

ANNOUNCEMENT FOR PERSONAL SERVICES  
CONTRACT FOR STUDENT SERVICES

U. S. Environmental Protection Agency  
Office of Research and Development  
National Exposure Research Laboratory  
Human Exposure and Atmospheric Sciences Division  
Exposure Modeling Research Branch

**RFQ-RT-09-00189**

The U. S. Environmental Protection Agency (EPA) Office of Research and Development (ORD) is seeking individuals, at least 18 years of age, who are studying for a Ph.D. in mathematics or statistics to provide services under a contractual agreement with its National Exposure Research Laboratory (NERL) in Research Triangle Park, North Carolina. It is part-time work.

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 improvements of the SHEDS-Multimedia is that many inputs contain components with variance-covariance structure. It is very important to invent 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.

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, method can be used to compose those variances and means from the suitable factors such as season, 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 mathematics requirements.

Example:

Indoor Pm2.5 concentration contains intra, inter-personal, season, location variance. Those factors not only affect overall variance of Indoor Pm2.5 and also its grand mean. It is easy to decompose the various variance and mean contributions from those factor for the overall distribution. It is challenge for us to put those contributions of variance and mean and generate the overall distribution which is close to the original distribution.

Tasks that the student contractor would perform include, but are not limited to: conducting literature review, statistical analyses, method searches and test, SAS module development with EPA staffs and implementation in SHEDS-Multimedia.

Working knowledge of various computer programs/software and methods to perform data management and reduction and database development is desirable, as well as SAS or other experience to present results. Ability to work in multidisciplinary teams and communicate results is required. Duties of the student contractor are fully described in the contract Statement of Work (SOW).

The work is expected to begin in September 2009. 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. It is anticipated that the student contractor will work up to 30 hours per week with the majority of the work being performed Monday through Friday between the hours of 8:00AM and 5:00PM. The contract's duty location is the US EPA's National Exposure Research Laboratory (NERL) in Research Triangle Park, North Carolina. U. S. citizens are eligible to participate in this program. Non-U.S. citizens may be eligible to participate, depending on their immigration/visa status and the applicable regulations of the U.S. Citizenship and Immigration Services (USCIS), formerly known as the Immigration and Naturalization Service (INS). Students, who are EPA/ORD employees, or the spouse or child of an EPA/ORD employee, are not eligible to participate. The student contractor will be paid on an hourly basis (\$34.43 per hour). Student contractors shall develop a proposal within the stated range of hourly rates. This will allow price to be an equivalent comparison factor for all student contractors/offerees. If a student contractor prepares and submits a proposal based on an hourly rate other than that stated in the solicitation, the proposal must be accompanied by an explanation indicating why the range of hourly rates provided was not proposed.

Student contractors will only be paid the basic hourly rate for any hours worked beyond 40 hours during a work week. Student contractors do not accrue leave, compensatory time, or holiday benefits and are not paid for any non-work days, regardless of the reason.

The student contractor is considered an independent contractor, therefore Federal, State, Local, Social Security, and Medicare taxes will not be withheld. Student contractors are responsible for reporting income to authorities and paying taxes.

Interested student contractors may apply for this opportunity by providing the proposed hourly rate, an official college transcript, documentary evidence from USCIS (if appropriate), and a one or two page resume or statement of qualifications including:

- Full legal name
- Mailing address
- E-Mail address
- Telephone number
- Date of Birth
- Place of Birth
- Citizenship or immigration/visa status (documentary evidence from BCIS)
- Description of recent classes relevant to the SOW
- Work experience (paid or volunteer) related to scientific field(s) listed in SOW
- Analytical laboratory experience (if applicable)
- Scientific publications, including a description of the student's participation
- Copy of all college/university transcripts including a listing of courses taken and overall grade point average

**Applicants should also address the research methods they have used in the past year, such as GLM, MIXEDModel, Monte Carlo simulation, Weibull, gamma, normal, lognormal, beta and other distributions, differential equations, or partial differential equations.**

Applicants should include a statement that they propose/accept the hourly rate of \$34.43. Send the above materials to: William Goins, Contracting Specialist, via email at [goins.william@epa.gov](mailto:goins.william@epa.gov) or via fax, with cover page, to (919) 685-3427.

