



WINTER 2004
NUMBER 19

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Calendar of Events



Plenary Session Speakers Canadian Brigadier-General H.M. Petras, CD, (left) and Ms. Maureen T. Koetz, representing the U.S. Air Force, meet with Dr. C. Herb Ward, the Chair of SERDP's Scientific Advisory Board.

For event highlights,
see this issue's insert.



SERDP
Strategic Environmental Research
and Development Program



INFORMATION B • U • L • L • E • T • I • N

SERDP and ESTCP Symposium Highlights International Collaboration to Meet the Military's Environmental Challenges

Project-of-the-Year Awards Showcase Cutting-Edge Technologies

Conventional industrial practices are severely stressing the environment and must be modified, Plenary Session speaker Ray C. Anderson told attendees at the 2003 Partners in Environmental Technology Technical Symposium and Workshop. Anderson is Chairman of the Board of Interface, Inc., a global billion-dollar flooring products company based in Atlanta, Georgia. Describing the steps his company is taking internationally to achieve zero emissions and zero environmental impacts, he challenged the audience to take similar action to address Department of Defense (DoD) operations. Anderson emphasized the principles his company is applying to meet these goals, including eliminating waste and using renewable energy and resource efficient transportation.

The SERDP- and ESTCP-sponsored Symposium was held December 2-4, 2003, at the Marriott Wardman Park Hotel in Washington, D.C. This annual conference promotes the many different partnerships among federal agencies, private industry, and academia, as well as with technology developers, end users, and regulators. Participants in the Symposium represented the United States and seven other countries—Australia, Canada, England, the Czech Republic, Germany, the Netherlands, and Sweden—highlighting the formation of international partnerships. In total, more than 750 attendees took part in this nationally recognized technical symposium and workshop addressing the environmental challenges of concern to the U.S. Department of Defense.

For the first time, a member of the Canadian Forces, Brigadier-General H.M. Petras, CD,

Director of General Land Combat Development, spoke at the Symposium Plenary Session, stressing the importance of the sustainable management of Canadian military ranges. He highlighted the commonalities of range issues in Canada and the United States and noted the highly successful partnerships between the two countries aimed at addressing the environmental effects of munitions in the environment.

Representing DoD's viewpoint for transforming the military's environmental management, Ms. Maureen T. Koetz, Deputy Assistant Secretary of the Air Force for Environment, Safety, and Occupational Health, presented the Air Force's innovative resource-based approach for managing operational and financial risk for range sustainment.

At the conclusion of the Plenary Session, Dr. C. Herb Ward, the Chair of SERDP's Scientific Advisory Board and the Foyt Family Chair of Engineering and Professor and Chair of the Department of Civil and Environmental Engineering at Rice University, presented five SERDP and one ESTCP Project-of-the-Year Awards that recognize successful research and technology developments with significant benefits to DoD. Recipients of this prestigious honor and a description of their award-winning projects follow.

SERDP Project of the Year—Cleanup. The presentation of this year's Cleanup Project of the Year Award demonstrated the international cooperative spirit fostered through the SERDP Program. The recipient, Dr. Jalal Hawari of Canada's National Research Council Biotechnology Research Institute in Montreal, is the first SERDP Principal Investigator from outside the United States selected for this honor. Dr. Hawari has performed revolutionary work

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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.



S U C C E S S O R Y

Multisensor STOLS Aids Geophysical Surveys at DoD Range, Offers Advanced Capabilities for UXO Detection

Given the past and ongoing use of weapons and munitions for military training, the DoD currently bears responsibility for an estimated 11 million acres of land potentially contaminated with unexploded ordnance (UXO). As bases are closed and lands are scheduled to transfer out of the military's control, UXO presents a safety hazard and restricts future land use. Detecting and discriminating these UXO from other anomalies in the field remains a costly and complicated endeavor. The combination of sensor technologies, as demonstrated by the ESTCP-funded project *Combined Electromagnetic and Magnetometer Data Acquisition and Processing (UX-0208)*, offers a powerful tool for improving the probability of detection and reducing the false alarm rate—thereby reducing survey times and costs and human exposure in the field.

