Office of Science
Financial Assistance
Funding Opportunity Announcement
DE-PS02-07ER07-18

(Eligibility Information has changed for this Notice. Please visit IIPS or Grants.gov and view the Funding Opportunity Announcement for Details.)

(Posted 3/8/2007)

Environmental Remediation Science Program

The Office of Science (SC), U.S. Department of Energy (DOE), hereby announces interest in receiving applications for research grants in the Environmental Remediation Sciences Program (ERSP). The goal of the ERSP is to support innovative, fundamental research investigating the coupled physical, chemical, and biological processes affecting the transport of subsurface contaminants at DOE sites. Applications should address hypothesis-driven research to define the key physical, chemical, and biological processes influencing the form and mobility of DOE contaminants in the subsurface. Research projects should aim to provide the scientific basis for the development of new remediation concepts or strategies for the long term stewardship of contaminated sites across the DOE complex. **Applications should address the applicability of the proposed research to DOE relevant contaminant transport processes occurring in the field.** The environment of interest is the terrestrial subsurface below the zone of root influence including both the vadose zone (unsaturated) and the saturated zone (groundwater and sediments). Phytoremediation and the study of organic contaminants are NOT addressed in this Notice. Specific Science Elements of interest to this Notice include: 1) Subsurface Physical, Chemical and Biological Processes; 2) Subsurface Microbial Ecology and Community Dynamics; 3) Novel Measurement and Monitoring Concepts, and; 4) Exploratory Research.

PREAPPLICATIONS

Potential applicants are **strongly encouraged** to submit a brief preapplication, referencing Program Solicitation DE-PS02-07ER07-18 for receipt by DOE by 4:30 p.m., Eastern Time, February 20, 2007.

Preapplications are limited to **two pages total**. Preapplications should be sent individually as a single PDF file attachment via email to: Kim.Laing@science.doe.gov. **The subject line of the email must state: "Preapplication DE-PS02-07ER07-18 - [*Science Element number*]".** [*Science Element number*] indicates to which of the four Science Elements (see pages 8-11) the preproposal is submitted. Preapplications must be received by DOE by 4:30 PM, Eastern Time, February 20, 2007. **No FAX or mail submission of preapplications will be accepted.**

Preapplications will be reviewed for conformance with the guidelines presented in this Solicitation and suitability in the technical areas specified in this Solicitation. A response to the preapplications encouraging or discouraging formal applications will be communicated to the applicants by March 6, 2007. Applicants who have not received a response regarding the status of their preapplication by this date are responsible for contacting the program to confirm this status.

Potential applicants are strongly encouraged to submit a brief preapplication that consists of no more than two pages total. This narrative should describe the research objectives, the technical approach(s), and the proposed team members and their expertise. The intent in requesting a preapplication is to save the time and effort of applicants in preparing and submitting a formal project application that may be inappropriate for the program. Preapplications will be reviewed relative to the scope and research needs as outlined in the summary paragraph and alignment with the ERSD strategic plan and long term measure. The preapplication should identify, on the cover sheet, the title of the project, the Science Element of interest (select only one), the institution or organization, principal investigator name, telephone number, fax number, and e-mail address. No budget information or biographical data need be included, nor is an institutional endorsement necessary.

APPLICATION DUE DATE: May 3, 2007, 8:00 pm, Eastern Time.

Applications must be submitted using Grants.gov, the Funding Opportunity Announcement can be found using the CFDA Number, 81.049 or the Funding Opportunity Announcement number, DE-PS02-07ER07-18. Applicants must follow the instructions and use the forms provided on Grants.gov.

