POSTDOCTORAL RESEARCH PROGRAM
U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL RISK MANAGEMENT RESEARCH LABORATORY
AIR POLLUTION PREVENTION AND CONTROL DIVISION
Research Triangle Park, North Carolina

Research Chemical/Environmental Engineer
Project # NRMRL/APPCD 2004-01

The U.S. Environmental Protection Agency (EPA) National Risk Management Research Laboratory's Air Pollution Prevention and Control Division (NRMRL/APPCD) located in Research Triangle Park, North Carolina, is currently seeking a postdoctoral research chemical/environmental engineer.

The research opportunity involves the development of fundamental models describing the chemistry of mercury in a flue gas environment. This will involve thermodynamic and kinetic modeling of mercury interactions with other flue gas components as well as heterogeneous interactions with fly ash and injected sorbent materials. The ideal candidate will have a strong background in classical equilibrium thermodynamic and/or kinetic modeling. The successful applicant will also be expected to conduct bench-scale experiments to develop reaction mechanisms and to obtain reaction rate constants. Experience with bench-scale experimental systems will be very helpful.

The postdoctoral researcher will be involved in a program that is examining the chemistry of mercury in a typical flue gas environment. This mercury research program seeks to understand the complex interactions of mercury with other flue gas components and particulate matter (fly ash, injected sorbents). The major ways of determining possible mechanisms are through extraction of kinetic data from simplifications of experimental flue gas conditions, calculation of kinetic and thermodynamic data for proposed reactions using quantum mechanics, and kinetic modeling based upon partial data that is available through a combination of the above techniques.

The research may involve the use of existing models that must be modified according to the specified conditions of interest. The research may also involve the writing of original models to describe reaction kinetics. The researcher would act to build EPA's in-house modeling capability while at the same time expanding his/her own range of expertise. The results of this program will be transferred to the public and private sectors by publications in the peer reviewed literature and conference presentations.

The researcher will perform somewhat independently, yet in cooperation with a team of other researchers and technicians to investigate the chemistry of mercury in flue gas. The ability to collaborate with senior level EPA engineers and scientists as well as more junior staff is essential to the success of the project. The researcher will assist with identifying and proposing potential mechanisms for reactions involving mercury in the flue gas and for working with staff experimentalist to develop research plans to investigate these. The researcher will be strongly encouraged to publish the results of his/her work in peer review journals and present data at national and international conferences.

Qualifications

Applicants should have received a doctoral degree in chemical or environmental engineering or a closely related field within three years of the desired starting date, or completion of all requirements for the degree should be expected prior to the starting date. 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.

The participants will be selected based on academic records, recommendations, research interests, compatibility of background and interests with research programs and projects at NRMRL/APPCD, and the availability of funds, staff, programs, and equipment.

The appointment is for one year and may be renewed for up to two additional years upon recommendation of NRMRL/APPCD and subject to availability of funds. The appointment is full time at the NRMRL/APPCD facilities in Research Triangle Park, NC. The appointee will not be considered an employee of EPA.

The participant will receive a stipend ranging from $4,079 and $4,887 per month depending on experience. Limited inbound travel and moving expenses may be reimbursed according to established policies.

The participant must show proof of health and medical insurance. This can be obtained through ORISE.

The Postdoctoral Research Program for NRMRL is administered by the Oak Ridge Institute for Science and Education. ***Please reference Project # NRMRL/APPCD 2004-01 when calling or writing for information.*** For additional information and application materials contact: Postdoctoral Research Program/NRMRL, Attn: Betty Bowling, Science and Engineering Education - MS 36, 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: bowlingb@orau.gov.

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