UXO site characterization is normally conducted using a single sensor technology, almost exclusively employing either magnetometry or electromagnetic induction (EMI). However, the two sensors have complementary detection and discrimination capabilities, suggesting the potential for dual mode surveys to improve performance. Magnetometers

detect ferrous metal such as steel and typically are more sensitive to deeply buried objects. EMI sensors offer a richer data set for the application of discrimination techniques and typically perform better for detecting small, shallow objects. EMI has the added capability of detecting non-ferrous metal such as brass or aluminum and can perform better on sites with geology that is problematic for magnetometry. The simultaneous deployment of these two technologies on a single platform has proven difficult because of the active nature of the EM technology, which generates electromagnetic fields that are detected as noise by magnetometers operated at close proximity.

In their soon to be completed ESTCP project, the U.S. Army Corps of Engineers-Huntsville Center and GEO-CENTERS, Inc., demonstrated the capability to deploy total field magnetometers and industry-standard EM61 pulsed induction sensors simultaneously on a single towed platform called the Surface Towed Ordnance Location System (STOLS). The project team developed and integrated electronics for interleaving data collected by these two sensors and designed a new nonmetallic proof-of-concept towed platform to host five total field magnetometers and three EM61 coils in a low-noise environment with a centimeter-level accuracy global positioning system (GPS), creating spatially co-registered data sets. Existing data processing software was modified to allow simultaneous viewing and analysis of the magnetometer and EM data.

To demonstrate this system's capability, the multisensor STOLS first was deployed in November 2002 at the SERDP- and ESTCP-sponsored Standardized UXO Demonstration Test Site at Aberdeen Proving Ground, Maryland. Data was acquired on a calibration grid, a blind grid, and a 13-acre open field site. The results confirmed that the interleaved technology functioned correctly and that the system simultaneously collected high-quality multisensor data in a single survey pass.

In May 2003, STOLS supported the comprehensive geophysical assessment of the Jeep/Demolition Range at the Former Lowry Bombing and Gunnery Range (FLBGR) in Aurora, Colorado. The objective was to detect, locate, and discriminate all subsurface objects that were possibly military K941 ferrous shipping containers (also known as PIGs) that might be associated with chemical

“The multisensor STOLS, as one of the key components of the overall site assessment, made significant contributions to our ability to detect, locate, discriminate, and eventually address the hazardous objects at the site.”

warfare material. This UXO-like application provided another opportunity to demonstrate the capabilities of the multisensor system. STOLS covered about 70% of this area and supplied high-density, high-fidelity magnetic data

See **MULTISENSOR STOLS**, page 3

U.S. Senator Commends ESTCP-Demonstrated MTBE Cleanup Technology

A cleanup technology for treating methyl tertiary butyl ether (MTBE) in groundwater that has been demonstrated through the ESTCP program received praise from U.S. Senator Dianne Feinstein (D-Calif.) last fall following its selection for a 2003 Most Valuable Pollution Prevention (MVP2) Award. The National Pollution Prevention Roundtable presented the award to Principal Investigator Karen Miller of the Naval Facilities

Engineering Service Center (NFESC) in Port Hueneme, California, during a ceremony in Washington, D.C.

In her congratulatory letter to the MVP2 Award recipients, Senator Feinstein singled out the passive flow-through biobarrier system developed by NFESC under the ESTCP project *In-Situ Bioremediation of MTBE (CU-0013)*. She commended NFESC's "cost-effective protection of ground water resources from MTBE and other

fuel-related water pollutants" and noted that, "At one site, application of this technology led to documented cost savings of over \$30 million."