FOR FURTHER INFORMATION CONTACT:

For further information regarding this notice,

Contact: Dr. David Lesmes
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SUPPLEMENTARY INFORMATION:

The Department of Energy oversees some of the largest environmental cleanup operations in the world. Cold War Era processing of uranium for nuclear power and weapons has left an enduring legacy of over 6 billion cubic meters of contaminated soil and groundwater. Innovative solutions, based on scientific understanding of subsurface processes, are needed to remediate, manage and monitor the various contaminated sites found across the DOE complex (NRC, 2000). The Environmental Remediation Sciences Division (ERSD) within the Office of Biological and Environmental Research (BER) is tasked with developing the fundamental scientific basis for understanding the fate and transport of contaminants in the subsurface. This task is guided by the ERSD long term performance measure to "provide (by 2015) sufficient scientific understanding to allow a significant fraction of DOE sites to incorporate coupled physical, chemical and biological processes into decision making for environmental remediation and long-term

stewardship." In order to meet this measure the ERSD will fund basic research to investigate the key processes affecting the mobility of subsurface contaminants found at DOE sites.

The cleanup of contaminated sites across the DOE complex presents an enormous technical, scientific and financial challenge for the Department of Energy and the nation as a whole. While technologies exist for dismantling and decommissioning surface structures such as contaminated buildings, contaminants that have entered the subsurface are exceptionally difficult to clean up. This is particularly true for those contaminants that are spread over wide areas and whose potent toxicity and persistence require removal to very low levels. Radionuclides, which are products of nuclear fuel and weapons manufacturing are of particular concern to DOE cleanup operations. Also of concern are heavy metals and non-aqueous phase liquids (NAPLs) which are found at DOE sites. This solicitation targets a subset of these contaminants listed below under the Contaminants of Concern section of the solicitation. At this time, we are NOT soliciting projects that are focused on non-aqueous phase liquids (organic contaminants).

The projected performance of subsurface remediation techniques and long term stewardship strategies is often based on insufficient knowledge of the transport behavior of contaminants in the subsurface and the mechanisms of contaminant transformation. As a result, *in situ* cleanup strategies often do not meet performance expectations and exceed both cost and time schedule estimates. At many sites, it is likely that subsurface contamination will remain long after surface remediation measures have been completed (DOE, 2001; NRC, 2000). It is therefore imperative that the DOE understand the factors that affect contaminant mobility and transformation within the subsurface in order to devise new remediation and long-term monitoring strategies and to provide realistic assessments of the threat posed by subsurface contamination. These tasks will require significant advances in our understanding of the key factors controlling the mobility and fate of contaminants in the subsurface. Additionally, these tasks will require the development of innovative tools for detecting, monitoring, modeling and stabilizing contaminants *in situ*, as well as novel techniques for removing contaminants from the subsurface.

The ERSP portfolio maintains a diverse suite of projects ranging from molecular-scale science to field-scale investigations. Of the major challenges that remain, one of the most important is the linking of molecular-scale processes to larger scale processes and ultimately, to processes occurring at the field-scale. The ultimate goal of the ERSP is to provide the DOE with field-scale descriptions of subsurface processes affecting contaminant transport or transformation. Projects funded within the ERSP should progress toward demonstrating the field relevance of processes or techniques under investigation. To promote this approach, the ERSP is soliciting applications in several targeted Science Elements addressing the investigation of contaminants of greatest concern to the DOE.

The preceding discussion is based on the ERSP Strategic Plan which is available on the ERSD website at http://www.science.doe.gov/ober/ERSD_top.html.

Contaminants of Concern

Key contaminants (and their mixtures) of interest for this Notice are:

- Radionuclides: uranium, technetium-99, strontium-90, plutonium, cesium-137, iodine-129, and neptunium-237.
- Non-Radioactive Metals: chromium(VI) and mercury.
- Nitrate and complexing agents as co-contaminants with the listed radionuclides or non-radioactive metals.

Organic contaminants (e.g., NAPLs) are NOT a focus for this Notice. Applications describing NAPL or organic contaminant degradation will not be considered at this time.

A description of the nature and extent of contamination at the principal DOE sites is available at http://www.nap.edu/books/0309065496/html/index.html/. . More detailed information is available in some cases from the major DOE sites: Hanford (http://www.hanford.gov, http://www.hanford.gov/cp/gpp/, http://www.hanford.gov/cp/gpp/science/sandt.cfm) Idaho National Laboratory (http://www.inl.gov/subsurface/environmentalissues/vadosezone.shtml) Oak Ridge Reservation (http://www.oro.doe.gov/external/Programs/EnvironmentalManagement/tabid/42/Default.aspx) and Savannah River Site (http://www.srs.gov/general/srs-home.html, http://www.srs.gov/general/programs/soil/extpage.html.

