

**Research Participation Program
U.S. Environmental Protection Agency
Office of Research and Development
National Risk Management Research Laboratory
Research Triangle Park, North Carolina**

Project No #: EPA-ORD/NRMRL-APPCD-2009-03

A postdoctoral research project training opportunity is currently available at the U.S. Environmental Protection Agency (EPA) National Risk Management Research Laboratory (NRMRL) in Research Triangle Park, North Carolina

Project Description: The research project is with the National PM_{2.5} Program which is under the Office of Research and Development (ORD). The participant will learn the process of how to assist in the near-road and mobile emissions measurement part of the National PM_{2.5} Program – an EPA-wide administered program that supports (i) PM standards implementation, air quality modeling and analysis, (ii) the interpretation of health studies, (iii) understating the effects of atmospheric constituents on visibility impairment, and (iv) air monitoring network design. Results from emissions testing at EPA under the Program contribute nationally and internationally to speciation databases that are utilized in risk assessments, site-specific environmental decisions, rulemaking, and for determining the effectiveness of emissions control. The National PM_{2.5} Program under ORD involves the production of detailed chemical emissions profiles that undergo a series of internal and external peer reviews prior to being released. In addition to their daily laboratory duties, ORD staff is responsible for the laboratory generation of chemical emissions profiles, emissions profile introduction to various databases, and the profile dissemination in the peer-reviewed scientific literature. These activities are accomplished under rigorous quality control, safety, and health guidelines. This training opportunity will provide the selected scientist with the knowledge, skills, and abilities needed to perform the chemical analysis of organic air toxics in fine particulate matter relevant to global scale emissions research and monitoring activities.

Specific Tasks: The selected individual will be trained in tasks related to analytical method development for PM_{2.5}. This might include the development of novel analysis techniques for the determination of air toxics in fine PM emissions in accordance with a set of National Program priorities. The research will be performed under a mobile emissions source testing schedule and will require (i) interaction with other engineers and scientists to identify and resolve chassis dynamometer and analytical laboratory issues in a timely manner and (ii) completion of support documents for relevant air toxics and speciation databases. The selected individual will also learn from interactions with other individuals and teams on cross-cutting scientific issues that arise during the sampling and measurement of mobile emissions. With guidance from the mentor, the participant may be involved in the following training activities.

- Preparing PM_{2.5} sample matter for analysis and acquiring and interpreting physical, chemical, and biological data – such as those obtained from TE-GC-MS, HPLC-MS, HR-TEM, XPS, and AFM analyses – supporting the qualitative and quantitative estimates of air toxics and organic and biological particle matter, including nitro-polycyclic aromatic hydrocarbons, quinones, proteinaceous and peptide matter in PM_{2.5}.

- Maintaining laboratory instrumentation used for PM2.5 characterization according to quality control, safety, and health guidelines.
- Organizing scientific information for database input and for wider dissemination into peer-reviewed science literature, responding to peer review comments by ORD scientists, other sections of EPA, and external reviewers.
- Identifying and researching cross-cutting scientific issues related to near-road research, mobile emissions technologies and PM2.5, such as the application of novel methodologies or models, presentation of scientific findings, and procedures for emission factor development.
- Devising novel analytical-chemical approaches for quinones, nitro-PAH, proteins, peptides, and other air toxics in PM2.5 emissions from a near-road environment and interacting with other scientists external to and in EPA to improve analytical methodologies and their implementation.

The participant will be mentored by an ORD-NRMRL team member. The participant will have latitude in exercising independent initiative and judgment in the research commensurate with the level of training. EPA will review completed papers for adherence to ORD-NRMRL principles and policies, quality, and soundness of scientific conclusions.

Qualifications and Skills: Applicants should have received a doctoral degree in chemistry, biochemistry, environmental science, or a related scientific or engineering discipline within five years of the starting date, or completion of all requirements for the degree should be expected prior to the starting date. Candidates should have strong analytical and chemical laboratory skills, and be able to independently perform research while working in a multidisciplinary team environment. The appointment date is flexible but should occur before August 2009.

The program is open to all qualified individuals without regard to race, sex, religion, color, age, physical or mental disability, national origin, or status as a Vietnam era or disabled veteran. U.S. citizenship or lawful permanent resident status is preferred (but can also hold an appropriate visa status, however, an H1B visa is not appropriate).

The appointment is full-time for one year and may be renewed for up to one year upon recommendation of NRMRL and subject to availability of funds. The participant will receive a monthly stipend. The participant must show proof of health and medical insurance. **The participant does not become an EPA employee.**

Funding may be made available to reimburse 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 interviews, relocation costs, costs of tuition/school fees, or a participant's health insurance.

The Research Participation Program for EPA is administered by the Oak Ridge Institute for Science and Education. ***Please reference Project # EPA-ORD/NRMRL-APPCD-2009-03 when calling or writing for information.*** For additional information and application materials contact: Research Participation Program/NRMRL, Attn: Betty Bowling, Oak Ridge Institute for Science and Education, P.O. Box 117, Oak Ridge, Tennessee 37831-0117, Phone: (865) 576-8503 FAX: (865) 241-5219 e-mail: betty.bowling@orau.org.

An application can be found at www.ornl.gov/orise/edu/EPA/app-gugrgpd.pdf.