PARTNERS IN ENVIRONMENTAL TECHNOLOGY

SERDP Strategic Environmental Research and Development Program

ESTCP

INFORMATION B•U•L•L•E•T•I•N

SPRING 2002
NUMBER 12

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PARTNERS IN ENVIRONMENTAL TECHNOLOGY

TECHNICAL SYMPOSIUM & WORKSHOP

CALL FOR POSTER ABSTRACTS

Both federal and non-federal submitters will be considered.

There is a limited number of spaces available to display poster presentations of technologies that relate to the Symposium & Workshop technical session topics (see Symposium Announcement at right). If you are interested in being considered for poster space, please refer to the abstract guidelines that are posted at www.serdp.org or www.estcp.org.

Abstracts are due August 23, 2002.

There is no additional charge for poster space.

Medium Caliber Ammo Umbrella Program: Another Chapter of the "Green Bullet" Effort

In the last year, thousands of pounds of hazardous barium nitrate and lead azide, a heavy metal, were used in the production of the military's medium caliber munitions. These and other hazardous materials used in munitions production have a harmful effect on the environment that spans the life cycle of the munitions and adversely affects production and cleanup costs.

In an effort to address 20 mm to 60 mm caliber ammunition environmental problems in a systematic manner, SERDP initiated an umbrella program to ensure highly focused efforts that are led by knowledgeable managers within the medium caliber munitions research community. To better focus on these environmental issues, the U.S. Army, SERDP, and the medium caliber ammunition technical community formed a Technical Advisory Committee (TAC). The TAC consists of representatives from the armed services, key government agencies, major contractors, and academia. The TAC's objectives are to study and prioritize environmental issues, write and coordinate Statements of Need (SON) for research, evaluate and provide funding recommendations to SERDP, and review the technical progress of on-going projects. The umbrella project approach is now a fully funded SERDP effort under the Pollution Prevention Technology Thrust Area (PP-1237: *Green Medium Caliber Munitions*) and is managed by Principal Investigator (PI) Mr. Roman Fedyna from the U.S. Army Tank-automotive & Armaments Command—Armament Research, Development & Engineering Center (TACOM-ARDEC).

As depicted above, medium caliber munitions are more complex than small caliber munitions.

See MEDIUM CALIBER MUNITIONS, page 6

THE PARTNERS IN ENVIRONMENTAL TECHNOLOGY TECHNICAL SYMPOSIUM & WORKSHOP

"Meeting DoD's Environmental Challenges"

December 3-5, 2002
Marriott Wardman Park Hotel ✦ Washington, D.C.

This year's technical program will feature comprehensive sessions that will illustrate how SERDP and ESTCP research & development and demonstration & validation efforts are assisting the Department of Defense to address increasingly complex environmental challenges. Take a look at the preliminary list of technical sessions…

- **Treatment of Range Contaminants**
- **Military Impacts on Marine Mammals**
- **Greening the Industrial Complex**
- **Sustainable Ranges: Characterization, Fate & Transport, Effects**
- **Sustainable Ranges: Air Quality & Noise Issues**
- **Greening the Force: Weapons Platforms**
- **Greening the Force: Weapons**
- **Reducing the Cost of Long-Term Remedial Actions**
- **UXO: Research/Fundamentals**
- **UXO: Demonstration/Deployment**
- **Perchlorate Treatment and Toxicity**
- **Ecosystems Management for Threatened and Endangered Species**

For updated Symposium information, visit one of our web sites www.serdp.org or www.estcp.org or call (703) 736-4548 for assistance.

PARTNERS IN ENVIRONMENTAL TECHNOLOGY

S•U•C•C•E•S•S STORIES

SERDP-funded research and development efforts and ESTCP-funded demonstration and validation activities continue to provide a rapidly increasing number of outstanding technical and environmental advances. These developments are highly important and relevant to the Department of Defense (DoD), Department of Energy (DOE), Environmental Protection Agency (EPA), and many other user communities.

SERDP
Strategic Environmental Research and Development Program

SUCCESS STORY

Ensuring Sustainable Ranges for Military Readiness

The long-term viability and utility of training and testing ranges is essential to DoD mission readiness. Early recognition and mitigation of degraded lands used for these purposes helps avoid high land restoration costs and the risk of destroying the viability of ranges.

