

**Statement of Work (SOW) for Student Services Contract
RFQ-RT-09-00189**

Position Title: Research Assistant

1. Project Description:

This project involves work within EPA's Office of Research and Development, National Exposure Research Laboratory (ORD/NERL). ORD/NERL's SHEDS-Multimedia model was developed in response to the Food Quality Protection Act of 1996, which requires the EPA to consider aggregate human exposure, particularly for infants and children, when making pesticide regulatory decisions. The general approach of the ORD/NERL's Stochastic Human Exposure and Dose Simulation Model for Multimedia, Multipathway Pollutants (SHEDS-Multimedia) consists of simulating an individual using HEASD's Consolidated Human Activity Database (CHAD), probabilistically simulating that individual's contact with environmental concentrations, estimating the individual's exposure time profile for multiple pathways, and applying Monte Carlo sampling to simulate the population exposure. SHEDS-Multimedia can be used to predict ranges of exposure in a population, to enhance dose model estimates, to identify critical pathways and factors, to quantify uncertainties, and to compare model predictions against real-world data. The model includes a number of unique features: preserving within-day exposure variability; innovative sensitivity and uncertainty analysis methods; an enhanced hand-to-mouth exposure algorithm; correlation of input variables; and flexible, transparent, modularized code.

One of many challenges for improvement of the SHEDS-Multimedia is that many inputs contain multiple components with a variance-covariance structure. It is very important to develop a new method which can be used to decompose the complicated structure from real data and use those individual components to simulate the overall distribution, with acceptable bias to reduce the uncertainty and bias.

2. Description of Student Services:

The EPA Office of Research and Development, National Exposure Research Laboratory, is looking for a Ph.D. student with a strong math and statistical background to develop the method in the preceding paragraph and write it in a SAS module so that SHEDS can directly call the module to implement the method. EPA will provide the test data and the student contractor, along with EPA staff, will check the methods with more data in addition to the test data.

Statistical methods such as ANOVA, GLM and MIXED models can be used to decompose the total variances by various factors, such as intra, inter personal, season, weekday and weekday and so on. Currently, various distributions are used by stratifying by those factors in SHEDS. The method is inefficient, complicated and sometimes biased since it is assumed that they are independent. Ideally, a new method can be used to compose those variances and means from the suitable factors such as season and location in the model simulation. The resulting distribution

will be close to the overall distribution of the original data. It is challenging due to the mathematical requirements.

Example:

Indoor PM_{2.5} concentration contains intra, inter-personal, season, location variance. Those factors not only affect the overall variance of the indoor PM_{2.5} concentration, but also its grand mean. It is easy to decompose the various variance and mean contributions from those factor for the overall distribution. It is more difficult for us to combine those contributions of variance and mean and generate the overall distribution which is close to the original distribution.

3. Required Expertise/Skills:

Eligible student contractors shall be a Ph.D. student in mathematics or statistics. SAS programming skills would be very useful, although it is not required. The student contractor would be responsible for literature review, statistical analyses, method searches and test, SAS module development with EPA staff and implementation in SHEDS-Multimedia.

4. Quality Assurance Requirements:

Activities conducted by the student contractor shall be governed by the EPA Quality System as described in the NERL/NCCT IIQMP dated December 21, 2005 and EPA QA/G-4 dated February 2006. Once the contract begins, the student contractor shall follow the guidance in the NERL/NCCT IIQMP and EPA QA/G-4 for all work-related tasks. Any activities requiring analysis of data performed under this contract shall be in accordance with EPA's Quality Assurance Policy. Student contractors analyzing statistical data resulting from exposure model inputs or outputs shall follow the guidance as outlined in EPA's Guidance on Systematic Planning Using the Data Quality Objectives (EPA QA/G-4) dated February 2006 (EPA/240/B-06/001: EPA Office of Environmental Information). All other activities shall follow the guidance as presented in the NERL/NCCT/IIQMP dated December 21, 2005.

5. Description of Working Conditions:

Work will be performed in an office environment using computing resources and associated facilities. No work involving chemistry/biology analytical laboratory tasks or contact with hazardous materials shall be performed under this contract.

The student contractor will be governed by the USEPA quality system, as described in the approved quality management plan for the organization where the student contractor is working. Approved quality management plans are in full compliance with the USEPA's quality system requirements as expressed in these two documents:

Policy and Program Requirements for the Mandatory Agency-wide Quality System, EPA Order 5360.1 A2, May 2000

EPA Quality Manual for Environmental Programs, EPA Order 5360 A1, May 2000

Work performed by the student contractor in a laboratory setting must be in compliance with the above referenced quality management plan. The Mentor is responsible for ensuring this compliance.

