Opportunity Title: EPA Fellowship on New Approach Methods for Calculating Ambient Chemical Inhalation Risk
Opportunity Reference Code: EPA-ORD-CCTE-CCED-2024-04

Organization	U.S. Environmental Protection Agency (EPA)
Reference Code	EPA-ORD-CCTE-CCED-2024-04
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	1/31/2025 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 available at the Environmental Protection Agency (EPA), Office of Research and Development (ORD), Center for Computational Toxicology and Exposure (CCTE), Chemical Characterization & Exposure Division (CCED) located in Research Triangle Park, North Carolina.

Research Project: The EPA Center for Computational Toxicology and Exposure (CCTE) is responsible for developing new computational tools and providing quantitative analysis for improving public health and environmental risk assessments and regulatory decisions pertaining to chemical safety. In addition, the EPA Center for Environmental Measurement and Modeling (CEMMS) develops tools for prediction of ambient air quality in support of the Clean Air Act. The research participant will join a high-performing, multi-center team including modelers, programmers, wet lab scientists, and public health decision makers. The participant will be mentored by John Wambaugh and Havala Pye. The research participant will have latitude in exercising independent initiative and judgment to participate and develop additional research projects commensurate with the level of training.

Under the guidance of a mentor, the research participant will evaluate new approach methods (NAMs) for potentially assessing human health risk from air pollutants. People inhale roughly 2,000 gallons of air a day. Within that air are a myriad of emitted compounds and their oxidation products. Known pollutants are combined with ambient exposure concentrations to calculate risk at the census tract level as part of EPA's AirToxScreen. Some fraction

of inhaled risk is not captured by current methods because there are known compounds in air for which we do not have routine methods to estimate risk. Further, some airborne pollutants have yet to be sufficiently characterized in terms of health effects. Over the past two decades in vitro-based NAMs have been developed for otherwise data-poor chemicals. These NAMs can help assess the potential hazard and link exposure to tissue concentrations (that is, toxicokinetics). NAMs were previously limited to chemicals amenable to in vitro testing (in particular, only semi- or non-volatile compounds). However, there have been sufficient NAM data collected to allow tools for relating chemical structure to key hazard and toxicokinetic properties. The research participant will estimate risk for understudied air pollutants by combining computational models for predicting airborne chemical concentration, mathematical models for relating inhaled concentration to human plasma levels, and structure-based models for chemical toxicity. The research participant will evaluate the usefulness of these tools for hazardous air pollutants that have no other available data.

Learning Objectives: Under the guidance of a mentor, the research participant will receive training that will lead to authorship and co-authorship on peer-reviewed scientific publications. The research participant will communicate project research at national meetings of professional societies and EPA work-in-progress seminars.

Through this project, the research participant will gain education and training in the areas of:

- Air pollution modeling,
- New approach methods for hazard.
- Toxicokinetics.
- Applied statistics.
- Mathematical modeling.
- Informatics.
- Exposure science.
- Chemical Analysis.
- Data management.

This is a research training opportunity. The research participant will develop skills in new approach methodologies for hazard, air modeling, and inhalation toxicokinetics. These skills will include mathematical modeling, applied statistic, informatics, "Big Data" analytics, and machine learning approaches.

Mentor(s): The mentor for this opportunity is John Wambaugh (wambaugh.john@epa.gov). If you have questions about the nature of the research, please contact the mentor.

Anticipated Appointment Start Date: December 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 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 degree or doctoral degree in one of the relevant fields. Degree must have been received within five years of the appointment start date.

Preferred Skills/Experience:

- Biomedical engineering.
- Informatics.
- Computer science.
- Signal processing.
- Machine learning.
- Chemistry.
- Physics.
- Applied mathematics.
- Pharmacology.
- Statistics.
- Modern programming language (for example, R, Python, Julia, C).

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Eligibility Requirements	- **Citizenship:** U.S. Citizen Only
	- **Degree:** Master's Degree or Doctoral Degree received within the last 60 month(s).
	- **Discipline(s):**
	   ○ **Chemistry and Materials Sciences** (6 👁)
	   ○ **Computer, Information, and Data Sciences** (17 👁)
	   ○ **Earth and Geosciences** (8 👁)
	   ○ **Engineering** (7 👁)
	   ○ **Environmental and Marine Sciences** (2 👁)
	   ○ **Life Health and Medical Sciences** (9 👁)
	   ○ **Mathematics and Statistics** (11 👁)
	   ○ **Physics** (16 👁)