PARTNERS IN ENVIRONMENTAL TECHNOLOGY

DoD EPA DOE SERDP Strategic Environmental Research and Development Program

ESTCP

information B•U•L•L•E•T•I•N

JULY 1999
NUMBER 1

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You now can access the SERDP web site at www.serdp.org.

While the former address is still operational, we believe the new address offers increased reliability.

DoD and EPA Sign Memorandum of Agreement To Collaborate on Technology Verification Activities

In a Pentagon ceremony held July 21, Department of Defense (DoD) Deputy Under Secretary of Defense for Environmental Security Sherri W. Goodman and Environmental Protection Agency (EPA) Assistant Administrator for Research and Development Norine E. Noonan signed a Memorandum of Agreement (MOA) to facilitate closer cooperation and coordination on joint technology verification efforts. The MOA builds a partnership between DoD's ESTCP Program and EPA's Environmental Technology Verification (ETV) Program.

Collaborative projects initiated under this MOA will be mutually beneficial and will result in the verification of environmental technologies that will be used to improve environmental clean up and protection at both DoD and non-DoD sites. Anticipated benefits include improved effectiveness and efficiency in the conduct of environmental technology demonstration, validation, and verification projects; better use of each organization's capacity for environmental testing and verification; joint reporting on technology performance; and more widespread communication and acceptance of joint and separate environmental technology verification efforts.

According to the provisions of the MOA, specific joint verification activities will be described in separate supporting agreements. The first supporting agreement will outline plans for a collaborative demonstration with Oak Ridge National Laboratory to test and verify the performance of various explosives detection technologies under field conditions. The devices tested will enhance the capability to analyze samples that may be used to make site characterization, monitoring, or cleanup decisions.

More information on ESTCP can be found at www.estcp.org or (703) 696-2117. Additional information about the ETV Program can be found at www.epa.gov/etv/ or (202) 564-3212. ◆

SERDP and ESTCP Launch Premier Issue of Information Bulletin

New Publication Provides Expanded Coverage To Include Both Programs

In a continuing effort to foster technology transfer, the SERDP and ESTCP Program Offices are pleased to release this first edition of the *Partners In Environmental Technology Information Bulletin*. An outgrowth of the partnership that has continued to flourish between the two programs, the joint *Information Bulletin* reflects the theme that was first used for the annual Symposium and Workshop that is sponsored by SERDP and ESTCP and now has become the hallmark of various efforts sponsored by the two programs. The theme not only reflects the partnership formed by SERDP and ESTCP, but more significantly, highlights the many different partnerships that play a pivotal role in the success of Federal technology development: the partnership between the Department of Defense (DoD) research and development programs; the partnership between DoD and the Department of Energy, the Environmental Protection Agency, and other Federal agencies; and the partnership between Federal agencies, private industry, and academia. If you are reading this publication, more than likely you represent one of these partnerships. With this in mind, we aim to provide you with relevant information on technology development success stories, funding and opportunities updates, and program highlights. No doubt, if you received

See *INFORMATION BULLETIN*, page 5

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 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.

success story

ESTCP Co-Sponsored HVOF Technology Demonstration Results in Largest Environmental-Related Project Arrangement Between U.S. and Canada

Hard chrome plating is a process that is used extensively by military aircraft maintenance depots and aircraft manufacturers to provide wear and/or corrosion resistance to components or to restore dimensional tolerance to components. Within the Department of Defense (DoD), the total value of the hard chrome plating operations exceeds $100 million annually. Types of aircraft components onto which hard chrome is applied include landing gear, hydraulic actuators, propeller hubs, helicopter rotor heads, and gas turbine engines. However, chrome plating utilizes hexavalent chromium, which is highly toxic and a known carcinogen. Increasingly stringent environmental and worker-safety regulations are making chrome plating more restrictive and expensive for manufacturers and the DoD.