To help develop the tools and technology needed to ensure the sustainability of ranges, SERDP has been funding researchers at Bechtel Nevada in Las Vegas. The research team has been extremely successful at addressing the dual needs of identifying degraded range lands and developing new techniques to mitigate degradation. This project, *Diagnostic Tools and Reclamation Technology for Mitigating Impacts of DoD/DOE Activities on Arid Areas* (CS-1131), has been focusing on specific problems at Fort Irwin, CA, the Army's National Training Center located in the Mojave Desert, but the research findings are applicable to any facility in arid and semi-arid areas.

Using the correlation between the percentage of vegetation cover to the degree of land disturbance, or sustainable-use thresholds, scientists from Bechtel Nevada and their collaborators have developed an image collection and process technique that avoids the high cost of labor-intensive ground surveys. Conventional remote-sensing techniques were evaluated to determine optimal photo scales for capturing vegetation-cover information from digital images. New image processing techniques were developed with medical-image processing software used to identify cancer cells or detect flaws in electronic semiconductor chips. These new techniques provide a tool to measure vegetation cover rapidly from aerial photographs and satellite digital images with one-meter resolution. Vegetation cover data now can be displayed spatially providing accurate geographic information system maps. This allows for an effective communication of land condition, sustainable-use thresholds, and a means to establish a prioritized mitigation plan for returning the land to sustainable levels at a significant savings in cost and time to the facility.

Restoration trials were implemented in 2001 at Fort Irwin, CA, to enhance germination and establishment of dominant plant species.

The reclamation components of the project have focused on developing techniques to mitigate impacts of training and testing through the establishment of dominant plant species on disturbed areas. Parameters that enhance seed germination such as pretreating seed to remove seed coat inhibitors, maintaining proper moisture during germination, and seeding when temperatures are optimal for germination were identified through specific empirical testing with various reclamation trials at Fort Irwin and DOE sites.

Installation managers familiar with the project's diagnostic and reclamation techniques are optimistic about the application of these techniques at their sites and the potential for reducing the costs to identify and mitigate impacts. For example, personnel at the Marine Corps Air Ground Combat Center in Twentynine Palms, CA, see the potential for remote change analysis applications

See SUSTAINABLE RANGES, page 5

SERDP
Strategic Environmental Research and Development Program

SUCCESS STORY

SERDP Researchers Use Innovative Sampling Techniques to Characterize Explosives Residues on Ranges

Testing and training ranges are key to maintaining the readiness of U.S. Armed Forces. The firing of live munitions as part of training exercises on these ranges can result in the release of explosives compounds. The current state of knowledge concerning the fate and impact of these explosives compounds and residues is inadequate to ensure the sound management of military ranges as sustainable resources. Information regarding the composition, concentration, and distribution of residual explosives compounds and their combustion and breakdown products, coupled with an understanding of the ability of these materials to migrate in the environment, is required to determine accurately the risks associated with these substances.

SERDP is helping to address this gap in knowledge through its sponsorship of a research effort that is focused on the development of techniques to characterize explosives residues found on active test and training ranges, especially heavy artillery impact and firing points and hand grenade ranges. Under the leadership of Dr. Judith Pennington from the U.S. Army Engineer Research & Development Center (ERDC), Vicksburg, MS, the research team working on *Distribution and Fate of Energetics on DoD Test and Training Ranges* (CP-1155) is seeking to provide the Department of Defense with techniques to assess the potential for surface water and groundwater impacts from high explosives residues (TNT, PETN, RDX, and HMX) at testing and training ranges.

Accurate estimation of the amounts of residues resulting from high-order detonation of munitions is complicated by the presence of residues from previous detonations and the inability to obtain easily samples of adequate size to overcome spatial heterogeneity in residue deposition. In addition, the footprint of deposition of these compounds must be identified if the proper areas are to be sampled. To overcome these obstacles, Co-Principal Investigator Dr. Thomas Jenkins from ERDC's Cold Regions Research and Engineering Laboratory is employing a highly-innovative sampling technique using snow-covered ranges. The major advantages of using snow-covered ranges for these estimates are as follows: (1) the pristine snow cover provides an uncontaminated surface, unaffected by previous detonations, (2) the black soot produced from the detonation of TNT delineates the areas of residue deposition, and (3) surface snow provides a convenient matrix for collection of large surface area samples essential for characterization of heterogeneously distributed residues.

