



WINTER 2006
NUMBER 26



Symposium Validates Role of Environmental Sustainability in Enhancing Military Readiness

When acclaimed author and consultant **Mr. Alan AtKisson** began working on environmental issues in 1988, few people were familiar with the term “sustainability.” Today, hundreds of thousands of people worldwide are involved in sustainability initiatives, including, Mr. AtKisson noted, many of the nearly 900 environmental professionals who attended the 2005 Partners in Environmental Technology Technical Symposium & Workshop. Mr. AtKisson was a featured speaker at the opening session of the annual technical exposition hosted by SERDP and ESTCP that took place at the Marriott Wardman Park Hotel in Washington, D.C., November 29 through December 1, 2005.

Mr. AtKisson is the president and CEO of The AtKisson Group, an international consulting firm, and author of several books, including *Believing Cassandra: An Optimist Looks at a Pessimist's World*. While he acknowledged that achieving environmental sustainability in the Department of Defense (DoD) and in the world at large remains a daunting challenge, Mr. AtKisson called on attendees to renew their commitment to these efforts and to what he described as the “great vision” required to take on such challenges.

“There is a way forward to sustainability,” Mr. AtKisson told the engaged audience. “It is doable. It requires technical changes, behavioral changes, and value changes. But it is doable.”

SERDP and ESTCP continue to make significant contributions to help DoD work toward both environmental sustainability and improved mission readiness, **Mr. Alex Beehler**, Assistant Deputy Under Secretary of Defense (Environment, Safety and Occupational Health), told attendees during the Plenary Session. “It’s truly a win-win situation, which is very hard to find in other programs.” Mr. Beehler added, “The Programs’ return on value for dollars spent has been absolutely astronomical.”

By funding innovative research and demonstrations, the Programs are helping DoD to better understand how military activities may affect neighboring communities as well as ecological systems on these installations, ensuring the continued use of these unique and realistic training environments. During his briefing, Mr. Beehler recognized examples of SERDP and ESTCP successes that have impacted DoD’s ability to maintain mission readiness. He said he believed SERDP and ESTCP will continue to play a major leadership role in meeting DoD’s environmental challenges. “Both programs really do improve the environment and improve the mission,” Mr. Beehler said.

U.S. Coast Guard **Rear Admiral John Acton**, Deputy Area Commander for Mobilization and Reserve Affairs, Atlantic Area, spoke during the Plenary Session of the Coast Guard mission and recent operations. Rear Admiral Acton was deployed to New Orleans and later to Texas to help coordinate the Coast Guard’s response to Hurricanes Katrina and Rita. He noted that the Coast Guard rescued more than 33,700 people in the aftermath of Katrina and Rita. The Coast Guard also was faced with more than 4,674 oil and hazardous waste spills directly related to Katrina and more than 150 such spills from Rita. Among the lessons learned by the Coast Guard for future environmental disasters was to closely coordinate plans and actions with DoD, state, and federal officials and to predeploy personnel to anticipated disaster areas. “Also, try to anticipate the unexpected,” Rear Admiral Acton said.

At the conclusion of the Plenary Session, **Bradley P. Smith**, Executive Director of SERDP, and **Dr. Jeffrey A. Marqusee**, Director of ESTCP and Technical Director of SERDP, presented four SERDP and one ESTCP Project-of-the-Year Awards that recognize successful research and technology

INSIDE THIS ISSUE

— **2** —
Enhanced Anaerobic Bioremediation Principles and Practices Manual

— **3** —
SERDP and ESTCP Tackle Noise Impacts

— **4** —
New Munitions Management Efforts Awarded Funding

— **6** —
Symposium & Workshop Highlights

— **9** —
Dr. Robert Holst Retires, Dr. John Hall Assumes Role

— **10** —
Program Development Update

New Documents Posted in Online Library

S • U • C • C • E • S • S S T O R I E S

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 innovations. These advances 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

Tri-Service Initiative Led by ESTCP Develops Principles and Practices Manual for Implementing Enhanced Anaerobic Bioremediation

Through multiple field demonstrations supported by ESTCP over the past 10 years, enhanced anaerobic bioremediation has gained widespread acceptance by regulators, contractors, and site personnel as a viable and cost-effective strategy for remediation of chlorinated solvents in groundwater at DoD sites. A Principles and Practices manual is now available to assist remedial project managers (RPM) in identifying optimum approaches to achieve remedial goals using this technology. This manual was developed through a recent tri-service effort led by ESTCP involving the Naval Facilities Engineering Command (NAVFAC), Air Force Center for Environmental Excellence (AFCEE), and U.S. Army Corps of Engineers (USACE).