Science Elements

Applications submitted in response to this announcement must address one of the ERSP Science Elements listed below. **Each application must clearly identify the one Science Element that is most closely aligned with the proposed research.** Both single investigator projects and multi-investigator projects are encouraged within each element. Multi-investigator projects are expected to integrate multiple disciplines into the project. All projects should clearly delineate a hypothesis-driven approach to research and describe how the results of the research would ultimately improve understanding of subsurface processes at the field scale in the context of the DOE cleanup mission. A specific and well documented DOE relevance justification will be an important component of successful applications.

1) Subsurface Physical, Chemical and Biological Processes

Objective: Develop a fundamental and quantitative understanding of the physical, chemical and biological processes affecting contaminant transport, reactivity and stability in subsurface environments.

Many factors affect the transport and transformation of contaminants found in subsurface environments. Often several competing reactions occur simultaneously and produce intermediates of undetermined stability, further complicating overall quantitative descriptions of reactive transport. Additionally, at many DOE sites, DOE-relevant contaminants are found under unusual conditions of pH, ionic strength and redox potentials, and in unusual mixtures. These extreme conditions attenuate as the contaminants travel down gradient resulting in a change in the transport behavior of contaminants. Likewise, various *in situ* remediation techniques produce changes in local geochemical conditions in groundwater or vadose zone settings that directly influence contaminant transport. The metabolic activity of subsurface microorganisms or biofilm

communities can also affect the geochemical character of contaminants and subsurface materials as a consequence of the local subsurface conditions or as part of an active remediation technique.

The ERSP seeks understanding of the key physical, chemical and biological interactions that have a quantitatively important effect on contaminant transport in subsurface environments. This requires the identification and prioritization of the essential processes needed to predict the extent and rate of reactions affecting contaminant transport at DOE sites. Insight gained at the molecular scale should be used to interpret or predict processes occurring at larger scales and ultimately along groundwater flowpaths in the subsurface. Refinement of conceptual and computational models of contaminant transport based on new geochemical understanding of contaminant mobility and insight of processes at the microbe-mineral interface is also of interest. The emphasis of this science element is on understanding the integral relationships among physical, chemical and biological processes influencing contaminant transport and remediation. Applications submitted to this element need not necessarily incorporate an investigation of all three processes for situations where contaminant transport is dominated unequally by one process or another, but should describe the rationale for the focus of the research. Coordination with an ERSP field project is encouraged. The contaminants of interest for this Notice are listed above in the Contaminants of Concern section.

The following is a list of example areas of interest within this Science Element. This list is intended to illustrate, but not constrain research areas within this element:

- Understanding the fundamental chemical nature of reactive mineral surfaces, the biologically induced chemical and redox gradients across mineral-water interfaces and interactions with DOE relevant subsurface contaminants.
- Advanced techniques to assess the form, stability and distribution of immobilized DOE relevant contaminants in subsurface sediments.
- Research to identify and quantify the dominant physical and chemical mechanisms leading to the immobilization and/or remobilization of DOE relevant contaminants within the subsurface.
- Scaling of geochemical reactions and gradients, important for understanding the fate and transport of DOE relevant contaminants in the subsurface, occurring at the molecular, mineral surface and pore levels to larger scales.

2) Subsurface Microbial Ecology and Community Dynamics

Objective: Develop a quantitative understanding of the growth, activity and structure of subsurface microbial communities affecting contaminant transport.

