Opportunity Title: Modeling Fate and Transport of PFAS Across Media
Opportunity Reference Code: EPA-ORD-NERL-SED-2018-07

Organization U.S. Environmental Protection Agency (EPA)

Reference Code EPA-ORD-NERL-SED-2018-07

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 PFASs, are very stable substances that persist in the environment for long periods allowing for bioaccumulation and transport to remote regions. Two PFAS, perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS), have drawn the attention of United States Environmental Protection Agency (U.S. EPA) due to their potential health effects. PFOA has been linked to higher cholesterol, testicular cancer, and kidney cancer while there is no conclusive proof that PFOS has health impacts on humans but has been linked to death and changes in liver and thyroid function in animals. U.S. EPA research on PFAS is currently focused on developing validated methods and models for the analysis of PFASs in air, surface water, ground water, wastewater treatment influent and effluent, sludges, soils, and sediments.

Under the guidance of a mentor, the research participant may be involved in development of a multi-media model that includes air, water, soil/land with vegetation feeds of biosolids from waste water treatment plants, as well as area and point sources from air, water, and landfills. Typical spatial scales include urban to regional scales with timescales ranging from weeks to years. Several modeling tools are already available at the US EPA (e.g., AERMOD, WASP, EPIC, CTS, etc...) and these tools will be used to build a multi-media dispersion model in addition to using other models such as DOE's dispersion model, QUIC.

Research activities may include:

- Tailoring existing models for use with PFAS fate and transport, dynamically coupling models, addition of new modules to account for including PFAS processes and/or developing new formulations/parameterizations that may be needed to complete the life cycle analysis of PFAS
- Utilizing existing databases for PFAS measurements across media, human blood/serum data, performing literature survey, and acquiring and producing data to develop needed inputs to human exposure models/methods enabling the assessment of exposure pathways for PFAS
- Presenting results at national meetings

The research participant will benefit from interactions with an interdisciplinary research team with expertise in chemistry, microbiology, environmental modeling and software engineering. This team is presently working on the development and application of a suite of software tools that will provide the user with predicted reaction pathways, physicochemical properties, and transformation rates for Agency priority organic chemicals.

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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 Research Triangle Park, North Carolina area. Participants do not become employees of EPA, DOE or the program administrator, and there are no employment-related benefits.

The mentor for this opportunity is Dr. Kiran Alapaty. The anticipated appointment start date is January 2, 2019

Qualifications

The qualified candidate should be at near-completion of a doctoral degree or have received a doctoral degree in the relevant fields. Degree must have been received within five years of the appointment start date.

Preferred skills:

- Knowledge of predictive modeling of trace gases using chemical transport models, dispersion models, multi-media models
- Knowledge of meteorological and air quality modeling using WRF, QUIC, AERMOD, WRF-Chem, CAMx, and CMAQ models
- Knowledge of trace gas chemistry
- Strong background in using and developing computer codes using Fortran, C++ languages using PCs and Linux/Unix machines
- Good coding practices
- Familiarity with graphics/visualization packages
- Experience developing slides and posters for presentation at scientific meetings/conferences
- Minimum GPA: 3.3

Eligibility Requirements

- **Degree:** Doctoral Degree.
- **Minimum Overall GPA:** 3.30
- **Discipline(s):**
  - **Earth and Geosciences** (21 👁)
  - **Engineering** (27 👁)
  - **Environmental and Marine Sciences** (2 👁)

Affirmation

I have received a doctoral degree, or are currently pursuing a doctoral level degree and will receive the degree by the appointment start date.