To date, enhanced anaerobic bioremediation has been implemented at more than 60 sites across the country. Compared to pump-and-treat systems, DoD already has saved more than a half billion dollars using enhanced anaerobic bioremediation. This technology involves the delivery of organic substrates into the subsurface for the

purpose of stimulating microbial growth and development, leading to reductive dechlorination of compounds such as tetrachloroethene (PCE), trichloroethene (TCE), and 1,1,1-trichloroethane (TCA) into harmless endproducts such as ethene and ethane. Implementation of this technology in the field has been complicated by the myriad of organic substrates available and the need for improved tools to apply and monitor bioremediation.

Under the ESTCP project *Evaluation of Performance and Costs Associated with Anaerobic Dechlorination (ER-0125)*, investigators from the Naval Facilities Engineering Service Center (NFESC) in collaboration with AFCEE and the USACE, developed “Principles and Practices of Enhanced Anaerobic Bioremediation of Chlorinated Solvents.” The manual is divided into three parts: an overview of enhanced in situ anaerobic bioremediation; a description of the science and principles of anaerobic bioremediation; and guidance on the steps required to practice and evaluate the technology effectively. It provides a technology road map to promote successful implementation of enhanced anaerobic bioremediation, while identifying “red flags” that may limit success. Several illustrative case studies of field applications are highlighted in the appendices.

Once an RPM has determined that enhanced anaerobic bioremediation is suitable for a site, the manual provides further instruction on the design of appropriate enhanced bioremediation

system configurations and the selection of an appropriate substrate for application. It also describes several analytical techniques and the rationale for when to use them. A supplemental Microsoft Excel-based cost estimating tool, suitable for screening various configurations of enhanced bioremediation, is provided. The Principles and Practices manual, its associated tools, and other resources relevant to enhanced anaerobic bioremediation of chlorinated solvents are available at <http://www.estcp.org/Technology/ER-Chlorinated-Solvents.cfm>.

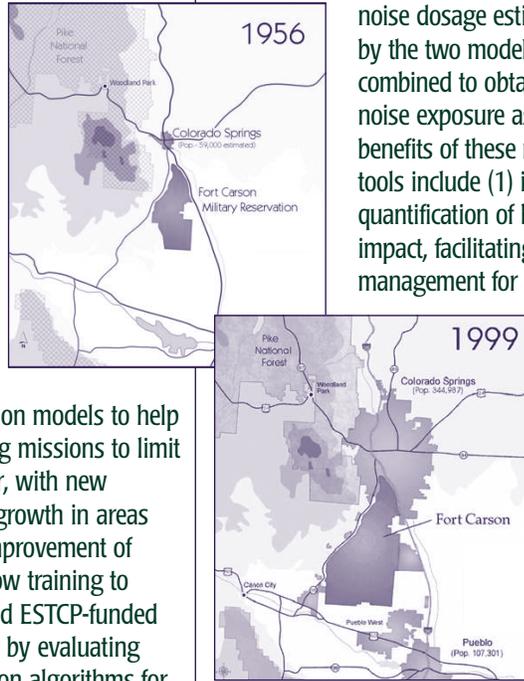
In developing the Principles and Practices manual, investigators conducted a survey of publicly available documents and site information to assess the state-of-the-art and current practice of applying enhanced anaerobic bioremediation. They compared several alternative approaches for applying enhanced anaerobic bioremediation as well as their efficacy under various site conditions. The survey includes data from 93 sites on the contaminants of concern; type, cost, and effectiveness of the selected substrate; type of impacted media; application technique; aggressiveness of treatment; any regulatory concerns; and lifecycle costs. The most frequently used substrates were hydrogen release compound (HRC®) (35 sites), molasses (15 sites), lactate (14 sites), and edible oils (10 sites). Other substrates included butyrate, acetate, fructose, lactose, methanol/acetate, ethanol, sodium benzoate, mulch, chitin, and hydrogen.