Microorganisms detected in the subsurface can profoundly alter geochemical conditions along groundwater flowpaths. In addition to indirectly creating conditions hindering contaminant mobility, many microorganisms are known to directly biotransform contaminants to innocuous or immobile forms. This is the basis for several *in situ* bioremediation technologies and natural attenuation mechanisms and may also play a role in the effectiveness of some *in situ* barrier systems. However, the sustained manipulation of subsurface microbial communities to affect contaminant transport and/or degradation is still largely an empirical exercise. Likewise the

microbially-mediated mechanisms of natural attenuation processes and potential microbial involvement in other more physical/chemical *in situ* remediation techniques remain poorly understood. Much remains to be learned about the identity and functioning of subsurface microbial communities relevant to contaminant biotransformation processes. Of particular concern for *in situ* remediation and natural attenuation processes is a mechanistic understanding of how microbial growth and activity quantitatively relate to mineral and contaminant biotransformation. This requires a mechanistic understanding of how microorganisms access/obtain essential nutrients, electron donors and electron acceptors in order to sustain activity. Also, interactions among groups of active microorganisms need to be better understood in order to more fully explain competitive processes and shifts in community structure. Additional techniques are needed to evaluate the distribution of active microbial communities in the contaminated subsurface as well as identification of novel mechanisms of microbially mediated contaminant transformation.

The emphasis of this Science Element is on understanding the functioning of subsurface microbial communities and how their growth and activity quantitatively affects contaminant fate and transport. Successful applications will address communities involved in metal and radionuclide immobilization/stabilization processes in environments of relevance to DOE. The contaminants of interest for this Notice are listed above in the Contaminants of Concern section.

The following is a list of example areas of interest within this Science Element. This list is intended to illustrate, but not constrain research areas within this element:

- Techniques to quantitatively identify active members of subsurface microbial communities and relate growth and activity to rates of biogeochemical reactions.
- Methods to quantify rates of contaminant biotransformation by active subsurface microbial communities.
- Understanding the biogeochemical factors that govern the distribution and functioning of subsurface microbial communities.
- Improving the understanding of the metabolic potential and physiology of subsurface microorganisms catalyzing contaminant transformation and/or the transformation of subsurface materials *in situ*.

3) Novel Measurement and Monitoring Concepts

Objective: Develop innovative measurement and monitoring techniques for detecting contaminant concentration and speciation, delineating the extent of subsurface contamination and detecting subsurface processes affecting contaminant transport.

Remediation and long term containment and monitoring (e.g. monitored natural attenuation) strategies require innovative measurement tools in order to track performance and/or verify containment measures. Applications submitted under this Science Element should describe the applicability of innovative approaches to subsurface measurement or monitoring techniques to the problem of delineating contaminant transport processes in the subsurface and/or evaluating the potential for the long-term success of *in situ* remediation concepts. Areas of interest include non-invasive techniques to delineate subsurface structure, track migration of contaminants in the

subsurface, detect groundwater flow and evaluate the rate and progression of biogeochemical processes. Applications examining in-well or subsurface techniques for quantifying the concentration and speciation of contaminants, the extent of microbial activity and rates of biogeochemical processes are also within the scope of this Science Element. Coordination with an ERSP field project is encouraged. The intent is to develop novel measurement and monitoring techniques under situations where direct relevance to conceptual or computational model development in a field setting can be demonstrated. Field testing of existing prototype monitoring devices or autonomous sampling systems is not within the scope of this Science Element. The contaminants of interest for this Notice are listed above in the Contaminants of Concern section.

The following is a list of example areas of interest within this Science Element. This list is intended to illustrate, but not constrain research areas within this element:

- High(er) resolution geophysical techniques for evaluating subsurface structure, groundwater flow paths and contaminant transport.
- Novel, field-readable techniques for contaminant detection, speciation and quantification.
- New techniques for detecting and evaluating the rates of key biogeochemical activities of subsurface microorganisms affecting contaminant transport.
- Sensors for evaluating redox, chemical gradients and, mineral or contamination speciation at crucial biogeochemical interfaces.
- Quantitative techniques to measure the distribution and contaminant sorption characteristics of minerals in natural materials.

4) Exploratory Research

Objective: Stimulate initiation of research into new concepts in subsurface science and *in situ* remediation.