In 1996, under ESTCP co-sponsorship, a project was initiated to address this need. The effort was designed to qualify high-velocity oxygen-fuel (HVOF) thermal spray coatings as a viable replacement for hard chrome plating on military aircraft components. This effort resulted in the formation of the Hard Chrome Alternatives Team (HCAT). HCAT is a tri-service/industry group tasked with execution of the project which includes extensive material testing (fatigue, corrosion, and wear), full-scale component testing, cost analyses, and development of standards and specifications. Additional funding for this project has been provided by the Air Force, Navy, and the Defense Advanced Research Projects Agency with a total commitment exceeding $6 million over a five-year period.

HVOF thermal spraying is a process that utilizes an internal combustion jet to generate supersonic gas velocities to deposit metal alloy, ceramic/metal composite, and polymer coatings rapidly and to thicknesses comparable to those of chrome plating. Initial material testing has indicated that the properties of HVOF tungsten carbide/cobalt coatings are superior to those of hard chrome. In addition, production HVOF coating systems have been established at several DoD aircraft depots and personnel have been trained in their operation.

The initial favorable results of the HCAT program have led to the establishment of a partnership with the Joint Group on Pollution Prevention to execute individual projects for chrome replacement on landing gear, propeller hubs, and helicopter dynamic components. Additional projects related to hydraulic actuators and gas turbine engine components are being proposed. For each approved project, Joint Test Protocols are established and executed to qualify HVOF coatings as the replacement for hard chrome.

As a further testament to the initial favorable results of the HCAT program, the Joint Strike Fighter (JSF) Program has provided funding to explore replacing chrome coatings on the JSF. It is of note, however, that the applications of the HVOF coatings are not limited just to the replacement of hard chrome. In a related effort, the Office of Naval Research has established an Integrated Project Team

See HVOF, page 3

Dr. H. Lee Buchanan, Assistant Secretary of Navy (Research, Development, and Acquisition), preparing to sign U.S./Canada Project Arrangement. From left (standing) are Mr. Michael Slack and Rear Admiral F. W. Gibson, representing Canada, and Ms. Sherri Goodman, Deputy Undersecretary of Defense for Environmental Security and Mr. Bruce Sartwell, Naval Research Laboratory, representing the United States.

success story

SERDP's National Environmental Technology Test Sites (NETTS) Program

Researchers Pursue MTBE Groundwater Remediation Solutions at SERDP-Funded Port Hueneme NETTS Location

MTBE (methyl tertiary butyl ether), a common fuel additive, is a chemical of concern at fuel contamination sites, specifically at those sites where releases have occurred since the early 1980s. Because it is highly mobile, extremely soluble, sorbs weakly to soil and aquifer materials, and has low natural degradation potential, MTBE often migrates downgradient farther and faster than other fuel components. There are some indications that MTBE is potentially toxic and potentially carcinogenic. It imparts an objectionable taste at concentrations as low as 5 parts per billion (ppb). Regulatory standards for MTBE in groundwater have yet to be set on a national level. However, preliminary guidelines and health advisories have suggested target levels in the low 5-40 ppb range based on both health and aesthetic considerations. MTBE contamination of groundwater has the potential to be a significant remediation issue for the Department of Defense (DoD) as well as for the rest of the nation.

MTBE is one of the primary components currently used in gasoline to meet standards to reduce smog-forming emissions. It is used either seasonally or year-round in parts of the country where concentrations of ozone in the summer or carbon monoxide in the winter exceed established air quality standards. MTBE is currently the oxygenate of choice for petroleum refineries. This is due in part to its low cost, ease of production, and favorable transfer and blending characteristics. Petroleum refineries have used MTBE in gasoline to meet oxygenated fuel requirements since 1991 and as an anti-knock compound since 1979. Oxygenated gasoline can contain up to 15 percent MTBE by volume.