See ANAEROBIC BIOREMEDIATION, page 11

Tackling the Military Noise Issue

The Department of Defense conducts numerous training activities such as aircraft weapons firing, artillery shelling, and small arms firing that produce impulsive noise, which can affect communities both on and near an installation. As urban areas expand closer to military training facilities, the number of noise-related concerns (e.g., potential impacts to land use, property, and wildlife habitats; psychological discomfort to humans) has risen, resulting in costly damage claims and increasingly severe restrictions on the scope and frequency of training. Planners for military training facilities, and operations use noise prediction models to help schedule and execute training missions to limit the impact of noise. However, with new weapons systems and with growth in areas surrounding installations, improvement of such models is critical to allow training to continue. Several SERDP- and ESTCP-funded efforts are tackling this issue by evaluating and refining noise propagation algorithms for existing and new airborne platforms and for various weapons (source terms); estimating the potential damage to structures from military impulsive noise (resulting effects); and developing monitoring systems capable of detecting noise events and discerning military noises from naturally occurring sounds.

The ability to forecast and assess community noise exposure is a key element of an effective noise management strategy. Noise dosage assessment models are useful when siting new ranges and planning training operations to minimize noise impacts on community health and welfare. These models also are used to assess noise dosage in order to guide compatible land use decisions and to assess the impact of training activity on endangered species. Investigators working on an ESTCP-funded effort, *Assessing and Controlling Blast Noise Emission (SI-0006)*, are demonstrating and validating two noise assessment models recently developed by the U.S. Army Corps of Engineers, Engineer



Research and Development Center (ERDC), Construction Engineering Research Laboratory. Developed using actual artillery and explosive noise data, BNOISE2 enables the calculation and display of noise exposure contours for artillery and explosive operations. Likewise, using actual small arms fire noise data, SARNAM provides a similar capability for small-arms ranges. The final noise dosage estimates derived by the two models can be combined to obtain an overall noise exposure assessment. The benefits of these new modeling tools include (1) improved quantification of blast noise impact, facilitating noise management for existing and

Over time, urban areas have expanded closer to military installations such as Fort Carson in Colorado, increasing noise-related concerns that SERDP and ESTCP initiatives are working to address.

new ranges; (2) enhanced technical capability for military noise management and operations planning; (3) efficient use of resources when acquiring additional land as a buffer to avoid excessive noise impacts; and (4) sustained military readiness while reducing community noise levels.

Improving noise model capabilities to assess the impact of military aircraft operations for some of the existing and newest generations of fighter aircraft is the goal of two SERDP projects—*Advanced Acoustic Models for Military Aircraft Noise Propagation and Impact Assessment (SI-1304)* and *Airborne Weapons Noise Prediction Model (SI-1397)*—under the direction of Wyle Laboratories, Inc. Current noise models do not take into account the latest technology of high performance engines and their vectored thrust capabilities.

Investigators obtained field measurements at the MOBILE Acoustic Source (MOAS), Blossom Point, Maryland, to capture high amplitude sound sources and at Edwards Air Force Base, California, for ground run-up jet noise from F/A-22 aircraft. These field measurements enabled development of the nonlinear acoustic propagation algorithm in MATLAB. The resulting models will provide environmental specialists with the tools needed to accurately assess impacts of the newest aircraft around military bases and on ranges. In conjunction with these models, investigators also are assessing noise impacts due to aircraft mounted artillery by characterizing the noise generated by such systems, as well as evaluating and refining current weapon noise propagation algorithms for the various airborne platforms. This research will enable completely new sets of operational scenarios to be modeled, assisting in public presentations and the understanding and mitigation of potential noise impacts by airborne weapon operations.

A persistent belief held by the public is that airborne impulsive noise generated by military operations propagates through the ground. A literature review conducted under SERDP project *Prediction Model for Impulsive Noise Impacts on Structures (SI-1398)* revealed an overwhelming consensus that propagation of noise from the sources of interest is predominantly airborne. Using the latest technology for assessing potential damage and rattling of building components when exposed to impulsive noise, Wyle Laboratories performed measurements of military impulsive noise sources at Aberdeen Proving Ground, Maryland; Fort Sill, Oklahoma; and McAlester Army Ammunition Plant, Oklahoma. Airborne and ground borne propagation were assessed, together with the response of numerous buildings at each facility. Propagation was confirmed to be predominantly airborne, and transfer functions are being developed for the structures tested. A damage probability model has been formulated based on generalization of an existing sonic boom damage model. Additional research on ground vibrations has been conducted through the **SERDP Exploratory Development**

Initiatives in Munitions Management

highlighted. This issue features recently awarded Munitions Management efforts.