The intent of this Science Element is to catalyze the study of new concepts, tools and approaches that could lead to breakthroughs in subsurface remediation science. Emphasis will be on new ideas that offer exceptional promise (high payoff) but also involve substantial risk of failure and hence might not receive funding in the other Science Elements in competition with more established techniques and concepts. **The narrative portion of Exploratory Research applications is limited to a maximum of 10 pages.** Eligible areas include the development of novel insights into subsurface contaminant transport processes, new *in situ* remediation techniques, innovative *in situ* detection and monitoring techniques, novel mechanisms of contaminant removal from the subsurface, and novel applications of advanced characterization methods (e.g., neutron imaging, Tera-Hertz spectroscopy, Free Electron Lasers, etc.) to the ERSP Science Elements described above. Exploratory research projects will be of short term duration and funding. These projects should be viewed as providing an opportunity to conduct preliminary research and to develop novel ideas for later, more substantial funding opportunities within the ERSP. Applications submitted to this Science Element should address topics that could lead to breakthroughs in one or more of the other Science Elements in the program and align with the ERSP focus on subsurface processes occurring below the zone of root influence.

The contaminants of interest for this Notice are listed above in the Contaminants of Concern section.

Related Programs

ERSD strongly encourages investigators to familiarize themselves with the resources and potential partnering opportunities provided by ERSD. Leveraging of these resources is strongly encouraged. ERSD funds basic research on subsurface contaminant transport and remediation processes ranging from molecular scale processes to field scale processes via a unique set of program resources and partnering. Programmatic resources include the Environmental Molecular Science Laboratory (EMSL, http://www.emsl.pnl.gov/) located at Pacific Northwest National Laboratory. EMSL is a National Scientific User Facility that supports an array of integrative experimental and computational science resources that are made available to the scientific community. Investigators are strongly encouraged to consider EMSL capabilities in developing applications.

ERSD jointly funds several Environmental Molecular Science Institutes (EMSIs) with the National Science Foundation (NSF). ERSD supported EMSIs are located at Stanford University, Penn State University and Stony Brook University, and are focusing on the fundamental nature of chemical and biological processes occurring at important environmental interfaces (http://pangea.stanford.edu/research/emsi/index.html), the kinetics and scaling of biogeochemical processes (http://www.ceka.psu.edu/) and the behavior of environmental contaminants in natural and engineered systems (http://www.cems.stonybrook.edu/). ERSD also provides support for experimental work at the national synchrotron light sources (see Availability of User Facilities and Other Specialized Resources below).

Biological processes profoundly influence contaminant transport at a variety of scales in the subsurface. ERSD maintains a close relationship with the Genomics:GTL program (http://doegenomestolife.org/) and the microbial genome sequencing efforts at the Joint Genome Institute (JGI, http://www.jgi.doe.gov/) in order to take advantage of revolutionary genome-enabled and systems biology techniques that promise a more mechanistic understanding of subsurface microbial metabolism affecting contaminant transport.

DOE's substantial computational resources are now being applied to simulations of subsurface reactive transport through ERSD's participation in the SciDAC (Scientific Discovery through Advanced Computing, http://www.osti.gov/scidac/) program. The SciDAC program funds computationally intensive research on fundamental science questions using some of the world's most powerful computers.

Integrative research on subsurface biogeochemical processes affecting contaminant metal and radionuclide transport conducted under the former Natural and Accelerated Bioremediation Research (NABIR) program (http://www.lbl.gov/NABIR/index.html) has brought new insights into the stimulation of subsurface microbial communities to affect contaminant transport from the laboratory to *in situ* field experiments of radionuclide bioremediation at the ERSD Field Research Center (http://www.esd.ornl.gov/nabirfrc/), at uranium mill tailing sites (UMTRA, http://www.pnl.gov/nabir-umtra/index.stm) and at the Hanford site (

http://esd.lbl.gov/ERT/hanford100h/index.html). Technology development in support of DOE's subsurface and high level waste cleanup programs to reduce costs and improve efficiency was the focus of the former Environmental Management Science Program (EMSP) program (http://www.science.doe.gov/ober/ERSD/ersd_emsp.html).

Collaboration and Training

Multi-disciplinary and inter-institutional collaborations are strongly encouraged to enhance and strengthen research capabilities as needed. Collaboration could include institutions such as universities, industry, non-profit organizations, federal laboratories and Federally Funded Research and Development Centers (FFRDCs), including the DOE National Laboratories. All applications should include letters of agreement to collaborate from included collaborators. These letters should specify the contributions the collaborators intend to make if the application is accepted and funded. The application should present a management structure for integrating collaborating investigators. DOE may encourage collaboration among prospective investigators by promoting joint applications or joint research projects based on review of the Letters of Intent or through other forms of communication. Involvement of students and post doctoral scientists is encouraged. Refer to http://www.science.doe.gov/grants/Colab.html for details.