For additional information on this award-winning technology, please contact Ms. Karen Miller, Naval Facilities Engineering Service Center, Port Hueneme, CA, at (805) 982-1010 or via e-mail at karen.miller@navy.mil. ♦

MULTISENSOR STOLS, from page 2

as well as simultaneously collected EMI data. The magnetic data has been analyzed by separate contractors for advanced target discrimination analysis, while the EMI data has been used as a comparison baseline to review data collected by other EMI systems. Based on the target analysis and discrimination procedures, costly intrusive activities have focused on targets most likely to be PIGs. Thus far, the project has been highly successful in clearing areas of possible PIG items, with a wide variety of objects excavated. As Mr. Jerry Hodgson, the U.S. Army Corps of Engineers Program

Manager at FLBGR, notes "The multisensor STOLS, as one of the key components of the overall site assessment, made significant contributions to our ability to detect, locate, discriminate, and eventually address the hazardous objects at the site."

The STOLS, collecting data from both magnetometer and EMI sensors simultaneously, can decrease survey time, cost, and human exposure to hazardous areas while supplying data that increase the probability of correctly identifying objects of interest. The co-registered data sets collected during

the tests will represent a unique resource to UXO researchers and algorithm developers working on feature extraction, automatic target recognition, and information fusion. Further research on spatially co-registered magnetometer and EM data is expected to improve the probability of detection and reduce expensive investigations of false alarms.

For more information on the multisensor STOLS technology, please contact Mr. Roger Young, U.S. Army Corps of Engineers, Engineering & Support Center, Huntsville, Alabama, at (256) 896-1629 or via e-mail at roger.j.young@hnd01.usace.army.mil. ♦



The multisensor STOLS permits the simultaneous capture of magnetometry and EMI data, resulting in significant improvements in the detection and discrimination of UXO.

involving the enzymatic and microbial processes that aid in the degradation of RDX and HMX under both aerobic and anaerobic conditions. Dr. Hawari and his international team of researchers, including Dr. Jim Spain and Ms. Shirley Nishino of the U.S. Air Force Research Laboratory and Dr. Guy Ampleman and Dr. Sonia Thiboutot of Defence Research and Development Canada, have discovered key metabolites and intermediates that can be used to further elucidate the degradation pathways of these explosive compounds. This increased fundamental understanding of the microbial and enzymatic degradation of RDX and HMX provides a foundation for future pilot-scale demonstrations and for the development of cost-effective bioremediation technologies that can be applied to the cleanup of contaminated DoD sites.

SERDP Project of the Year—Pollution Prevention. Mr. John Weir and Dr. Don DiMarzio of the Northrop Grumman Corporation were selected for their innovative research in the nondestructive investigation of corrosion that may be present beneath the painted or coated surfaces of aircraft components. This effort succeeded in using enhanced, hand-held infrared sensors to produce quality images for inspecting aircraft structural integrity, including cracks and corrosion, under coatings. The results of this research will greatly reduce the frequency and area of paint stripping required to complete these inspections. This innovative technique will enable maintenance facilities to reduce by an order of magnitude the use of hazardous solvents and the associated creation of solid waste as well as emissions from the stripping of organic coatings. As an added benefit, this advanced inspection technology now makes possible the practical use of extended-life topcoat systems that have the potential to protect aircraft structures for up to 10 years. Annual

cost savings for the DoD are projected at \$40 million per year, and four times this amount may be saved in the commercial sector. Under ESTCP sponsorship, Northrop Grumman is scheduled to fully demonstrate this technology for use at DoD facilities.

SERDP Project of the Year—Compliance. The Project-of-the-Year Award for Compliance was presented jointly to Dr. Stephen Skrabal of the University of North Carolina at Wilmington and Dr. Martin Shafer of the University of Wisconsin-Madison for their research on the effects of dissolved copper and zinc in three marine estuaries — San Diego Bay, California; Cape Fear, North Carolina; and Norfolk Harbor, Virginia. Through their two projects, Dr. Skrabal and Dr. Shafer collectively demonstrated first, how ligands, or organic molecules with one or more unshared pairs of electrons, serve to bind with metallic ions and make them no longer bioavailable, and second, how these ligands can be used as a metric for water quality purposes. Dr. Skrabal's investigations revealed the potentially important role that sediment-water exchange can play as a source of the strong complexing ligands that control the speciation of these two potentially toxic metals in estuarine and harbor environments. Dr. Shafer's research complemented Dr. Skrabal's efforts by demonstrating that the amount of copper uptake in algal cells directly correlates to the presence and quantity of copper-binding complex ligands in the estuary. This research substantiates that accounting for metal speciation will enable a more realistic estimation of acute and chronic risk, and these results will ultimately lead to the development of scientifically based water quality standards for copper and zinc in the aquatic environment. With this data, DoD now can evaluate its water quality compliance criteria and more accurately assess its potential impacts on the harbor biological environment.