Active Tensor Magnetic Gradiometer System (MM-1514)

Principal Investigator: David Smith/U.S. Geological Survey

This project aims to prove the concept of an Active Tensor Magnetic Gradiometer System using physics-based models and systems-based real-world simulations. This innovative system will address the problem of detecting and discriminating UXO effectively in highly cluttered environments.

Statistical Methods for UXO Pattern Recognition (MM-1531)

Principal Investigator: Mitchell Small/Carnegie Mellon University

This project will investigate the hypothesis that spatial patterns of metallic anomalies at UXO sites and in non-UXO areas are fundamentally different and can be used to distinguish non-UXO from UXO-containing areas without excavating metallic anomalies as part of wide-area surveys. The approach is based on formal statistical methods developed for spatial point pattern analysis.

Sensor Phenomenology and Feature Development for Improved Sonar-Based Detection and Discrimination of Underwater UXO (MM-1533)

Principal Investigator: Eugene Lavelly/BAE Systems

No effective capability exists to survey underwater environments and to map the location of UXO for site characterization, and there is little understanding of the UXO or clutter characteristics from which to establish performance requirements. The objective of this project is to comprehensively evaluate the utility of synthetic aperture sonar for shallow-water UXO remediation.

ESTCP Demonstrations

Information on these newly funded efforts soon will be available on the ESTCP web site at www.estcp.org under the Technologies link.

Combined Magnetometer/Electromagnetic Induction Array for Cued UXO Discrimination (MM-0601)

Principal Investigator: Herb Nelson/Naval Research Laboratory

The objective of this project is to design, construct, and demonstrate a vehicle-towed combined magnetometer/electromagnetic induction sensor array to be used for discrimination of UXO from clutter. The vehicle-towed array's discrimination ability will be equal to the best gridded survey techniques with the coverage rate of a vehicular system.

Multisensor EM63 for UXO Detection and Discrimination in Areas with Magnetic Soil (MM-0602)

Principal Investigator: G. Hunter Ware/Geophysical Associates

This project will develop a multisensor EM63 platform for more efficient coverage of large open areas with laterally variable, high magnetic susceptibility soils. Efficient UXO detection and discrimination can have a significant impact on the cost and effectiveness of remediation through reduction of false positives and residual risk.

Metal Mapper: A Multisensor TEM and Magnetic Gradiometer System for UXO Detection and Classification (MM-0603)

Principal Investigator: Mark Prouty/Geometrics, Inc.

The objective of this project is to develop and demonstrate an instrument that can simultaneously complete both a time-domain electromagnetic (TEM) survey and a magnetic gradiometer survey. The Defense Science Board has observed

that the introduction of survey technology that reduces the false alarm rate and improves the probability of detection can significantly affect overall costs.

Inertial Navigation System Improvements for Target Characterization (MM-0604)

Principal Investigator: Scott Millhouse/U.S. Army Corps of Engineers, Engineering and Support Center Huntsville

Accurate characterization and identification of buried targets as UXO or non-UXO are required so remediation resources can be focused on hazardous targets, and non-hazardous targets can be left in place. This project will demonstrate a system that can be used to reoccupy and interrogate a set of small areas and quickly provide precise three-dimensional position data to maximize the accuracy achievable by a standard Geonics EM61 handheld sensor.

Use of Commercial-Off-The-Shelf Vehicles for Towed Array Magnetometry (MM-0605)

Principal Investigator: Robert Siegel/SAIC

The objective of this project is to test several commercial-off-the-shelf low-ferrous vehicles for their applicability to towed magnetometer arrays and to assess if any remaining vehicle signature can be removed through data processing. Most vehicles are highly ferromagnetic, and a towing vehicle's magnetic self-signature typically overwhelms the signal from subsurface objects such as UXO. Further, because the vehicle signature is induced by the Earth's magnetic field, it changes with the vehicle's direction and pitch.