Availability of User Facilities and Other Specialized Resources

The ERSD within the DOE Office of Biological and Environmental Research (http://www.science.doe.gov/ober/ERSD_top.html) has responsibility for programs and facilities that offer unique and complementary resources for the conduct of ERSP research. Potential applicants are encouraged to consider use of these programs/facilities in development of applications.

- The Environmental Molecular Science Laboratory (EMSL) at the Pacific Northwest National Laboratory, (http://www.emsl.pnl.gov), is operated by ERSD as a National Scientific User Facility with state-of-the-art instrumentation in environmental spectroscopy (http://www.emsl.pnl.gov/capabs/esbf.shtml), high field magnetic resonance spectroscopy (http://www.emsl.pnl.gov/capabs/hfmrf.shtml), high performance mass spectrometry (http://www.emsl.pnl.gov/capabs/hpmsf.shtml), high resolution electron microscopy (http://www.emsl.pnl.gov/capabs/insf.shtml), and high performance computing (http://www.emsl.pnl.gov/capabs/mscf.shtml).

  The EMSL's high performance supercomputer is available for computational research in the physical, chemical and biological sciences, including geochemistry, groundwater flow and transport simulations, molecular thermodynamics and kinetics, heavy element chemistry, geochemistry, and surface chemistry (http://www.emsl.pnl.gov/capabs/mscf.shtml). Remote and on-site access to the 11+ TeraFlops, Linux-based Hewlett-Packard (HP) system and associated software, and visualization and data storage capabilities are available through a separate application and external peer review process. Applications for allocations of large blocks of time on the EMSL's HP system are solicited annually (usually in February or March for allocations

beginning in October). Awards typically average 500,000 hours for multi-investigator teams (http://mscf.emsl.pnl.gov/getting_started/list_proposals.shtml).

DOE also provides compute cycles to the scientific user community at other high performance computing centers. For example, the National Energy Research Scientific Computing Center (NERSC) at the Lawrence Berkeley National Laboratory provides a 6080 processor IBM SP RS/6000 system plus extensive data storage capabilities (http://www.nersc.gov). NERSC usually solicits proposals for time allocations in June or July. Proposals are externally peer reviewed and time awards are announced in December. The National Center for Computational Sciences (NCCS) at the Oak Ridge National Laboratory has several supercomputers available to users, including the Cray X1E Phoenix system, the Cray XT3 Jaguar system, and the SGI Altix Ram system (http://nccs.gov/). Proposals for time allocations on the various systems at the NCCS may be submitted throughout the year, but 95% of the awards are for "high-impact, grand challenge type projects" (see http://nccs.gov/accounts/index.html, for additional information.)

- The ERSD Field Research Center (FRC) at Oak Ridge National Laboratory (http://www.esd.ornl.gov/nabirfrc/) and two other newly established field research sites at the Hanford 300 Area and the Old Rifle UMTRA site provide DOE sites where scientists can conduct field-scale research and obtain DOE relevant samples of soils, sediments, and ground waters for laboratory research. A useful general orientation for prospective investigators is available at http://public.ornl.gov/nabirfrc/workshop2006_posters.cfm.
- ERSD (http://www.science.doe.gov/ober/ober_top.html) provides user support for experiments at synchrotron light sources that are capable of providing structural and chemical information often unavailable with conventional sources of x-rays. DOE laboratories with synchrotrons supporting ERSD research and points of contact include: Argonne National Laboratory (http://www.aps.anl.gov/index.html), contact Ken Kemner (kemner@anl.gov); Brookhaven National Laboratory (http://www.nsls.bnl.gov/), contact Jeffrey Fitts (fitts@bnl.gov); Lawrence Berkeley National Laboratory (http://esd.lbl.gov/als_environmental_program/), contact Susan Hubbard (sshubbard@lbl.gov); and Stanford Synchrotron Radiation Laboratory (http://www-ssrl.slac.stanford.edu/mes/remedi/index.html), contact John Bargar, bargar@slac.stanford.edu). Use of the synchrotron light sources requires a separate approval process.