To date, experiments have been conducted at two snow-covered installations where hand grenades, mortars, mines, and plastic explosives were detonated. In all cases, the amounts of residues of explosives deposited were very small, but detectable. RDX accounted for most of the residue deposited, with lesser amounts of HMX and TNT. The locations where explosive material residues were deposited were identified by the presence of black soot from the detonation of TNT on the surface of the otherwise clean snow. Large surface snow samples (1-9 m^2) were collected with a snow shovel (see photo at right), the snow was melted and filtered, the water and filtered soot were extracted separately, and both extracts were analyzed by gas chromatography (GC) and high performance liquid chromatography (HPLC).

The results of the snow-sampling study demonstrate the utility of using snow surfaces to determine the amounts of explosives residues resulting from detonations of military munitions. While these initial results are preliminary, several generalizations can be made. Residues of TNT were present at much lower concentrations than RDX. HMX also was observed in residues, with approximate surface concentrations of about 20 percent of RDX.

In a parallel effort, surface soils (without snow) were sampled and analyzed at four hand grenade ranges. Initial results suggest that while these ranges are a potential source of explosives residuals, these relatively small areas are amenable to soil remediation techniques. Preliminary results of dissolution studies indicate that formulations of explosives used in munitions dissolve more slowly than the individual components. These results suggest that mobilization of explosives from low order detonations would require longer than suggested by dissolution kinetics of the individual components. These data have special significance in estimating the source term for leaching of explosives from ranges to groundwater.

Once the composition of post-blast residues and the environmental transformation products of explosives have been identified using the techniques outlined above, Dr. Pennington and her team of researchers will develop transport parameters to estimate the distribution and concentration of the explosives residues at ranges. Transport parameter studies will concentrate on main-charge explosives, their transformation products, and explosives residues for which fate and transport data are nonexistent. Firing

See INNOVATIVE SAMPLING, page 4

Pristine snow enables innovative sampling of explosives residues from individual detonations.

F ◆ A ◆ Q s

from SERDP and ESTCP Principal Investigators

SUBJECT: SERDP SOLICITATIONS

Q: *What are the differences between SERDP Core and SEED solicitations and the due dates for proposal submission?*

A: SERDP usually conducts two solicitations annually—a "Core" solicitation and a "SEED" solicitation. In preparation for these solicitations, SERDP develops two categories of Statements of Need (SON) for the respective solicitations: Core SONs and SERDP Exploratory Development program (SEED) SONs.

The Core solicitation provides funding in various amounts for multi-year projects. These competitively selected projects are referred to as Core projects. The Core solicitation for FY 2003 was released on November 14, 2001. Preproposals from the non-federal sector were due January 10, 2002, and federal proposals were due March 7, 2002.

The SEED program is designed to provide initial funding for high-risk, high payoff projects. SEED proposals are submitted in response to SEED SONs, and when selected, are referred to as SEED projects. Funding is limited to a maximum of $100,000 for one year. SEED projects that are successful and wish to pursue follow-on funding are provided the opportunity to compete for additional funds. The FY 2003 SEED solicitation was released on November 14, 2001, with proposals due on February 7, 2002.

Please note the difference in due dates for the two submissions. Responses to the Core solicitations (i.e., pre-proposals) from the non-federal sector are due in early January, and responses from the federal sector are due in early March. Responses to the SEED solicitations generally are due the first week in February.

SUBJECT: ESTCP DEMONSTRATION PLANS

Q: *How can I ensure that my Demonstration Plan is reviewed and approved in a timely manner?*

A: The most important aspect of a technically sound Demonstration Plan is that it adhere to the guidance provided on the ESTCP web site **http://www.estcp.org/documents/guidance/index.cfm**. PIs are directed to read the guidance that is appropriate for their thrust area and technology and are strongly encouraged to contact their ESTCP Program Manager with any questions.

Key elements of the Demonstration Plan, as described in the guidance on the web site, include the following:

Performance Objectives. A Demonstration Plan must include realistic performance objectives including associated measurable performance metrics that are amenable to some form of confirmation analysis (e.g., statistics). Examples include treating contaminated groundwater to acceptable concentrations, determining the number of false positives/false negatives with an innovative sampling device, or assessing the amount of contaminant removed with a treatment technology. Performance also can be compared to the results of similar conventional technologies. PIs should provide actual quantitative performance metrics and describe how the performance criteria will be measured.