6. Principal Duty Station:

The contract will be performed at the US EPA's National Exposure Research Laboratory (NERL) in Research Triangle Park, North Carolina. The mentor for this contract will be Jianping Xue of the Exposure Modeling Research Branch in NERL's Human Exposure and Atmospheric Sciences Division (HEASD).

7. Required Background Investigation and Suitability Determination:

Students awarded a contract will have to undergo a background investigation, a check of FBI fingerprint files, and a suitability determination by the Environmental Protection Agency. Using the HPSD-12 Contract People Template found at <http://epa.gov/oam/>, student contractor will electronically submit information to Jianping Xue at xue.jianping@epa.gov within ten (10) days of contract award. Refer to Homeland Security Presidential Directive 12 (HPSD-12) for more information. If a background check reveals information to indicate the student represents a risk to the interests of EPA and the national security, the contract may be terminated

8. Taxes

The student contractors are responsible for paying all Federal, State or local income taxes required as a result of income received under this order.

9. Duration and Compensation

The initial contract will be for one year, not to exceed 730 hours. There will also be two 12 month option periods; not to exceed 800 hours each. The rate of compensation for this position is \$34.43 per hour and includes the cost of self-employment taxes for social security and Medicare.

Attachment to Work Statement
Agency Personal Verification Procedures
for Contractor Personnel
October 2006

Background: Homeland Security Presidential Directive 12 (HSPD-12), signed on August 27, 2004, requires a Government-wide, common identification standard for all Federal and contractor employees requiring physical access to Federally controlled facilities and/or logical access to Federally controlled information systems. The goals of HSPD-12 are to enhance safety and security, increase Government efficiency, reduce identity fraud, and protect personal privacy.

HSPD-12 requires that the common identification be: (a) issued based on sound criteria for verifying an individual employee's identity; (b) strongly resistant to identity fraud, tampering, counterfeiting, and terrorist exploitation; (c) rapidly authenticated electronically; and (d) issued by providers whose reliability has been established by an official accreditation process.

HSPD-12 and its common identification standard require personal identity verification (PIV), background investigations, and suitability determinations for all affected contractor and subcontractor personnel. In accordance with FAR clause 52.204-9, Personal Identity Verification of Contractor Personnel, contractors and subcontractors must comply with EPA's master plan for implementing HSPD-12.

a) Contractor Requirements for Personal Identity Verification of Contractor Personnel (including subcontractors)

Contractor Employees Requiring Access to EPA facilities or EPA Information Systems for at Least 24 Hours a Week for at Least 6 Months: All individual contractor employees whose work under the contract requires on-site access to an EPA controlled facility or logical access to an EPA information system for at least 24 hours a week for at least 6 months a year, will be required to undergo a background investigation in order to receive an EPA Personnel Access and Security System (EPASS) badge.

To begin the PIV process, the contractor should submit to the Contracting Officer Representative (COR) within ten (10) days of contract award or contract modification with this Attachment to Work Statement AAgency Personal Verification Procedures for Contractor Personnel, the following information in electronic format via secure means using the HSPD-12 Contractor Template found at <http://epa.gov.oam/>. The template was developed to assist in the transmission of the required contractor employee information in a uniform format. The template also contains drop down menus when entering data in various data cells. Specifically, the 8 data elements, Employee Type, Program Office, Work City and State, Birth State, Birth Country, Citizenship, Previous Investigation and Investigative Agency, contain drop down menus.

- § Contract number;
- § Contract expiration date;
- § Name, address, and phone number of the Contractor Program Manager point of contact

- § Name, date of birth, place of birth (city, state, country), and Social Security Number for all contractor employees identified above. (NOTE: This information must be protected at all times, including during transmission, according to the requirements of the Privacy Act of 1974; see <http://www.epa.gov/privacy/>);
- § Employee Type, Position, Email address, Program Office, Work City and State, An indication of which contractor employees are foreign nationals;
- § Name of each contractor employee claiming to have a previous, favorably adjudicated Federal background investigation on record, and the name of the Federal Agency that required the investigation, and the completion date.

The contract-level COR will upload this information to the Office of Administrative Services Information System (OASIS) personnel security database.

After submission of the preliminary information, the contractor will be notified by the contract-level COR or PSB when to begin providing all information on Standard Form (SF) 85P, Questionnaire for Public Trust Positions, and submit the form electronically to PSB via the Office of Personnel Management's (OPM's) Electronic Questionnaires for Investigations Processing (e-QIP) system. Instructions for using e-QIP, filling out, and submitting the SF 85P on-line, can be found at <http://www.opm.gov/e-qip/reference.asp>. As part of the investigative and EPASS badging processes, contractor employees must be fingerprinted, photographed and provide two forms of identification, at a time and location specified by the COR. These fingerprints will be sent to the Federal Bureau of Investigation (FBI) for processing.