Once MTBE comes in contact with groundwater, its removal requires proactive measures. Treatment of contaminated aquifers is difficult as MTBE's unique chemical properties render most conventional in-situ treatment approaches ineffective or impracticable. Currently, extraction and aboveground treatment is the only proven and reliable treatment option. However, this option is slow, maintenance-intensive, and costly. Preliminary American Petroleum Institute (API) estimates suggest that the presence of MTBE at a fuel contamination site could double the corrective action cost relative to a similar site without MTBE. This is relevant to the DoD as fuel is stored, transported, and/or dispensed at many military installations. MTBE has been identified at DoD facilities in 15 states, five of which were not known to use MTBE to meet air quality standards.

The SERDP-funded National Environmental Technology Test Site (NETTS), located at the Naval Construction Battalion Center (CBC), Port Hueneme, California, emphasizes fuel hydrocarbon remediation in soil and groundwater. Its mission is to develop and maintain research and development platforms for testing, evaluation, and validation of promising environmental cleanup and monitoring technologies. This NETTS location has established a network of environmental engineers, regulators, and experts from industry and academia to address MTBE remediation in soil and aquifers. It also

See MTBE Remediation, page 4

HVOF, from page 2

to explore applications of nanoscale HVOF coatings for the CVX, the Navy's aircraft carrier for the 21st Century.

The highly successful ESTCP-sponsored HVOF technology demonstration HCAT effort also has resulted in a formal Project Arrangement (PA) between the U.S. Department of Defense and the Canadian Department of National Defense (DND). The DND and Industry Canada (a government agency similar to the U.S. Department of Commerce) became interested in the HCAT program because of the considerable number of military aircraft in the DND and because Canadian companies manufacture more than two-thirds of the landing gear used on military and commercial aircraft in North America. This represents the largest environmental-related Project Arrangement that has been executed between the United States and Canada. The PA, executed under the auspices of the Technology Research and Development Program Memorandum of Understanding between the United States and Canada, was signed on March 31, 1999. Under the terms of this agreement, the Canadian Government will invest $6 million, matching the U.S. contribution, to conduct complementary material and component testing. All data and information realized from the study will be shared between the two countries.

Initial economic analyses have indicated that the total cost related to application of HVOF coatings is less than that for hard chrome plating. This, together with their anticipated increased performance, holds the promise that the transition to HVOF coatings will improve sustainability while lowering the total cost-of-ownership to the DoD for its aircraft. At the completion of the program, it is expected that HVOF will be in production in many manufacturing and maintenance activities in both the U.S. and Canada, resulting in both a cleaner environment and the savings of millions of dollars in maintenance costs.

For additional information, please contact Mr. Bruce Sartwell, Naval Research Laboratory, Washington, DC, at (202) 767-0722 or via e-mail at sartwell@nrl.navy.mil. ◆

MTBE Remediation, from page 3

manages a test platform at the Port Hueneme Navy Exchange for evaluating ex-situ and in-situ characterization, monitoring, and remediation technologies. This test platform is a well-characterized site where technologies can be field-tested under known conditions against established standards.

To address the DoD and national concern about remediating MTBE contaminated sites, a number of remediation technologies, fate and transport model enhancements, and risk analyses are being evaluated at the SERDP-funded Port Hueneme NETTS location. The following is a short description of some of the projects.

Air Sparging

Under ESTCP sponsorship and oversight, the Air Force Research Laboratory, Battelle Memorial Institute, Parsons Engineering Science, Inc., Oregon Graduate Institute, and Arizona State University are conducting a multi-site air sparging evaluation project with the Port Hueneme test platform as the primary site. The objective of air sparging is to inject clean air through contaminated aquifer materials to provide oxygen for bioremediation and/or to strip contaminants out of the aquifer.