Experimental Design. Be sure to provide a matrix of the operational parameters that will be varied during the demonstration in order to obtain optimal performance. This matrix is required even though the operational parameters themselves usually are not necessarily performance objectives.

Discussion of Data Quality Indicators. A Demonstration Plan must identify acceptable levels of precision/accuracy for the data obtained. Without this information, an insufficient number of samples might be analyzed, and any claim of success may be compromised if supported by a minimum of data of unknown precision/accuracy. To obtain acceptable levels of precision/accuracy, it is necessary to take replicate samples, or sequential samples over time, and split these samples into duplicates for actual analytical tests. Samples must be analyzed for each and every performance criterion. For monitoring technology demonstrations, a common omission has been the failure to provide the acceptable level of false positives/negatives as a performance criterion.

Realistic Bench-Scale Studies. While not a formal requirement, many demonstrations are based on bench-scale efforts that fail to account for site-specific conditions that might severely influence the field portion of the project. It is important when conducting bench-scale efforts to test for key factors and conditions that might influence significantly a technology's performance.

Pre-Demonstration Site Characterization. For field remediation technologies, pre-demonstration efforts are strongly encouraged, especially in light of the uncertainty associated with site heterogeneities. Pre-demonstration site characterizations often miss identifying conditions that ultimately compromise the performance effectiveness of the technology.

Waste Characterization. For waste treatment technology demonstrations, PIs are strongly encouraged to provide accurate analyses of waste characteristics, upon which the performance of some treatment technologies is highly dependent.

Cost Analysis. When developing a Demonstration Plan, consider carefully the method that will be used to compile the cost data that will be tracked and input to the Environmental Cost Analysis Methodology (ECAM) format for comparing the innovative with the existing technology at the end of the demonstration. ESTCP requires a cost estimate/analysis to be performed for a hypothetical full-scale implementation of the technology, not just a listing of the demonstration costs. ◆

See INNOVATIVE SAMPLING, from page 3

histories, fate and transport characteristics of explosives residues, and distribution and concentration of the residues will be used as input for simulation models to evaluate impacts to soil and groundwater.

The results of this SERDP-funded effort will contribute to an understanding of the key processes affecting the potential impact of explosives residues on the environment. Project results will identify activities at testing and training ranges that have the potential to contaminate surface water and groundwater with high explosives residues. Immediate benefits include the development of (1) guidance for characterizing contamination efficiently and cost effectively; (2) tools for anticipating the potential for environmental impacts; and (3) tools to demonstrate responsible management of facilities to sustain their use for testing and training while minimizing any impacts to the environment. Together, these tools are expected to result in a substantial cost savings for site characterization and sustained use of training ranges to maintain the readiness of U.S. Armed Forces.

For more information about this project, please contact Dr. Judith C. Pennington, U.S. Army Engineer R&D Center, Environmental Laboratory, Vicksburg, MS, at (601) 634-2802 or via e-mail at Judy.C.Pennington@erdc.usace.army.mil. ◆

Program Development Update

Proposal activity is very active for both SERDP and ESTCP as each Program recently received proposals in response to solicitations that will be funded from both FY 2002 and FY 2003 appropriations.

SERDP

The SERDP Scientific Advisory Board (SAB) has reviewed the proposals submitted in response to the FY 2002 Supplemental Solicitation. After passing this gate, the Executive Director has full authority from the SERDP Council to approve and fund these projects. Project kick-off conference calls are in progress and funding should be arriving soon for those projects that have briefed the SAB successfully.

FY 2003 Core proposals have been received and are now in the final stages of independent peer review. In June, the Core proposals will be discussed at the multi-agency Technology Thrust Area Working Group (TTAWG) meetings. SERDP has reserved about $8 million for these New Start projects.

FY 2003 SEED proposals currently are being reviewed by Program Staff to identify those that best respond to the Statements of Need (SON). Those that are encouraging and push the state of science will be reviewed at the June TTAWG meetings. The Executive Director will make the final selections. Available funding for FY 2003 SEED projects is about $500 thousand.

