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**Opportunity Title:** EPA Fellowship: Investigating Emerging Contaminants in Water, with Emphasis on Poly- and Perfluoroalkyl Substances and their Treatment
**Opportunity Reference Code:** EPA-ORD-CESER-BIL-2024-08

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| **Organization** | U.S. Environmental Protection Agency (EPA) |
| **Reference Code** | EPA-ORD-CESER-BIL-2024-08 |
| **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.

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| **Application Deadline** | 1/3/2025 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), 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 remote participation may be considered at the mentor's discretion.

**Research Project:** The research participant will be part of an EPA team of analytical chemists and environmental engineers, with a research focus on the data analysis and modeling of unknown and known chemical contaminants needed to evaluate the effect of drinking water treatment processes on the removal of environmental contaminants. Consumption of contaminated drinking water is one of the most common routes of human exposure to environmental pollutants. As a result, evaluating the effective removal and/or transformation of contaminants of emerging concern (CECs) - which include perfluorinated alkyl substances (PFAS), pesticides, cyanobacterial toxins - in water treatment processes is of great interest to the EPA. The analytical tools used to evaluate PFAS removal and/or transformation include a combination of targeted mass spectrometry methods, total oxidizable precursor (TOP) assay and total organofluorine (TOF), and non-targeted chemical analysis (NTA) enabled by high resolution mass spectrometry (HRMS). While NTA is an ideal tool for this application, as it collects data without a need for specific standards or structural knowledge in advance, it produces much larger amounts of data which must be interpreted using informatics tools. The research participant will work alongside EPA scientists and one or more drinking water utilities to use non-targeted analysis to evaluate the effect of various drinking water treatment processes on the

removal and/or transformation of PFAS and other CECs.

**Learning Objectives**: Under the guidance of the mentor, research activities may include:

- Computer programming (Python and/or R) to develop tools for data processing and analysis.
- Data interpretation from the application of existing analytical methods for non-targeted analysis of environmentally relevant samples using mass spectrometry.

A variety of skills will be developed and used in the pursuit of the overall research objectives in this project. Because of the complexity of non-targeted data, identification of chemical features of interest in analytical outputs is extremely complex and predicated on the use of a wide range of tools, including predictive models, machine learning techniques, statistical analysis, and fragmentation analysis to better characterize species being identified. There will also be opportunities to explore the use of theoretical modeling techniques including quantum chemical simulations to explore the underlying mechanisms and pathways for treatability/transformation of chemicals of interest in conjunction with experimentally obtained data. Further, the research participant will collaborate with an interdisciplinary team of scientists to obtain a more holistic understanding of the underlying challenges and solutions to complex environmental problems. Under the guidance of a mentor, the research participant will have also freedom to pursue additional research objectives within the study areas as their own interests direct.

**Mentor(s):** The mentor for this opportunity is Toby Sanan ([sanan.toby@epa.gov](mailto:sanan.toby@epa.gov)). If you have questions about the nature of the research please contact the mentor.

**Anticipated Appointment Start Date: November 1, 2024.** 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 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).

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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 degree or Doctoral Degree in one of the relevant fields or be currently pursuing a relevant Doctoral degree in science, technology, engineering or mathematics field (e.g., Applied Math, Applied Physics, Biology, Chemistry, Computer Science, Ecology, Evolutionary Biology, Earth & Atmospheric Sciences, Engineering [Biological, Chemical, Computer, Environmental], Environmental Science, Geology, Mathematics, Microbiology, Physics, Statistics). Degree must have been received within five years of the appointment start date.

Preferred Skills:

- Experience using a scientific programming language (e.g. R, Python) to summarize and manipulate data files, manage data, and conduct basic data analysis such as statistics and modeling.
- Evidence of coursework and/or experience performing quantitative chemical analysis, including a working knowledge of mass spectrometry.

### Eligibility Requirements

- **Citizenship:** LPR or U.S. Citizen
- **Degree:** Master's Degree or Doctoral Degree received within the last 60 months or currently pursuing.
- **Discipline(s):**
  - **Chemistry and Materials Sciences** (12 👁)
  - **Computer, Information, and Data Sciences** (17 👁)
  - **Earth and Geosciences** (21 👁)
  - **Engineering** (27 👁)
  - **Environmental and Marine Sciences** (14 👁)
  - **Life Health and Medical Sciences** (51 👁)
  - **Mathematics and Statistics** (11 👁)
  - **Other Non-Science & Engineering** (1 👁)
  - **Physics** (16 👁)
  - **Social and Behavioral Sciences** (2 👁)

### Affirmation

I have lived in the United States for at least 36 out of the past 60 months. (36 months do not have to be consecutive.)