Efficient Shallow Underwater UXO Retrieval (MM-0606)

Principal Investigator: Jim McDonald/AETC Incorporated

Currently, Explosive Ordnance Disposal or commercial UXO recovery teams retrieve UXO targets in shallow water by a UXO specialist diver/swimmer using hand tools to expose the target. This project will demonstrate a relatively efficient, economical, and safe approach for recovery of individual UXO targets in shallow water. Targets that are either proud or partially proud of the bottom will be retrieved using an electromagnet or a grapple and placed on a holding craft. Targets buried in the bottom sediments will be accessed using a vacuum water jet dredge system to expose the targets.

Wide-Area UXO Screening with the Multi-Sensor Fixed Wing Airborne System MARS (MM-0607)

Principal Investigator: Stephen Billings/Sky Research Inc.

DoD faces an increased demand for low-cost, high-resolution wide area assessment of former and active military facilities contaminated with UXO. The Minimum Altitude Remote Sensing (MARS) system to be demonstrated provides the ability to characterize large sites with improved cost efficiency, reliability, and safety as compared with other low-altitude systems. MARS deploys cesium magnetometers using an advanced data acquisition system via a light sport aircraft.

Transportable Manned and Robotic Digital Geophysical Mapping Tow Vehicle (MM-0608)

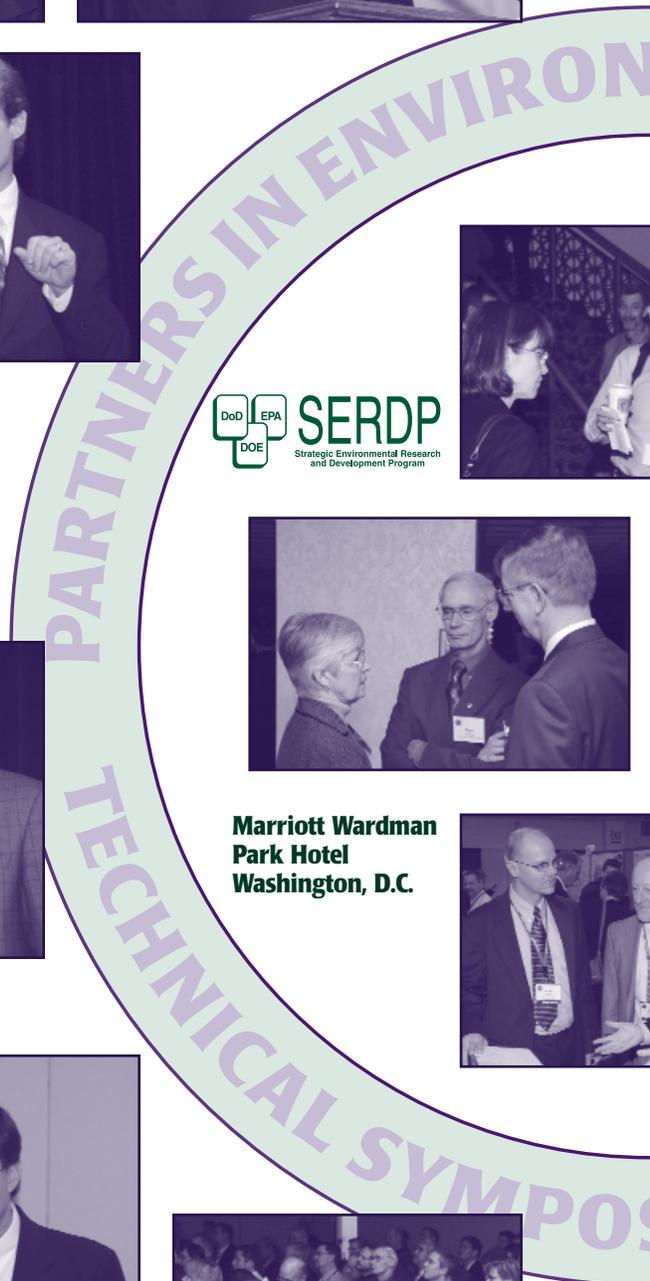
Principal Investigator: Scott Millhouse/U.S. Army Corps of Engineers, Engineering and Support Center Huntsville

Many UXO remediation sites require man-portable geophysical sensor platforms because of challenges posed by terrain and ground cover. The quality of digital geophysical mapping (DGM) data collected from man-portable equipment can be degraded due to operator fatigue. This project will demonstrate use of the transportable battery power-towed Segway Robotic Mobility Platform to collect high-quality DGM data.