The table below outlines proposals received versus SONs for each solicitation.

SERDP FY 2003 Call for Proposals	Solicitation	
	Core	SEED
No of SONs Issued	17	3
Preproposals Received	186	N/A
Proposals Received	136	38

ESTCP

In three separate Calls for Proposals, ESTCP solicited proposals from DoD, non-DoD federal, and non-federal organizations. Non-DoD federal and non-federal organizations submitted 83 preproposals in response to three environmental topic areas under Cleanup and UXO. Each preproposal has been screened for relevance and submitted to the ESTCP Cleanup and UXO Review Committees for evaluation in June. Successful candidates will be provided DoD liaisons that can help identify a demonstration site at an appropriate DoD facility. These liaisons also help develop a responsive proposal that will be briefed to and reviewed by the appropriate ESTCP Review Committee in the August time frame.

In response to the ESTCP DoD Call for Proposals, 87 proposals were received from a variety of Army, Air Force, and Navy installations; Engineering Service Centers; and Service laboratories. The ESTCP Review Committees will evaluate these "Phase I" proposals, and successful bidders will be asked to present a detailed briefing to this Committee in August.

Regardless of the solicitation, all bidders will receive notification. Unsuccessful bidders may request feedback after the June selection meetings by submitting a letter or e-mail to the SERDP Executive Director or ESTCP Director, as appropriate. ◆

SUSTAINABLE RANGES, from page 2

as integral to their future land management. "Changing budgets and the complex logistics of a 598,000-acre installation that trains Marines for current and future world engagements make intensive base-wide environmental fieldwork extremely costly, and it [fieldwork] actually competes for access with units training at the installation," said Ecologist Rhys Evans. "Using modern technologies to reduce on-the-ground manpower will allow staff to focus on other areas of environmental concern and may reduce some of the dangers of fieldwork inherent with a harsh climate and rugged terrain," he added.

User's guides that describe both the reclamation and diagnostic techniques have been drafted and will be available for distribution in the fall of 2002. These documents will provide resource managers with valuable information on techniques and costs associated with mitigation of disturbed areas. In another effort to transfer this technology, a workshop is being planned for October 2002 in Las Vegas to train personnel in the use of the diagnostic and reclamation techniques.

For additional information about this project, please contact Dr. Kent Ostler, Bechtel Nevada, North Las Vegas, NV, at (702) 295-0393 or via e-mail at ostlerwk@nv.doe.gov. ◆

TECH NOTES

◆ SUCCESSFUL COMMERCIAL APPLICATION OF PIPELINE ACOUSTIC LEAK-LOCATION SYSTEM (PALS)

In FY 2001, ESTCP sponsored the Naval Facilities Engineering Service Center and Vista Research, Inc., to conduct a demonstration/validation of the PALS using simulated leaks on various pipeline configurations. The first real test of the system came in late September 2001 when the system was used successfully to locate two holes in an 18" ship off-loading transfer fuel pipeline at a Naval Fleet and Industrial Supply Center (FISC). The pipeline in question was approximately 2600 feet in length and 6 feet below ground, and its configuration presented numerous technical challenges, including a complicated branched network, close proximity to other lines, and high industrial activity (background noise). Because a fuel tanker that needed to use the line was arriving in two weeks, the leak had to be located and repaired quickly, otherwise a $50,000/day fine could be assessed while the tanker was in port, unable to off-load its fuel. In summary, this innovative acoustic leak-location system enabled the leak to be located and repaired and the pipeline to be brought back into service in less than one week. The FISC was fully prepared to off-load fuel using the repaired transfer line upon arrival of the fuel tanker. *Additional information about this project can be found at* ***www.estcp.org/projects/compliance/199904o.cfm.***

◆ SERDP DEVELOPED COMPOSITES APPROVED FOR AIRCRAFT FIELD TESTING

After the completion in FY 2001 of the SERDP project *Non-Polluting Composites Remanufacturing and Repair for Military Application* (PP-1109), Dr. James Sands, lead Principal Investigator, developed a prepreg composite that has been tested under a cooperative agreement with the U.S. Army Sikorsky Aircraft. This innovative compound may become the first electron beam (EB) cured composite structure to be fielded on a military aircraft. The EB cure approach and material selection have been successfully implemented to manufacture composite structures as part of a risk reduction demonstration performed by Sikorsky and Boeing. The expectation is that these EB-cured composite structures will be applied during Engineering and Manufacturing Development (EMD) for the Army's RAH-66 Comanche. The developed component saves weight by reducing required plies in the structure and decreases potential hazardous wastes by providing a near infinite shelf-life resin system for the production platform. *Additional information about this project can be found at* ***www.serdp.org/research/pp/pp-1109.pdf.*** ◆