SERDP Project of the Year—Conservation. Dr. Kurt Fristrup from the Cornell Laboratory of Ornithology was selected for his innovative research in threatened and endangered species (TES) monitoring. Dr. Fristrup and his team collaborated on a project to successfully develop and implement autonomous digital recording systems and signal processing algorithms that automatically localize and classify bird songs. This innovative system was installed on both fixed and mobile platforms to monitor the Black-Capped Vireo and Golden-Cheeked Warbler over large areas of Fort Hood, Texas, including live-fire and artillery impact areas. This unique approach to TES monitoring provides an enormous amount of detailed information on these two endangered bird species and enables monitoring in areas that previously had been inaccessible to installation natural resource managers. With modification to the automatic recognition algorithms, the system is applicable to other avian species as well as other TES.

SERDP Project of the Year—Unexploded Ordnance. Mr. George Robitaille of the U.S. Army Environmental Center was selected for establishing the UXO Standardized Test Sites for technology testing and demonstration at Aberdeen Proving Ground, Maryland, and Yuma Proving Ground, Arizona. The test sites facilitate the transition of technologies to detect and discriminate unexploded ordnance through independent testing. The test sites promote the full characterization of these technologies, tracking performance as the system develops, comparing performance of different systems, and comparing performance in different environments. The standardized procedures and performance metrics developed as part of this project help to ensure that comparisons of UXO sensor technologies are consistent and valid. Mr. Robitaille, with the contributions of a large project team, has created a

SERDP and ESTCP to Develop Applied Tools Through In Situ Chemical Oxidation Initiative

In Situ Chemical Oxidation (ISCO) is an emerging technology for remediating soil and groundwater contaminants including chlorinated solvent Dense Non-Aqueous Phase Liquids (DNAPL), pesticides, and polycyclic aromatic hydrocarbons (PAH) at DoD facilities. Application of ISCO involves introduction of an oxidant, primarily Fenton's Reagent, ozone, or permanganate, into the subsurface to transform the contaminants into harmless substances. To date, the field-scale performance of ISCO technologies has varied significantly because of the limited understanding of the chemical reaction mechanisms, kinetics, and the interactions between the oxidant, contaminants, and aquifer characteristics.

To investigate the data gaps associated with this promising technology for contaminant source reduction, SERDP and ESTCP are funding several projects that focus on chemical and biological

processes involved in ISCO treatment of soil and groundwater contaminated with DNAPL. The information gathered from these projects should enable site managers to implement the technology successfully and cost-effectively. Anticipated results from these efforts include tools to expedite and facilitate ISCO technology transfer for the DoD service branches. Instructive tables or matrices will be developed that contain information to identify geochemical characteristics and other favorable and unfavorable aquifer properties that impact the application of various ISCO technologies. In addition, an ISCO technology questionnaire, including specific questions that site managers should ask vendors selling or promoting ISCO, will be prepared for inclusion with the guidance tools.

To encourage a high level of cooperation and coordination between Principal Investigators working on these

efforts, SERDP and ESTCP formed an independent ISCO Technical Review Panel composed of renowned experts in the field. Five projects, including four in SERDP and one in ESTCP, currently are under review by the panel. Project-specific information can be found at the following site devoted to the ISCO Initiative: <http://www.serdp-estcp.org/ISCO.cfm>. By the spring of 2004, Annual Summary Reports on the progress of the projects under the Panel's review will be posted on the ISCO Initiative web site. Final Reports for these projects will be available in late 2004 and throughout 2005.