This ESTCP demonstration will validate a draft version of a design paradigm recently developed on air sparging technology. The design paradigm is geared for the DoD environmental engineering community, which aims to reduce the "trial and error" nature of the air sparging practice by providing a fundamental understanding of the air sparging process, basic design techniques, and cost-effective monitoring methods. The draft air sparging design paradigm can be downloaded from the ESTCP web site at **www.estcp.org.**

In-Situ Bioremediation

Equilon's Westhollow Technology Center has teamed with Arizona State University to evaluate an in-situ bioaugmentation process for remediation of MTBE. This project involved injecting a biomass slurry suspension into the fuel hydrocarbon/MTBE plume. The biomass suspension contains isolated ether-degrading microbes that can markedly shorten the half-life of oxygenates. The effectiveness of ether-degrading biobarriers is being evaluated with respect to the following factors: (1) survival, (2) decay and rate of growth, (3) adaptation, (4) substrate/energy utilization and availability, and (5) indigenous microbial population competition.

This field trial, the first of its kind for MTBE treatment, focuses on the use of a consortium of microorganisms, known as the BC-4 culture, in an in-situ bio-barrier to halt MTBE migration. The project design calls for the injection of a narrow band of BC-4 slurry into the aquifer followed by injection of oxygen. The field test layout includes three 20' x 40' test cells aligned with the direction of groundwater flow.

Natural attenuation of MTBE by indigenous methanogenic bacteria is being studied by the U.S. Environmental Protection Agency National Risk Management Research Laboratory. The goal of this field project is to investigate the fate of MTBE in methanogenic geochemical zones within the NETTS MTBE plume. This investigation will determine nutrient sources which enhance MTBE degradation and the transition from the preferential BTEX degradation to the MTBE degradation. Determining the presence of indigenous MTBE degraders is accomplished by using a phospholipid method.

MTBE 2000

The MTBE 2000 Project is a University of California Santa Barbara effort to continue an ecological risk analysis on the MTBE plume following the DoD three-tiered action plan for Ecological Risk Assessment. The project's primary goal is to produce a complete ecological risk analysis of the MTBE plume. Secondly, Navy guidelines call for considering possible remediation strategies for the contaminated zone. The final phase of the project will include both cost/benefit and policy analysis.

Natural Attenuation

Oregon Graduate Institute and Arizona State University are investigating the fate and transport of MTBE in the subsurface. A solution of perdeuterated MTBE ($^2H_{12}$-MTBE) is being used in the study as a tracer to measure the natural attenuation of MTBE in the existing plume. Since deuterated molecules have a slightly higher molecular weight than the commonly occurring ($^1H_{12}$-MTBE) molecules, the $^2H_{12}$-MTBE tracer and its degradation products can be distinguished from existing MTBE using a gas chromatograph with a mass selective detector.

The tracer test will yield quantitative information on the fate of MTBE during migration under reducing conditions in the presence of other fuel hydrocarbons. This information will help assess the role of natural attenuation as a plume management strategy for MTBE.

Summary

In-situ MTBE remediation alternatives found to be practicable and cost-effective when compared to conventional pump and treat (P&T) will be presented to the DoD. Savings relative to P&T are expected to be in excess of $250,000 per site where some of these technologies are applicable. More significant benefits will be achieved indirectly as additional information is provided to the regulatory community on the role of natural attenuation for MTBE plumes. Most DoD bases in operation since the early 1980s have gasoline release sites, and many will have associated dissolved MTBE plumes.

For more information regarding the MTBE-related efforts, please contact Mr. Ernest Lory, the Port Hueneme NETTS Manager, at (805) 982-1299 or via e-mail at loryee@nfesc.navy.mil, NFESC, Port Hueneme, CA. For more information regarding the SERDP NETTS Program, please contact Catherine Vogel, SERDP/ESTCP Cleanup Program Manager, at (703) 696-2118 or via e-mail at vogelc@acq.osd.mil. ◆

FY 2000 Solicitation Update

SERDP

SERDP is in the final stages of down selecting proposals for FY 2000 funding, a process that began in November of 1998. During the latter half of June, the multi-agency Technology Thrust Area Working Groups (TTAWG) met to discuss and conduct a final evaluation of proposals that were generated in response to Statements of Need (SON) published in the initial Broad Agency Announcement (BAA) and Federal Call for Proposals. Twenty Core proposals and 13 SEED proposals were recommended for further review by the Scientific Advisory Board (SAB).