Prior to submitting a proposal for this contract, you should visit the EPA procurement home page at [http://www.epa.gov/oam/rtp\\_cmd/](http://www.epa.gov/oam/rtp_cmd/) to learn the full details of the contract. You should visit the website periodically to check the status of this procurement and to see whether or not any amendments (changes to the requirement of the posted contract) have been issued. If you have any questions on the information contained on the website, contact William Goins, Contracting Specialist, via email at [goins.william@epa.gov](mailto:goins.william@epa.gov) or via fax, with cover page, to (919) 685-3427.

The Government will make contract award(s) based on the student=s work experience, knowledge and skills, training and course work as it relates to the services as described in the Announcement. Students who perform under contract for EPA will be required to undergo a background check, check of FBI fingerprint files and a suitability determination by the Environmental Protection Agency. The Government may elect to award contracts to multiple students under this Announcement.

Students are responsible for submitting their proposals to ensure that they reach the Government office by the date/time specified.

Any proposal received at the designated Government office after the exact date/time specified for receipt is "late" and will not be considered unless it is received before contract award is made and the Contracting Officer determines that accepting the late offer would not unduly delay the acquisition, and:

1. It was transmitted electronically and received at the initial point of entry to the Government infrastructure no later than 5:00p.m., one working day prior to the date established for receipt; or
2. There is acceptable evidence to establish it was received at the Government installation and was under the Government's control prior to the date/time set for receipt; or
3. It was the only proposal received.

However, a late modification of an otherwise successful proposal, which was received by the Government prior to the date/time, specified for receipt, that makes its terms more favorable to the Government will be considered anytime it is received and may be accepted.

Acceptable evidence to establish the time of receipt at the designated Government office/installation includes the date/time stamp of that installation on the proposal wrapper, other documentary evidence of receipt maintained by the installation, or oral testimony of statements of Government personnel.

If an emergency or unanticipated event interrupts normal Government processes so that proposals cannot be received at the designated office by the exact date/time specified, and urgent Government requirements preclude amendment of the announcement, the date/time specified for receipt will be deemed extended to the same time of day specified on the first work day on which normal Government processes resume.

The Government will make contract awards based on all factors other than price. This is because the student's/recent graduates' knowledge and skills, academic and work experience, training and coursework as it relates to the services described in the Announcement is significantly more important than price. Personal interviews may be conducted with the most promising candidates. The Government may elect to award multiple contracts under this solicitation.

The evaluation of student's resumes or statements of qualification will be based on the following evaluation factors: experience with GIS methods and software; experience with data management; knowledge/experience in community-based cumulative risk assessment.

Students or recent graduates who perform under contract to EPA must have a checking or savings account at a financial institution that will accept direct deposits of Federal funds for Electronic Funds Transfer (EFT) prior to award and must register with the Central Contract Registration (CCR) and Dun and Bradstreet (D&B). To register with D&B and obtain a DUNS number, the selected student contractor(s) can call D&B at 866-705-5711 or contact D&B at <http://www.dnb.com/update>. To register for the CCR, the selected student contractor(s) can call CCR at 888-227-2423 or 296-961-5757 or contact CCR at <http://www.ccr.gov>. There is no charge to register for CCR or a DUNS number.

Students or recent graduates who perform under contract to EPA are required to undergo a background investigation consisting of a check of Federal Bureau of Investigation (FBI) name and fingerprint files, and a suitability determination. Selected students will be provided copies of

the appropriate forms, instructions on the completion of those forms, and submission requirements.

Student contractors are responsible for all costs of transportation to and from the principal duty station/location. EPA does not provide nor pay for housing, meals, or other living expenses while working at the principal duty station/location. If performance of the contract requires overnight travel, the student contractor will travel under the rules and procedures established for Federal employee travel.

EPA will be responsible for compensating student contractors in the same manner as Federal employees for any injury suffered while performing services under this contract. Student contractors are protected from personal common-law tort liability for damages to third parties arising out of his/her work under the same broad-based immunity provided to Federal employees while performing services. Properly licensed student contractors may be permitted to operate Government vehicles, if required to do so by the SOW.

Student contractors will be required to comply with Federal requirements for Standards of Ethical Conduct and Conflict of Interest.

Students or recent graduates may be offered, at Government expense, non-mandatory vaccinations, immunizations, treatments, medical examinations, and health and safety training to safeguard their health prior to beginning certain types of work which may expose them to health or safety risks in the environment.

Students or recent graduates selected for this contract will receive more information about these issues prior to contract award.