For additional information on investments in this area, please contact Dr. Andrea Leeson, the SERDP and ESTCP Cleanup Program Manager, at (703) 696-2118 or via e-mail at Andrea.Leeson@osd.mil. ♦

SYMPOSIUM, from page 4

resource for site managers in need of technology, as well as an invaluable test bed for the research community.

ESTCP Project of the Year. The ESTCP Project-of-the-Year Award was presented to Mr. Bruce Sartwell of the Naval Research Laboratory for demonstrating and validating High Velocity Oxygen-Fuel (HVOF) thermal spray technology to deposit tungsten carbide-cobalt coatings on landing gear. The project team has demonstrated that tungsten carbide-cobalt coatings provide improved wear and corrosion performance, substantially reduced life-cycle maintenance costs, and an environmentally acceptable alternative to electrolytic hard chrome plating. Additionally, in 1998, Mr. Sartwell, assisted by Dr. Keith Legg of Rowan Technology Group, established the Hard Chrome Alternatives Team (HCAT) to develop a joint test protocol defining the qualification criteria for the

HVOF process and coatings for line-of-sight aerospace applications. This industry/DoD team has become an international forum to coordinate the development and evaluation of chrome alternatives for the aerospace community and continues today to refine the HVOF process and oversee materials testing. Through his noteworthy efforts, Mr. Sartwell has developed a viable replacement for line-of-sight hard chrome applications, and he also established an international forum that will continue to coordinate similar efforts for other applications.

An intensive technical program on 12 topical areas, the true substance of the Symposium & Workshop, followed the Plenary Session. These topically focused sessions provided both stimulating presentations from acknowledged experts and examples of cutting-edge technological solutions for addressing DoD's highest priority environmental

problems, including military range sustainability issues. Between technical sessions and during evening receptions, participants interacted with technical presenters and other attendees in a venue containing 250 posters and 20 exhibits from various departments and agencies. The number of international poster presenters this year surpassed previous events, a testament to SERDP and ESTCP's success in fostering international partnerships to solve environmental problems.

Planning is already under way for the next Symposium & Workshop, which is slated for November 30-December 2, 2004. The event again will be held at the Marriott Wardman Park Hotel in Washington, D.C. Topics for the technical sessions will be selected during the late winter and spring and will be announced in future issues and on our web sites. ♦

Technology Transfer Opportunity for ESTCP and SERDP at Navy's Remediation Innovative Technology Seminar

The Remediation Innovative Technology Seminar (RITS) program, sponsored by the Naval Facilities Engineering Command (NAVFAC) in coordination with its Engineering Field Divisions, Activities, and the Engineering Service Center, provides training on innovative technologies, methodologies, and guidance to the Navy's Environmental Restoration and Base Realignment and Closure (BRAC) professionals, DoD personnel, the Navy's environmental cleanup contractors, and environmental regulators. During the Fall 2003 RITS training session, ESTCP and SERDP capitalized on the opportunity to transition technologies by providing presentations at a series of locations across the United States including Waipahu, Hawaii; San Diego, California; Silverdale, Washington; Lester, Pennsylvania; Arlington, Virginia; Norfolk, Virginia; and North Charleston, South

Carolina. Other topics presented during the session included Preparing for Optimization and Site Closeout, In Situ Chemical Oxidation: Case Studies and Technology Advancements, and DCE/VC Stall at Natural Attenuation Sites. The objective of RITS training is to promote innovative technologies to achieve DoD site remediation more efficiently, cost effectively, and with higher performance.

ESTCP and SERDP's presentation, provided by Dr. Andrea Leeson, Cleanup Program Manager, and Dr. Marvin Unger and Dr. Hans Stroo of The RETEC Group, Inc., focused on how ESTCP and SERDP function, the solicitation process for the demonstration/validation of innovative technologies, and recently validated or promising technologies. Dr. Leeson highlighted new technologies that address characterization and remediation of groundwater, sediments, or soils contaminated with chlorinated solvents, energetics, perchlorate, heavy

metals, and petroleum-related compounds. The presentation concluded with a discussion of future research and the means by which Remedial Project Managers (RPM) can communicate their technology needs. Following the RITS presentations, several RPMs contacted ESTCP and SERDP to discuss hosting future demonstrations of innovative technologies at their field sites.