This year, for the first time, SERDP has allocated a small percentage of resources (about 15 percent of available FY 2000 New Start funds) for **SE**RDP **E**xploratory **D**evelopment (SEED) projects. In a continuing effort to fund projects that have higher inherent technical risk with commensurate payoff in support of priority environmental needs of the Department of Defense (DoD) and the Department of Energy (DOE), SERDP reserved $1 million to launch this experiment. SERDP's principal objective is to generate innovative ideas under a limited proof-of-concept effort. If successful, SERDP may ask the Principal Investigator to submit a follow-on plan to develop the concept further.

Four SONs for SEED projects were generated collectively by the Cleanup, Conservation, and Pollution Prevention TTAWGs. The resultant projects, all less than one year in length and no more than $100,000 in value, will be presented collectively by SERDP Executive Director Brad Smith to the Scientific Advisory Board (SAB) at its next meeting scheduled for August 11-12 in Arlington, VA.

Proposals recommended for approval by the SAB (both Core and SEED) will be presented for approval to the SERDP Council at its annual meeting on September 23. A list of awardees will be posted on SERDP's web site as they become available.

ESTCP

As this issue of the *Information Bulletin* goes to press, the FY 2000 ESTCP proposal solicitation process is at the halfway mark. The ESTCP solicitation, which began in December 1998, consisted of a two-step process (BAA and DoD-only solicitation). For the Cleanup and UXO pillars, the solicitation process was open to Federal and non-Federal proposers through a Broad Agency Announcement. The solicitation process was open to DoD-only proposers for the other two pillars, Pollution Prevention and Compliance. In all, ESTCP received good response from both the Federal and non-Federal sectors for the Phase I solicitation. A total of 170 Phase I proposals and pre-proposals were received, and the break out of the proposals by pillar is illustrated in the box in the next column.

Pillar	DoD Response	Non-DoD Response
Cleanup	25	46
UXO	17	16
Pollution Prevention	41	N/A
Compliance	25	N/A
Total	**108**	**62**

The Phase I review committees, consisting of representatives from the Departments of Defense and Energy and the Environmental Protection Agency, met June 21-July 2 to select the proposals from each of the four pillars that will be promoted to Phase II meetings. All winners of the Phase I review now have been notified. The Phase II reviews are scheduled to be held August 17-31 and will consist of an oral presentation by each of the proposers. The next edition of the *Information Bulletin* will provide additional updates as to the status of Phase I and II selections for each of the pillars. ◆

***INFORMATION BULLETIN*, from page 1**

the former SERDP *Information Bulletin*, some of these columns will be familiar. However, now these features will reflect information from *both* SERDP and ESTCP. Additionally, we'll be including some new information. For example, we think that you will find the calendar that includes a listing of conferences to be a particularly useful tool (page 8).

We hope you like our new look and welcome your ideas for future articles. ◆

Mr. Charles Pellerin Joins the SERDP and ESTCP Staffs as Pollution Prevention Program Manager

Mr. Charles ("Chuck") Pellerin has joined the SERDP and ESTCP Staff to serve as Program Manager for Pollution Prevention efforts for both Programs. He relieves Dr. Robert Holst who was Acting Program Manager for Pollution Prevention.

Chuck hails from an impressive career with the Air Force. Among his many accomplishments, Chuck established and managed the Air Force's pollution prevention research and development program office. Additionally, he was the Air Force Material Command's representative for the science and technology community and helped to develop Air Force wide policy for the structure and implementation of the Air Force environmental program. More recently, he facilitated collaborative efforts between the Air Force pollution prevention research and development program and the Army, Navy, DoD, DOE, and EPA.

