

Opportunity Title: Using Non-Targeted Analysis Methods to Identify Ubiquitous and Unique Compounds in Dust

Opportunity Reference Code: EPA-ORD-NERL-SED-2017-06

Organization U.S. Environmental Protection Agency (EPA)

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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 This research project will pursue research related to the analysis of large, laboratory-derived data sets to identify compounds that are both ubiquitous and unique in order to be able to identify a list of candidate tracer compounds for use in field studies involving human participants.


In collaboration with the mentor and collaboration with a team of EPA scientists, the participant's research may include the following activities:

- Devise scientific approaches and investigations to better understand human exposure to environmental chemicals using laboratory measurement data.
- Generate and evaluate lists of chemical features in dust samples using non-targeted analysis approaches.
- Use existing high-resolution mass spectrometry data, software packages, and chemical databases to screen for emerging chemical contaminants in environmental (e.g., dust) samples.
- Compare chemical features in dust with those measured in other environmental (e.g., soil) and biological media (e.g., serum).
- Use lists of chemical features along with existing models, software tools, and cheminformatic approaches to identify specific chemical structures that are ubiquitous in dust, unique to dust, and likely measurable as a human exposure biomarker.
- Write peer reviewed manuscripts and respond to peer review comments by scientists in NERL, other parts of EPA, and external reviewers.
- Present research findings at national/international scientific




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meetings relevant to the research.








This program, administered by ORAU through its contract with the U.S. Department of Energy to manage the Oak Ridge Institute for Science and Education, was established through an interagency agreement between DOE and EPA.

The appointment is full time for one year and may be renewed upon recommendation of EPA and contingent on the availability of funds. The participant will receive a monthly stipend. Funding may be made available to reimburse the participant's travel expenses to present the results of his/her research at scientific conferences. No funding will be made available to cover travel costs for pre-appointment visits, relocation costs, tuition and fees, or participant's health insurance. The participant must show proof of health and medical insurance. **The participant does not become an EPA employee.**

The mentor for this project is Nicole Tulve tulve.nicolle@epa.gov. The desired start date is November 1, 2017.

Qualifications Applicants must have received a doctoral degree in environmental sciences, environmental engineering, exposure science, environmental epidemiology, public health, or a related field within five years of the desired starting date, or completion of all requirements for the degree should be expected prior to the starting date. Experience working with: 1) high-resolution mass spectrometry data (e.g., LC-TOF, LC-QTOF, LC-OribTrap); 2) software programs for processing mass spectrometry data (e.g., Agilent MassHunter, ProFinder, and MPP; XCMS); and 3) statistical analysis programs/data processing packages (e.g., SAS, R, Python), is desirable.

Eligibility Requirements

- **Citizenship:** LPR or U.S. Citizen
- **Degree:** Doctoral Degree received within the last 60 month(s).
- **Discipline(s):**
 - **Chemistry and Materials Sciences** (6 )
 - **Computer, Information, and Data Sciences** (1 )
 - **Engineering** (3 )
 - **Environmental and Marine Sciences** (1 )
 - **Life Health and Medical Sciences** (5 )
 - **Mathematics and Statistics** (10 )
 - **Social and Behavioral Sciences** (3 )