Through the Navy RITS program and other venues, ESTCP and SERDP strive to engage the DoD user community in applying recently developed innovative technologies at field sites.

For further information on the Navy RITS training, please visit http://enviro.nfesc.navy.mil/erb/erb_a/support/rits/rits-main.htm or e-mail rits@nfesc.navy.mil. ♦

Program Development Update

SERDP

On November 6, 2003, the solicitation for FY 2005 funds was released, and the response has been impressive. By the January 8 deadline, the Program Office received 207 pre-proposals in response to the Broad Agency Announcement that contained 21 Statements of Need. These pre-proposals have already undergone SERDP Staff review, and on February 3, Request Letters for full proposals were extended to those that show promise and meet the relevance criterion. Full proposals from the private sector, along with proposals submitted in response to the federal Call for Proposals, were due at SERDP no later than March 4. Collectively in April, these proposals will undergo an independent peer review evaluation and then be reviewed by the Technology Thrust Area Working Groups (TTAWG) during May and June.

In a parallel effort, SERDP released a SERDP Exploratory Development

(SEED) solicitation with two Statements of Need on November 6. SEED efforts are those of high risk, yet commensurate high payoff, if successful. SEED projects last no longer than one year and cost less than \$100,000. SEED proposals, which were due February 5, will undergo Staff review and be included in the proposal downselect meetings held by the TTAWGs in June.

For further details on the requirements and schedule for any of the solicitations listed above, please refer to the SERDP web site (www.serdp.org) under the Funding & Opportunities link.

ESTCP

On January 8, ESTCP released both a Call for Proposals to non-DoD federal organizations and a Broad Agency Announcement for private sector bidders requesting pre-proposals. The Call solicited pre-proposals under three topics within the Unexploded Ordnance (UXO), Cleanup, and Compliance

Pillars (see the ESTCP web site for full topic descriptions). All pre-proposals were due at the ESTCP Program Office no later than March 11. Based on a relevancy review, qualified proposers will be asked to submit a full proposal for review later this summer.

Similarly on January 8, a Call for ESTCP Phase I Proposals was sent to DoD organizations soliciting pre-proposals in Cleanup, UXO, Compliance, and Pollution Prevention technology Pillars to be submitted by April 8. The DoD ESTCP Review Committee will review these pre-proposals through June and recommend that successful proposers submit full proposals for review by multi-Agency Review Committees later in the summer.

For additional details on all ESTCP solicitations and the full proposal requirements, please refer to the ESTCP web site (www.estcp.org) under the Opportunities link. ♦

- ◆ **OUR THANKS TO ALL WHO PARTICIPATED IN THE PARTNERS IN ENVIRONMENTAL TECHNOLOGY TECHNICAL SYMPOSIUM & WORKSHOP IN DECEMBER.** The event was a tremendous success, thanks to all your efforts. Plan to join us for the next Symposium & Workshop scheduled for November 30-December 2, 2004, at the Marriott Wardman Park Hotel, Washington, D.C.
- ◆ **THE COMBINED SERDP AND ESTCP IN PROGRESS REVIEWS (IPR)** are being held in Arlington, Virginia, during April and May. The tentative schedule calls for the IPRs to be held on the following dates: Cleanup IPR (April 13-15 and April 27-30); Pollution Prevention IPR (April 19-23); Compliance IPR (May 3-7); UXO IPR (May 17-21); and Conservation IPR (May 24-26).

S ♦ E ♦ R ♦ D ♦ P

- ◆ **PROGRESS REPORT DATA** (i.e., a written summary of the quarter's technical accomplishments, updated completion dates for milestones, and any concerns regarding technical/financial progress) for the second quarter of government FY 2004 are due by April 15, 2004.
- ◆ **THE SERDP SCIENTIFIC ADVISORY BOARD (SAB) IS SCHEDULED TO MEET** March 30-April 1 in San Diego, California, and June 9-10 in Arlington, Virginia. Contact Veronica Rice at (703) 696-2119 or via e-mail at Veronica.Rice.CTR@osd.mil for additional information.