By no means a new face to the SERDP and ESTCP Programs, Chuck previously served as the Co-Chair for the SERDP Pollution Prevention Technology Thrust Area Working Group (TTAWG) for 2 years and was a member of the Compliance TTAWG as well. He also participated on ESTCP's Pollution Prevention Review Panel for 3 years and the Compliance Review Panel for a year.

Chuck can be reached at (703) 696-2128 or by e-mail at pellercj@acq.osd.mil. ◆

SERDP Convenes Workshop To Identify Near- and Long-Term DoD Air Emissions Research Needs

Reductions in air pollutant discharge limits, reductions in permitted air releases, and reductions in Department of Defense (DoD) compliance budgets. These were the challenges for the DoD as described by Maureen Sullivan, Office of the Deputy Under Secretary of Defense for Environmental Security, at a workshop held June 3-4, 1999, in Baltimore. Building on the success of a workshop held last year, SERDP, in cooperation with the American Academy of Environmental Engineers (AAEE), convened a diverse group of 68 renowned engineering and scientific experts, DoD and industry representatives, and regulators to identify future air emissions research needs for DoD.

The mission of the workshop was to define the research needed to characterize, assess impacts of, and minimize the air pollutant emissions from military diesels, turbine engines, and ordnance systems, with particular emphasis on nitrogen oxides, sulfur oxides, particulates, and toxics. The workshop 1) examined the state of science and uncertainties; 2) identified gaps in current technologies; and 3) identified research opportunities relevant to DoD/SERDP.

Patrick Atkins, director of Environmental Affairs for Alcoa and SERDP Science Advisory Board member, moderated the Workshop. SERDP Executive Director Bradley Smith presented an introduction and summarized the mission of the workshop followed by an overview of DoD Air Quality Compliance Issues presented by Maureen Sullivan and the Environmental Protection Agency (EPA) perspective by Don Kopinski. Summaries of the state of the science for three key DoD air emission sources, diesel engines, turbine engines, and ordnance, were presented by James Eberhardt (Department of Energy), Mel Roquemore (Air Force Research Laboratory), and Bill Mitchell (EPA), respectively.

To focus its efforts on high-priority, DoD-unique research needs, workshop attendees broke into four workgroups to discuss and assess key aspects of air pollutant emissions—*formation processes*, *control technologies*, *monitoring and measurement*, *and health affects/impacts*. The findings of each of the four workgroups were deliberated by all of the experts during and at the conclusion of the workshop.

The DoD research needs identified at the workshop will be compiled into a report designed to assist SERDP in the development of its future research agenda for the Compliance and Pollution Prevention Thrust Areas. The report then will be formally published by and available through AAEE in a book intended to inform and spur additional research within the air emissions research community. Additionally, the results of the control technology workgroup will form the basis for a technical session at this year's SERDP/ESTCP Symposium which takes place November 30 through December 2, 1999. ◆

Partners in Environmental Technology Technical Symposium & Workshop

"Meeting Today's Needs While Preserving Our Future"

SYMPOSIUM & WORKSHOP

The Partners in Environmental Technology Technical Symposium and Workshop sponsored by SERDP and ESTCP will be held November 30 through December 2, 1999, at the Hyatt Regency Crystal City in Arlington, VA.

This year's technical program, with the theme of "Meeting Today's Needs While Preserving Our Future," will feature comprehensive sessions that will address opportunities to mitigate or eliminate environmental impacts and preserve natural resources for future generations.