PLENARY SESSION



During the opening Plenary Session, three distinguished speakers commended the SERDP and ESTCP programs for their responsiveness to DoD needs and encouraged participants to seek innovative approaches to help DoD achieve sustainability. Clockwise from top left: Mr. Alex Beehler, Assistant Deputy Under Secretary of Defense for Environment, Safety and Occupational Health; following his presentation, Mr. Beehler fielded questions from the media; U.S. Coast Guard Rear Admiral John Acton, Deputy Area Commander for Mobilization and Reserve Affairs (Atlantic Area); Mr. Alan AtKisson, acclaimed author; and Mr. AtKisson signed his book *Believing Cassandra: An Optimist Looks at a Pessimist's World*.



**Marriott Wardman Park Hotel
Washington, D.C.**

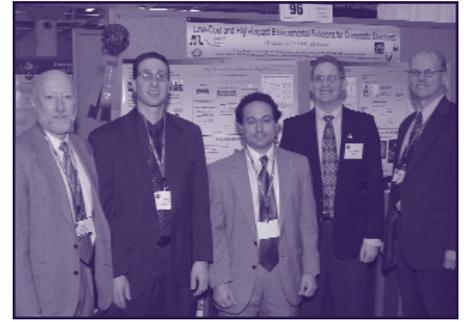


Stimulating presentations on 12 focused topical areas encouraged audience participation, follow-on discussion, and networking between acknowledged experts and the research and technology user communities.



TECHNICAL SESSIONS

PROJECT-OF-THE-YEAR AWARDS

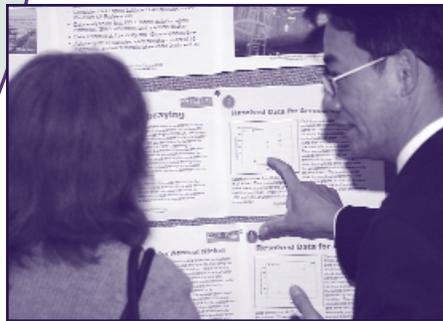
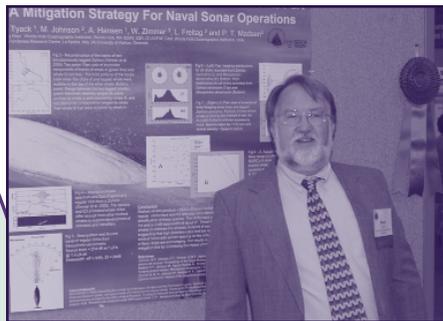


Clockwise from top left: Mr. Gerard Mongelli displayed the ESTCP Award at his poster highlighting a novel technology; Dr. Robert Siegrist (second from right) shared his SERDP Environmental Restoration Award with members of his research team; ESTCP Director Dr. Jeffrey Marqusee (left) and SERDP Executive Director Mr. Bradley Smith (right) congratulated SERDP Weapons Systems and Platforms Award recipient Dr. James Sands (second from right) and his research team while touring posters; Dr. Lawrence Carin received the SERDP Munitions Management Award from Mr. Smith (left) and Dr. Marqusee (right); SERDP Sustainable Infrastructure Award recipient Dr. Peter Tyack presented his award-winning research during a poster session.

ENVIRONMENTAL TECHNOLOGY SYMPOSIUM & WORKSHOP



November 29 – December 1, 2005



During the Symposium & Workshop, attendees and presenters had many opportunities to network while touring a record-breaking number of posters and exhibit booths.



EXHIBIT HALL

developments with significant benefits to DoD. Recipients of this prestigious honor and descriptions of their award-winning projects follow.

SERDP Project of the Year—Environmental Restoration. **Dr. Robert Siegrist**, Professor and Director of Environmental Science and Engineering at the Colorado School of Mines, was selected for his work in improving the processes used to clean up hazardous waste on military sites. Dr. Siegrist's research involved in situ chemical oxidation (ISCO), a technology used to treat low levels of chlorinated solvents and petrochemicals on contaminated sites. To successfully apply this technology to sites contaminated by dense nonaqueous phase liquids (DNAPL), more information is needed about the processes taking place in soils and in the ground's subsurface.

Through this effort, Dr. Siegrist and his team have built a knowledge base for treating DNAPL effectively using ISCO that can be translated into practices that remediation engineers can use in the field. Dr. Siegrist's research results are already being transitioned to a demonstration project under ESTCP that will develop useful guidance.

