by tailoring the data for the intended audience
• Learning project management skills to independently plan, organize, and engage with stakeholders to ensure delivery of the project deliverables on time
• Learning how to generate proposals, manuscripts, presentations and other outputs

Mentor(s): The mentor for this opportunity is Tae Lee (lee.tae@epa.gov). If you have questions about the nature of the research, please contact the mentor.

Anticipated Appointment Start Date: June 1, 2024. All start dates are flexible and vary depending on numerous factors. Click **here** for detailed information about start dates.

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Appointment Length: The appointment will initially be for one year and may be renewed three to four 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.

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 have received a master's or doctoral degree in one of the relevant fields, or be currently pursuing one of the degrees with completion before the appointment start date. Degree must have been received within five years of the appointment start date.

Preferred Skills:

- Knowledge of water treatment
- Experience with research on either adsorption or membrane-based technologies
- Experience in designing and conducting experiments, data analysis, and technical report writing
- Familiarity with analytical techniques commonly used in water quality analysis
- Ability to work both as a part of a team and independently.
- Excellent oral and written communication skills

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Master's Degree or Doctoral Degree received within the last 60

months or currently pursuing.

- **Discipline(s):**
  - **Chemistry and Materials Sciences** (4 👁)
  - **Earth and Geosciences** (5 👁)
  - **Engineering** (3 👁)
  - **Science & Engineering-related** (1 👁)