MEDIUM CALIBER MUNITIONS, from page 1

This new program is an outgrowth of the Army's "Green Bullet" program. In 1997, SERDP and the U.S. Army TACOM-ARDEC co-sponsored research to eliminate hazardous and toxic materials in small caliber munitions. Areas of interest included the elimination of Ozone Depleting Chemicals (ODC), Volatile Organic Compounds (VOC), and toxic heavy metals, as well as the reduction of the hazardous/toxic waste generated in the production process. As a direct result of this program, alternatives are now in place for all ODCs and all of the VOCs either have been replaced or are being addressed by ongoing SERDP research projects. An ESTCP project currently is demonstrating and validating lead-free projectile cores in the 5.56 mm and 7.62 mm munitions. Additional SERDP research programs are addressing the use of lead and other hazardous substances in primers.

While much of the technology developed under the small caliber research program can be transitioned to medium caliber munitions, more research is still required. Medium caliber munitions are intrinsically more complex than small caliber ammunition but share many of the same environmental issues. For example, medium caliber munitions not only use lead in the projectile, but they also use lead and other heavy metal compounds such as barium nitrate and antimony sulfide in primers, propellants, detonators, fuses, and tracer/incendiary formulations.

As one of its first tasks, the TAC coordinated with the SERDP PI to establish a matrix of technology requirements based on the quantity and toxicity of the chemicals used in the various munitions components. Based on this matrix and projected production requirements, they identified percussion primers, electric detonators, and incendiaries as topics for FY 2002 projects. SONs were generated and proposals solicited, and as a result, four FY 2002 projects were approved for funding. More proposals were solicited in November for the FY 2003 Program to address medium caliber stab detonators, propellants, and lithium-based reserve battery issues. These proposals are currently under review.

The development and fielding of "green" medium caliber munitions materials and designs will reduce environmental and health risks, reduce costs, and ultimately increase mission readiness. Equally important, the application of environmentally benign alternatives in medium caliber munitions will reduce overall range contamination and significantly contribute to Department of Defense range sustainability goals.

For more information about the medium caliber munitions program, please contact Mr. Roman Fedyna, U.S. Army TACOM-ARDEC, Picatinny Arsenal, NJ, at (973) 724-7058 or via e-mail at rfedyna@pica.army.mil. For additional information about the small caliber munitions efforts, please contact Mr. John Middleton, U.S. Army TACOM-ARDEC, Picatinny Arsenal, NJ, at (973) 246-6937 or via e-mail at johnm@pica.army.mil. ◆

PROGRAM NOTES

- **MARK YOUR CALENDARS FOR SERDP AND ESTCP'S ANNUAL PARTNERS IN ENVIRONMENTAL TECHNOLOGY TECHNICAL SYMPOSIUM & WORKSHOP SCHEDULED TO BE HELD DECEMBER 3-5, 2002,** at the Marriott Wardman Park Hotel, Washington, D.C. The Call for Poster Abstracts will close on August 23, 2002. If you are not yet in our contact database, be sure to subscribe via the SERDP or ESTCP web site so that you will receive the Registration & Program brochure that will be released late this summer.

S◆E◆R◆D◆P

- **THE FY 2001 ANNUAL REPORT TO CONGRESS** has been published and submitted. This Program Annual Report provides a summary of SERDP's activities and most significant accomplishments during FY 2001, its plans for FY 2002, and new initiatives to be undertaken during the year. The Annual Report is available on the SERDP web site by selecting *Publications & Products* under the *General Information* button.
- **QUARTERLY PROGRESS REPORTS** (i.e., the quarter's technical accomplishments, updated completion dates for milestones, and any concerns regarding technical/financial progress using SPIRS) for the third quarter of Government FY 2002 are due by July 15, 2002. For assistance, contact your Program Manager Assistant.
- **THE SERDP SCIENTIFIC ADVISORY BOARD (SAB)** is scheduled to meet

S◆E◆R◆D◆P *(Continued)*

in Arlington, Virginia, August 6-8 to review primarily FY 2003 New Start projects.