SERDP Project of the Year—Weapons Systems and Platforms. **Dr. James Sands** of the U.S. Army Research Laboratory at Aberdeen Proving Ground, Maryland, was selected for his work in developing cost-effective, environmentally friendly composite materials for use in military vehicles. Dr. Sands' work has enabled the military to reduce emissions of hazardous air pollutants during their manufacture and to reduce the exposure of soldiers to toxic chemicals while using composite materials.

Preventing and treating corrosion on military vehicles such as trucks and Humvees is an ongoing challenge. In recent years, the military has begun to move away from steel that corrodes easily to using composite materials for structural components. But existing

composite resin materials emit volatile organic compounds such as styrene and methylene chloride during the fabrication of these components and leach toxins over the life of the vehicle.

Dr. Sands and his team have developed new composite materials that have as much as 78% lower emissions than existing resin systems and a higher fracture toughness, resulting in a two-fold increase in performance characteristics. These new materials are expected to be used on vehicles in all military services in the coming years.

SERDP Project of the Year—Munitions Management. **Dr. Lawrence Carin** of the Department of Electrical and Computer Engineering at Duke University was selected for his work in developing more efficient and accurate processes for detecting and discriminating UXO on military sites. Dr. Carin's work using active-learning algorithms is enabling the military to improve the accuracy of UXO detection and discrimination, thereby reducing the number of total excavations and substantially reducing UXO remediation costs.

More than 1,400 military sites are suspected of containing explosives and propellants from munitions that have been armed and fired and remain unexploded through malfunction. It is essential for DoD to develop cost-effective, accurate, and efficient methods for detecting UXO and for discriminating UXO from scrap metal and other harmless materials.

Dr. Carin and his team's cutting edge work has fundamentally advanced the ability to use active learning techniques to address a UXO site cost-effectively and safely. His work is now being tested under ESTCP and is expected to be used in the future clean up of hundreds of UXO sites.

SERDP Project of the Year—Sustainable Infrastructure. **Dr. Peter Tyack**, Woods Hole Oceanographic Institution, was selected for his work in developing an

acoustic tag that for the first time enables scientists to monitor the behavior of marine mammals while they are underwater. Dr. Tyack was selected for this award because his work is helping DoD assess the potential effects of naval operations on marine mammals.

Characterizing marine mammal behavior while they dive as well as how they use and react to sound is of particular concern to DoD. The Department seeks to develop methods to determine the near-and long-term effects of naval operations on marine mammal behavior.

The noninvasive digital acoustic recording tags developed by Dr. Tyack and his team measure what each animal hears as well as the vocalizations they make, how fast they swim, how deep they dive, and their behavioral and physiological responses to the surrounding environment. Dr. Tyack's work offers the potential for using passive acoustic detection of these species in important Navy undersea ranges and for developing monitoring and mitigation tools.

ESTCP Project-of-the-Year Award. **Mr. Gerard Mongelli** of Concurrent Technologies Corporation was selected for his work in demonstrating the effectiveness of low-power, lightweight, handheld portable lasers as an environmentally safe alternative to existing coatings removal processes for military weapons systems and other equipment. Using laser energy for coating removal is an innovative new technology that can be applied to a variety of substrates, including composites, glass, metal, and plastics. The high level of energy absorption at the surface of a coating material results in the decomposition and removal of the coating with only a minimal increase in temperature.

Existing methods for decoating aircraft, vehicles, and other equipment are costly, time-consuming, labor-intensive, and require hazardous chemicals or blasting. With support from

(SEED) project, *Evaluation of Ground Vibrations Induced by Military Noise Sources (SI-1410)*, under the direction of the U.S. Army Corps of Engineers, ERDC Cold Regions Research and Engineering Laboratory. Though most of the effect on structures is due to acoustic sound waves, there is some significant level of effect to buildings because of the seismic wave, especially when the explosion occurs on or in the ground. Based on existing measurement data, researchers developed a model that predicts peak ground vibration from military noise sources for a variety of soil and ground conditions. The information and tools developed under these projects represent a significant advance in understanding the effects of blast waves on structures and the influence of ground propagation on levels of vibrations experienced, assisting the military in accurately assessing complaints and damage claims attributed to ground motion.

