

Opportunity Title: Applied Statistician for Mathematical Modeling

Opportunity Reference Code: EPA-ORD-NCCT-2016-01



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 A postdoctoral research opportunity is currently available at the U.S. Environmental Protection Agency's (EPA) Office of Research and Development (ORD). The appointment will be served with the National Center for Computational Technology (NCCT) in Research Triangle Park, NC.

NCCT and the Rapid Exposure and Dosimetry (RED) project are both comprised of scientists, technologists, post docs, and student researchers with backgrounds from diverse scientific disciplines.

NCCT is responsible for developing new computational tools and providing quantitative analysis for improving environmental risk assessments and regulatory decisions pertaining to chemical safety and sustainability (<http://epa.gov/ncct/>). There are tens of thousands of chemicals that are currently in commerce, with hundreds more introduced every year. Many of these chemicals find their way into the environment and only a small fraction have been adequately assessed for potential risk. NCCT is actively involved with its partners to revolutionize how they assess chemical toxicity risk to humans and the environment.

The RED project team strives to increase the pace and effectiveness at which relevant information on chemicals with environmental exposures can be obtained. Estimates of human and ecological exposures are required as critical input to risk-based prioritization and screening of chemicals. This project seeks to develop the data, tools, and evaluation approaches required to generate rapid and scientifically-defensible exposure predictions for the full universe of existing and proposed commercial chemicals.

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The research participant will be involved in some of the following training activities addressing environmental protection needs:

- Bayesian evaluation of the predictive ability of mathematical models for chemical exposure using biomonitoring and/or other data sources
- Implementation, parameterization, and revision of mathematical models for chemical exposure
- Informatics and “Big Data” analytics using machine learning approaches
- Analysis of biomonitoring (e.g., chemical concentration in blood sample) data
- Predicting relevant exposure pathways for individual chemicals from structure features
- Assessing domain of applicability for chemical property predictors using data from high throughput property measurements and quantitative-structure activity relationships (QSARs)
- Inference of loading of environmental chemicals into U.S. waterways using exposure models and water sampling data
- Parallelize and refine model calculations to best use multi-core computer resources.
- Review evidence from the literature and NCCT databases in order to develop hypotheses and identify data sets for evaluating and revising models.

Through this opportunity, the participant will gain education and training in the general areas of mathematical modeling, statistical analysis, computational toxicology, and exposure science. She/he will be involved in highly visible computational exposure research and engaged with researchers world-wide and have the opportunity to be published in peer-reviewed journals and present research results at local and national meetings.

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.

Qualifications Applicants must have received a doctoral degree in computer science, environmental science, engineering, life sciences, chemistry, mathematics, or statistics within five years of the desired starting date, or completion of all requirements for the degree should be expected prior to the starting date. Knowledge in biomedical engineering, applied statistics, applied

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mathematics, and/or physics is desirable.

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 available to reimburse the participant's travel expenses to present the results of his/her research at scientific conferences. No funding will be 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 John Wambaugh (wambaugh.john@epa.gov). The desired start date is May 2, 2016.

Eligibility Requirements

- **Degree:** Doctoral Degree received within the last 60 month(s).
- **Discipline(s):**
 - **Chemistry and Materials Sciences** (2 )
 - **Computer, Information, and Data Sciences** (3 )
 - **Engineering** (8 )
 - **Environmental and Marine Sciences** (3 )
 - **Life Health and Medical Sciences** (8 )
 - **Mathematics and Statistics** (4 )
 - **Physics** (16 )