SESSION TOPICS

Cleanup Technologies

- **Novel Technologies to Locate and Remove Unexploded Ordnance (UXO)**
- **New Cleanup Protocols to Efficiently and Effectively Achieve Cleanup Goals**
- **DNAPL Source Zone Characterization and Remediation**
- **Environmentally Acceptable Endpoints—How Clean is Clean?**
- **Emerging Groundwater Cleanup Issues**

Compliance Technologies

- **Air Emissions Treatment and Control**
- **Mitigating the Environmental Impacts of Testing/Training Activities**

Conservation Technologies

- **Strategies for Sustainable Training/Testing Sites**
- **Ecosystem Management Research for Preserving DoD and DOE Lands**

Pollution Prevention Technologies

- **Development of Advanced Low Emissions, High-Efficiency Turbine Propulsion Technologies**
- **Alternatives to Toxic Metals Plating and Finishing for Weapons Systems and Industrial Processes**
- **Industrial Ecology, Environmental Security, and the Defense Industry**

POSTER ABSTRACTS

There are a limited number of spaces available to display poster presentations of technologies that relate to the Symposium & Workshop technical session topics (listed at left). Those interested in being considered for poster space should refer to the abstract guidelines that are posted at **www.serdp.org** and **www.estcp.org**.

Abstracts are due September 1, 1999.

There is no additional charge for poster space.

PROGRAM
N ◆ O ◆ T ◆ E ◆ S

- **THE PARTNERS IN ENVIRONMENTAL TECHNOLOGY TECHNICAL SYMPOSIUM AND WORKSHOP SPONSORED BY SERDP AND ESTCP IS SCHEDULED TO BE HELD NOVEMBER 30 - DECEMBER 2, 1999, AT THE HYATT REGENCY CRYSTAL CITY IN ARLINGTON, VIRGINIA**. There are a limited number of spaces available to display poster presentations related to technical session topics. Both Federal and non-Federal submitters will be considered, and there is no additional charge for poster space. Those interested should refer to the abstract guidelines that are posted at **www.serdp.org** or **www.estcp.org**. **Abstracts are due September 1, 1999.** For more information about the Symposium, visit the SERDP or ESTCP web site listed above or call (703) 736-4548.

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- **SERDP EXECUTION PLAN DATA FOR CONTINUING PROJECTS ARE DUE SEPTEMBER 1.** Continuing project Principal Investigators should ensure that their Execution Plan data has been entered in SPIRS. For assistance, contact your Program Manager Assistant or Jenny Rusk at (703) 326-7801.
- **THE SERDP EXECUTIVE WORKING GROUP (EWG) WILL MEET SEPTEMBER 9 AND THE SERDP COUNCIL WILL MEET SEPTEMBER 29** to review and approve the FY2000 Program and the FY2001 Strategic Guidance. For additional information, contact Amy Kelly at (703) 696-2124 or via e-mail at kellya@acq.osd.mil.
- **THE SERDP SCIENTIFIC ADVISORY BOARD (SAB) WILL MEET AUGUST 11-12, SEPTEMBER 15-16, AND OCTOBER 19-20** in Arlington, VA. Contact Amy Kelly at (703) 696-2124 or via e-mail at kellya@acq.osd.mil for additional information.
- **COPIES OF ALL PRODUCTS/ REPORTS PARTIALLY OR WHOLLY SUPPORTED BY SERDP** should be sent to Mike Hathaway at the SERDP Program Office in order to keep the SERDP Staff current on SERDP results and to broaden all aspects of technology transfer. These topics include copies of papers, reports, abstracts, presentations, patents, etc. For more information, contact Mike Hathaway at (703) 506-1400 ext. 542 or via e-mail at Mike_Hathaway@labat.com.

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- **THE ESTCP REVIEW COMMITTEE MEETINGS WILL BE HELD IN ARLINGTON, VA, IN AUGUST.** The schedules are as follows: Pollution Prevention (August 17-18), Compliance (August 18-19), Cleanup (August 24-26), and UXO (August 31-September 1). For more information, contact Amy Kelly at (703) 696-2124 or via e-mail at kellya@acq.osd.mil.
- **ESTCP OBLIGATION AND EXPENDITURE PLANS FOR CONTINUING PROJECTS ARE DUE WITH OCTOBER 5th QUARTERLY REPORTS.** Continuing projects should ensure that their FY2000 Obligation and Expenditure Plans are entered through the ESTCP web site. Financial guidance and instructions will be sent to each Project Lead responsible for a continuing ESTCP project.
- **NEW PUBLICATIONS NOW AVAILABLE ON THE ESTCP HOME PAGE www.estcp.org**