E ♦ S ♦ T ♦ C ♦ P

- ◆ **DoD PHASE I PROPOSALS ARE DUE** to the ESTCP Program Office by 4 p.m. EDT on April 8, 2004.
- ◆ **QUARTERLY REPORTS** for the second quarter of government FY 2004 are due by April 15, 2004.
- ◆ **NEW PUBLICATIONS NOW AVAILABLE ON THE ESTCP HOME PAGE** (www.estcp.org under the Documents link)

Test Protocol:

Cleanup

- ◆ *Application Guide for Bioslurping Principles and Practices of Bioslurping: Use Of Pre-Pump Separation for Improved Bioslurper System Operation (CU-9908)*

E ♦ S ♦ T ♦ C ♦ P (Continued)

Cost and Performance Reports: Cleanup

- ◆ *Application of Flow and Transport Optimization Codes to Groundwater Pump-and-Treat Systems (CU-0010)*
- ◆ *Applied Innovative Technologies for Characterization of Explosives-Contaminated DoD Building Foundations and Underlying Soils (CU-0130)*
- ◆ *Fuel-Specific Bioslurper System Modifications for Enhanced Cost Effectiveness (CU-9908)*
- ◆ *Natural Pressure-Driven Passive Bioventing (CU-9715)*

Pollution Prevention

- ◆ *Universal Stationary/Mobile NoFoam Unit (USNOFU) for Aircraft Rescue and Fire Fighting (ARFF) Vehicles (PP-0026)*

UXO

- ◆ *Electromagnetic Induction and Magnetic Sensor Fusion for Enhanced UXO Target Classification (UX-9812)*
- ◆ *Evaluation of Footprint Reduction Methodology at the Cunny Table in the Former Badlands Bombing Range, Report for 2000 Survey (UX-3002)*
- ◆ *Innovative Navigation Systems to Support Digital Geophysical Mapping (UX-0129)*



STRATEGIC ENVIRONMENTAL RESEARCH AND DEVELOPMENT PROGRAM (SERDP)
ENVIRONMENTAL SECURITY TECHNOLOGY CERTIFICATION PROGRAM (ESTCP)

INFORMATION
BULLETIN

WINTER 2004

NUMBER 19

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F O R S E R D P A N D E S T C P

MARCH 2004

March 30-April 1

SERDP Scientific Advisory Board (SAB) meeting

APRIL 2004

April 8

ESTCP DoD Phase I proposals due

April 13-15

Cleanup In Progress Review (IPR) meetings
(week 1 of 2)

April 19-23

Pollution Prevention In Progress Review (IPR) meetings

April 27-30

Cleanup In Progress Review (IPR) meetings
(week 2 of 2)

MAY 2004

May 3-7

Compliance In Progress Review (IPR) meetings

May 17-21

UXO In Progress Review (IPR) meetings

May 24-26

Conservation In Progress Review (IPR) meetings

RELATED CONFERENCES & EVENTS

March 22-24

ITRC Spring Membership Meeting
Atlanta, Georgia

For more information, visit

<http://www.itrcweb.org/common/default.asp>.

May 9-13

Sixth International Symposium on Technology and
the Mine Problem
Monterey, California

For more information, visit

http://www.minwara.org/Meetings/2004_05/2004_05_Symposium.htm.

May 24-27

Remediation of Chlorinated and Recalcitrant
Compounds—The Fourth International Conference
Monterey, California

For more information, visit

<http://www.battelle.org/environment/er/conferences/chlorcon/default.stm>.

June 15-17

Accelerating Site Closeout, Improving Performance,
and Reducing Costs Through Optimization
Dallas, Texas
Participating organizations include SERDP and ESTCP.

For more information, visit <http://clu-in.org/siteopt/siteopt.htm>.