E◆S◆T◆C◆P

- **QUARTERLY REPORTS** for the third quarter of Government FY 2002 are due July 15, 2002. For assistance, please contact your Program Manager.
- **REQUESTED FULL PROPOSALS IN RESPONSE TO THE BROAD AGENCY ANNOUNCEMENT (BAA) ARE DUE** to the ESTCP Program Office by 4:00 p.m. EST on July 25, 2002.
- **NEW PUBLICATIONS NOW AVAILABLE ON THE ESTCP HOME PAGE** www.estcp.org

Final Reports:

Cleanup

Impact of Landfill Closure Designs on Long-Term Natural Attenuation of Chlorinated Hydrocarbons

Congratulations to . . .

SERDP Principal Investigator **Dr. Jalal Hawari** of Canada's National Research Council (NRC) Biotechnology Research Institute who was selected to receive an Outstanding Achievement in Industrial Partnership Award from the NRC for his successful collaborations with Dr. Jim Spain of the U.S. Air Force Research Laboratory and Dr. Sonia Thiboutot of Canada's Defence Research Establishment Valcartier that have resulted in an increased fundamental understanding of the microbial and enzymatic degradation of RDX and HMX. These explosives have been used extensively worldwide by the military during manufacturing, testing, training, demilitarization, and open burning/open detonation. Migration of these toxic compounds through the subsurface may lead to groundwater contamination. Recent work by the research team has demonstrated a successful initial enzymatic attack on RDX and HMX leading to complete degradation of the explosive to benign compounds under both aerobic and anaerobic conditions by either fungi or bacteria. Their work will serve as a foundation for future pilot-scale demonstrations for the bioremediation of RDX and HMX. ◆

PARTNERS IN ENVIRONMENTAL TECHNOLOGY

STRATEGIC ENVIRONMENTAL RESEARCH AND DEVELOPMENT PROGRAM (SERDP)

&

ENVIRONMENTAL SECURITY TECHNOLOGY CERTIFICATION PROGRAM (ESTCP)

INFORMATION BULLETIN

SPRING 2002 NUMBER 12

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Information and ideas for future articles are always welcome. Address comments and suggestions to

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C ◆ A ◆ L ◆ E ◆ N ◆ D ◆ A ◆ R

FOR SERDP AND ESTCP

JUNE 2002

June 18-19
SERDP Pollution Prevention Technology Thrust Area Working Group (TTAWG) Meeting

June 20
ESTCP Pollution Prevention Phase I Review Committee Meeting

June 24-25
SERDP Cleanup Technology Thrust Area Working Group (TTAWG) Meeting

June 25
ESTCP Cleanup Phase I Review Committee Meeting

June 26
ESTCP UXO Phase I Review Committee Meeting

June 26
SERDP Conservation Technology Thrust Area Working Group (TTAWG) Meeting

June 26
SERDP UXO Technology Thrust Area Working Group (TTAWG) Meeting

June 27
SERDP Compliance Technology Thrust Area Working Group (TTAWG) Meeting

June 27
ESTCP Compliance Phase I Review Committee Meeting

JULY 2002

July 15
SERDP Quarterly Progress Reports Due for the Third Quarter of Government FY 2002

July 15
ESTCP Quarterly Reports Due for the Third Quarter of Government FY 2002

July 25
ESTCP Full Proposals Due from Qualified Proposers Responding to the Broad Agency Announcement

AUGUST 2002

August 6-8
SERDP Scientific Advisory Board (SAB) Meeting

RELATED CONFERENCES & EVENTS

September 3-6
The UXO/Countermine Forum
Orlando World Center Marriott Resort & Convention Center
Orlando, FL

For more information, visit http://www.TheForum2002.com or send an e-mail to TheForum@ImpactStrategicEvents.com or call (865) 379-7065.

December 3-5
Partners In Environmental Technology Technical Symposium & Workshop
Marriott Wardman Park Hotel
Washington, DC
Sponsored by SERDP and ESTCP.

For more information, visit www.serdp.org or www.estcp.org or call the Symposium Contact Line at (703) 736-4548.

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