  Protocols:
  Draft Treatability Test for In-Situ Anaerobic Dechlorination (RABBIT)

  Draft Air Sparging Design Paradigm

  Cost & Performance Reports:
  Waste Acid Detoxification and Reclamation

  Advanced Non-Toxic Silicone Fouling-Release Coatings

PARTNERS IN ENVIRONMENTAL TECHNOLOGY

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JULY 1999 ◆ NUMBER 1

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ESTCP Director and SERDP Technical Director	Dr. Jeffrey Marqusee
Program Manager for Compliance and Conservation	Dr. Robert Holst
Program Manager for Pollution Prevention	Charles Pellerin
Program Manager for Cleanup	Catherine Vogel
Administrative Officer	Brenda Batch
Executive Assistant	Amy Kelly
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Information and ideas for future articles are always welcome. Address comments, suggestions, mailing list requests, and address changes to

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for serdp and estcp

AUGUST 1999

August 11-12
SERDP Scientific Advisory Board (SAB) Meeting

August 17-18
ESTCP Pollution Prevention Review Committee Meeting

August 18-19
ESTCP Compliance Review Committee Meeting

August 24-26
ESTCP Cleanup Review Committee Meeting

August 31 - September 1
ESTCP UXO Review Committee Meeting

SEPTEMBER 1999

September 1
Poster Presentation Abstracts Due for SERDP and ESTCP Partners in Environmental Technology Technical Symposium and Workshop

September 1
SERDP Execution Plan Data for Continuing FY2000 Projects Due

September 1
ESTCP Project Financial Information for Continuing Projects Due

September 9
SERDP Executive Working Group (EWG) Meeting

September 15-16
SERDP Scientific Advisory Board (SAB) Meeting

September 29
SERDP Council Meeting

OCTOBER-DECEMBER 1999

October 5
ESTCP Project Financial Information Quarterly Reports and Obligation and Expenditure Plans Due

October 19-20
SERDP Scientific Advisory Board (SAB) Meeting

October 31
SERDP Quarterly Report Data Due

November 30 - December 2
The SERDP and ESTCP Partners in Environmental Technology Technical Symposium and Workshop

RELATED CONFERENCES & EVENTS

September 8-9
2nd International Symposium on Biodegradation of Nitroaromatic
Compounds and Explosives
Xerox Document University
Leesburg, VA
For more information, call (850) 644-7211 or send e-mail to nitro99@cbtr.fsu.edu.
Sponsored by the U.S. Air Force Office of Scientific Research and the Defense Threat Reduction Agency.

October 18-21
15th Annual Conference on Contaminated Soils
University of Massachusetts, Amherst
Amherst, MA
For more information, see www.aehs.com.
Sponsored by the Association for the Health of Soils (AEHS).

November 16-17
Wetlands & Remediation Conference
Hilton Hotel
Salt Lake City, UT
For more information, call (800) 783-6338.
Sponsored by Battelle, SERDP, ESTCP, NAVFAC, and PARSONS.

November 30 - December 2
1999 Partners in Environmental Technology Technical Symposium & Workshop
Hyatt Regency Crystal City
Arlington, VA
For more information, call (703) 736-4548 or visit our web sites at www.serdp.org and www.estcp.org.
Sponsored by SERDP and ESTCP.

December 6-9
4th Annual Joint Services Pollution Prevention/ Hazardous Waste Management Conference and Exhibition
Henry B. Gonzalez Convention Center
San Antonio, TX
For more information, call (247) 259-2572 or send e-mail to tthomas@ndia.org.

Through September 2000
Training Course on Permeable Reactive Barriers for Remediating and Managing Contaminated Groundwater
Training sessions to be held in 10 EPA regional cities throughout the country.
For more information, see www.trainex.org/prb.

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