REFERENCES

National Research Council, 2000. Research Needs in Subsurface Science, U.S. Department of Energy's Environmental Management Science Program. National Academy Press, Washington, DC. http://www.nap.edu/browse.html

Department of Energy, 2001. A Report to Congress on Long-Term Stewardship. Office of Environmental Management. Washington, DC.
http://www.lm.doe.gov/documents/3_pro_doc/lts_study/rpt_to_congress_vol_I.pdf

Davis, J.A.; S.B. Yabusaki; C.I. Steefel; J.M. Zachara; G.P. Curtis; G.D. Redden; L.J. Criscenti; B.D. Honeyman 2004. Assessing Conceptual Models for Subsurface Reactive Transport of Inorganic Contaminants EOS 85, 449-455. http://www.iscmem.org/Documents/Publication_Davis2004Eos.pdf).

Relevance to Mission

A key consideration in the evaluation of research applications will be applicability to the Environmental Remediation Sciences Division (ERSD) mission of environmental remediation and long term stewardship of DOE sites. Applicants will need to identify specific areas of scientific need and make a strong case for the value of the proposed research in helping resolve those needs. The application should explain how resolution of these needs could improve capabilities in site stewardship and/or understanding/controlling subsurface contaminant fate and transport. Therefore, **all applications submitted in response to this Notice must explicitly state how the proposed research will support the accomplishment of the BER Long Term Measure "to provide sufficient scientific understanding to allow a significant fraction of DOE sites to incorporate coupled physical, chemical and biological processes into decision making for environmental remediation and long-term stewardship."** DOE will also consider, as part of the evaluation, program policy factors including balance among the program areas and research already in progress.

Other Special Requirements:

Only the Lead Institution and PI need submit an application to this Notice at this time but the submission must include all budgetary information for all funded Co-PIs. In addition to titles and contact information, the title page should include a table listing the identity of the Lead Institution (and PI) and all funded Co-PIs, their institutions and the amount of funding requested for each year for the project for each funded investigator. Additionally, submitting (lead) PIs should include the entire submission package (application, budgets for all funded PIs, certification forms, etc.) in one pdf document as an attachment within the Grants.gov submission system.

The one-page Abstract should be a self-contained document that identifies the name of the applicant, the project director/principal investigator(s), the project title, the objectives of the project, the hypotheses to be tested, the proposed experimental design, the names of all investigators and their affiliations, and the potential impact of the project to DOE (i.e., benefits, outcomes).

Attachments should include short (2 pages) curriculum vitae, a QA/QC plan, a listing of all current and pending federal support and Letters of Intent for proposed collaborators (when applicable).

Grantees must comply with federal and state laws and regulations as appropriate. Although compliance with the National Environmental Policy Act (NEPA) is the responsibility of DOE, grantees proposing to conduct field-related research should expect to provide information necessary for the DOE to complete the NEPA review and documentation.

Program Funding

It is anticipated that up to **$6,000,000 will be available for approximately 30 awards** to be made in Fiscal Year 2008, contingent on the availability of appropriated funds. Funds for this research will come from the Environmental Remediation Sciences Program. DOE is under no obligation to pay for any costs associated with preparation or submission of applications. DOE reserves the right to fund, in whole or in part, any, all, or none of the applications submitted in response to this Notice.

For Science Elements 1, 2 and 3, applicants may request project support up to three years, with out-year support contingent on the availability of funds, progress of the research and programmatic needs. Annual budgets for single investigator projects may not exceed $250,000/year total costs. Annual budgets for multi investigator projects may not exceed $450,000/year total costs.

For Science Element 4 (Exploratory Research), applicants may request project support for up to two years with a total budget of up to $150,000 total costs. We anticipate funding up to five projects in this Science Element.

Posted on the Office of Science Grants and Contracts Web Site
January 16, 2007.