Contractor employees with a favorably adjudicated Federal background investigation at the National Agency Check and Inquiries (NACI) level or above, completed within the past 5 years and verified by EPA, do not require an additional investigation unless one is requested by the Contracting Officer (CO) or contract-level Contracting Officer Representative (COR). These employees must still be fingerprinted at a time and location specified by the COR.

In order to prevent any interruption of contractor services pending the completion of the OPM background investigation, the Office of Administrative Services (OAS) Security Management Division (SMD) has procedures in place to issue temporary or provisional badges.

When reporting in person, as directed by the contract-level COR, contractor employees must provide two forms of original identity source documents from the lists on Form I-9, OMB No.1615-0047, Employment Eligibility Verification (available at <http://www.uscis.gov/graphics/formsfee/forms/files/i-9.pdf>). At least one document shall be a valid State or Federal Government-issued picture identification.

Contractor Employees Requiring EPA Access for Less than 24 Hours a Week for 6 Months:
These contractor employees may be subject to the above requirements, and may have limited and controlled access to facilities and information systems.

Foreign National Contractor Employees: To be eligible to work on-site at an EPA controlled facility or to access EPA information systems, a foreign national contractor employee must have been admitted to the U.S. on an Immigrant Visa or a Non-Immigrant Work Authorization Visa.

Foreign nationals requiring access to an EPA controlled facility or EPA information system for at least 24 hours a week for at least 6 months a year must meet the above requirements for an EPASS badge, and in addition:

- § In the AContinuation Space@ on the SF 85P, provide the visa number, issuance location, and issuance date for the visa used for entry to the U.S;
- § When presenting two identification source documents, as described above, provide at least one from List A on Form 1-9.

When determining a foreign national contractor employee=s eligibility for an EPASS badge, EPA will consider the type of visa presented (immigrant vs. non-immigrant) and the reciprocity agreement between the U.S. and the individual=s country of origin. These considerations are in addition to the Ared flag@ issues listed below.

Screening of the SF 85P: Information contained on the SF 85P may demonstrate that a contractor employee is not suitable to be given access to EPA facilities or information systems. PSB will screen information entered on the SF 85P prior to OPM initiating the background investigation. For individuals with admitted, derogatory information, issuance of an EPASS badge may be delayed pending further EPA review. Contractors are responsible for providing qualified personnel in accordance with requirements stated elsewhere in this contract. Contractors will only be notified by the COR if any contractor employee is found unsuitable to perform as a result of a background investigation, and must be immediately replaced by the contractor. The following are possible "red flags":

- Employment - Having been fired from a previous job, or having left under unfavorable circumstances within the past 7 years (Question 12 on the SF 85P);
- Selective Service - Failure to register with the Selective Service System; this applies to male applicants born after December 31, 1959 (Question 17 on the SF 85P);
- Police Records - Within the past 7 years, any arrest, charge, or conviction that has been upheld for violent or dangerous behavior or a pattern of arrests that demonstrates disregard for the law (Question 20 on the SF 85P);
- Illegal Drugs - Illegal use within the previous year, or drug manufacture or other involvement for profit within the past 7 years (Question 21 on the SF 85P).

b) Returning Badges

The contractor is responsible for ensuring that all badges are returned to the COR at the conclusion of the contract or when contractor on-site services are no longer required, or when an individual contractor employee leaves.

c) Subcontracts

These requirements must be incorporated into all subcontracts wherein employees= work under the subcontract requires physical access to an EPA controlled facility or logical access to an EPA information system for 6 months or longer.

d) Appeals

Contractors have the right to appeal, in writing to the COR, a determination to deny or revoke a badge. If the COR believes an appeal is justified, he/she will forward it to:

U.S. Environmental Protection Agency
Personnel Security Branch (Mail Code 3206M)

1200 Pennsylvania Avenue, NW
Washington, DC 20460

PSB=s decision on behalf of the Agency will be final and not subject to further appeal.

e) Definitions

- EPA Information System@ means an information system [44 U.S.C. 3502(8)] used or operated by EPA, or a contractor of EPA or other organization on behalf of the Agency.
- EPA Controlled Facilities@ means:
 - EPA or Federally-owned buildings or leased space, whether for single or multi-tenant occupancy, and its grounds and approaches, all or any portion of which are under the jurisdiction, custody or control of the Agency;
 - EPA or Federally controlled commercial space shared with non-government tenants. For example, if a department or agency leased the 10th floor of a commercial building, the Directive applies to the 10th floor only;
 - Government-owned contractor-operated facilities, including laboratories;
 - The term does not apply to educational institutions that conduct activities on behalf of departments or the agency or at which Federal Employees are hosted unless specifically designated as such by the sponsoring department or agency.

❖ "Foreign National@ means an individual who is not a United States citizen.