June 22-25

Air & Waste Management Association's 97th Annual
Conference & Exhibition
Indianapolis, Indiana

For more information, visit

<http://www.awma.org/ACE2004>.

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INFORMATION

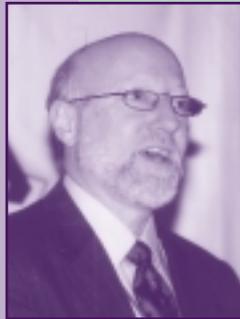
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PLENARY SESSION

Under the theme "Meeting DoD's Environmental Challenges: Sustaining Our Ranges; Reducing Environmental Liabilities," the opening Plenary Session speakers challenged attendees to take action toward achieving sustainability in the military.



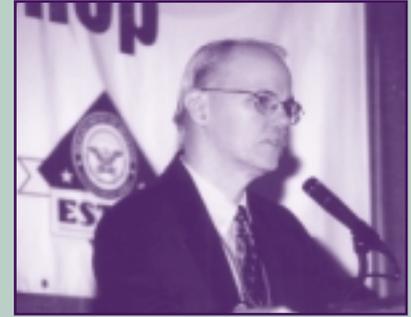
Ms. Maureen T. Koetz,
Deputy Assistant Secretary
of the Air Force for
Environment, Safety, and
Occupational Health



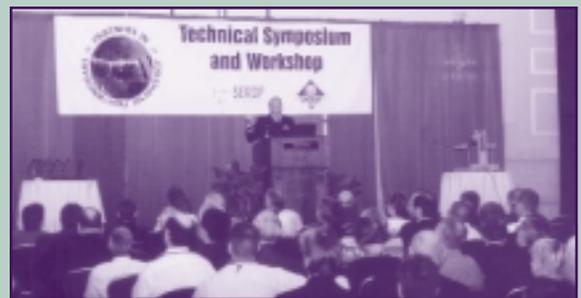
Dr. Jeffrey A. Marqusee,
Director of ESTCP



Mr. Ray C. Anderson,
Chairman of the Board,
Interface, Inc.



Mr. Bradley P. Smith,
Executive Director of SERDP



More than 750 attendees representing the United States and seven other countries participated in the Symposium, highlighting the successful international partnerships forged by SERDP and ESTCP to solve DoD's environmental problems.



Following the Plenary Session, Brigadier-General H.M. Petras, CD, Director of General Land Combat Development for the Canadian Forces, exchanged ideas with an attendee about range sustainability.

Partners in Environmental Technology Technical Symposium & Workshop



Marriott Wardman Park Hotel
Washington, D.C.
December 2-4, 2003



Above: Mr. Bruce Sartwell (center) and his colleagues recognized with the ESTCP Award.

PROJECT OF THE YEAR AWARDS

Below: Dr. C. Herb Ward (right), Chair of SERDP's Scientific Advisory Board, presented six awards in recognition of significant scientific advances, including the SERDP Compliance Award shared by Dr. Stephen Skrabal (left) and Dr. Martin Shafer.



Upper left: Dr. Jalal Hawari (center) and his project team honored with the SERDP Cleanup Award.



Lower left: Mr. George Robitaille (center) and his colleagues selected for the SERDP UXO Award.



Upper right: Dr. Marqusee (left) and Mr. Smith (right) congratulated Dr. Kurt Frstrup for the SERDP Conservation Award.

Lower right: Mr. John Weir (center) and his co-performers received the SERDP Pollution Prevention Award.



EXHIBIT HALL

Between technical sessions and during evening receptions, attendees toured 250 posters and 20 exhibit booths while exchanging information and discussing technology transfer opportunities.



*"...Partners Workshop is top tier. Extremely well run, top notch speakers, and most importantly, high quality research."
—2003 Attendee*



*"...great exchanges with other conference participants and certainly look forward to next year's conference."
—2003 Attendee*



TECHNICAL SESSIONS



Stimulating and insightful presentations on 12 focused topical areas encouraged audience participation and follow-on discussion between acknowledged experts and the research and technology user communities.