Monitoring systems to support noise management are being developed through two SERDP efforts. Researchers at the Applied Physical Sciences Corporation under SERDP project *Impulse Noise Bearing and Amplitude Measurement and Analysis System (BAMAS)*



SERDP researchers are updating noise models to account for the latest weapons systems.

(*SI-1427*) are developing an improved system for measuring and analyzing impulsive acoustic noise. Hardware and software developments will improve the basic measurement of impulse noise, as well as the automatic detection and reporting of noise events. A complementary SEED project, *Development of Metrics for Identifying Military Impulse Noise Sources (SI-1436)*, is exploring the development of a novel impulse-noise monitoring system that can discern military noises from naturally occurring sounds.

Researchers from the University of Pittsburgh are creating a library of military impulse noises and developing software algorithms to form the basis of a real-time noise classification system that can autonomously distinguish between wind and military impulse noise. Such a system could be instrumental in assessing damage claims as well as providing instant feedback to determine whether conditions are favorable to conduct military training exercises.

Collectively, these SERDP and ESTCP projects will provide military trainers and facility and operations planners with advanced models and tools to assess and control the impact of noise on and off military installations. These models and tools will allow the training mission for the latest weapons platforms on the ground and in the air to continue efficiently and cost-effectively.

Additional information about these ongoing projects that together are tackling the military noise issue can be found on the SERDP web site at <http://www.serdp.org/Research/SI-Facilities-Management.cfm> and on the ESTCP web site at <http://www.estcp.org/Technology/SI-Facilities-Management.cfm>. ♦

Dr. John Hall Replaces Dr. Robert Holst as Sustainable Infrastructure Program Manager

After 10 years of service to SERDP and ESTCP as the Program Manager for Pollution Prevention (3 years), Compliance (9 years), and Conservation (7 years) and recently as the Sustainable Infrastructure Program Manager under the new management structure, Dr. Robert Holst is retiring from federal service. While he will certainly be missed, we wish him well in his future endeavors! Dr. John Hall recently moved to the Arlington, Virginia, area to assume the role of Program Manager for Sustainable Infrastructure efforts. He joins us from The Nature Conservancy, where he was the Sonoran Desert Program Manager for more than 5 years. Dr. Hall earned his doctoral degree in zoology from Washington State University. He can be reached at (703) 696-2125 or via e-mail at John.Hall@osd.mil. Given the high level of activity in the Sustainable Infrastructure area, Dr. Hall has hit the ground running. Please join us in welcoming him as our new Program Manager. ♦

Congratulations to . . .

Congratulations to Dr. John Zimmerman from Stanford University who was recently recognized by the Association of Environmental Engineering and Science Professors (AEESP) as the 2005 recipient of the Engineering Science Ph.D. Thesis Award for the best Ph.D. thesis submitted in 2004. SERDP-funded research under project ER-1207 served as the basis for his thesis, "In Situ Stabilization of Persistent Organic Contaminants in Marine Sediments."

Through this effort, Dr. Zimmerman investigated the feasibility for in situ stabilization/containment of PAHs and PCBs in marine sediments through use of low-cost, coal-derived material as sorbent media to sequester the contaminants and reduce bioavailability. The addition of fresh coal-derived sorbents to contaminated sediments may reduce ecosystem exposure by reducing contaminant flux between sediments and pore water and the water column. Using this approach, sediment restoration, water quality improvement, and environmental protection may be achieved without dredging or capping.

Dr. Zimmerman received his award on October 31, 2005, at the AEESP Award Ceremony, which was held during the annual Water Environment Federation meeting in Washington, D.C. ♦

Program Development Update

SERDP

On November 10, 2005, SERDP released the solicitation for FY 2007 funds, and the response has been impressive. By the January 5 deadline, the Program Office received 230 pre-proposals in response to the 17 Statements of Need (SON). SERDP Staff reviewed these pre-proposals, and on February 2, requested letters for full proposals that show promise and meet the relevance criterion. Full proposals from the private sector and proposals submitted in response to the federal Call for Proposals are due on March 16. Collectively in April, these proposals will undergo an independent peer review evaluation and then be reviewed in June by the SERDP Technical Committees (STC).

SERDP also released a SERDP Exploratory Development (SEED) solicitation with three SONs on November 10. SEED efforts are high risk, high payoff, if successful. SEED projects last no longer than one year and

cost less than \$100,000. SEED proposals, due March 16, will undergo Staff review and be included in the proposal selection meetings held by the STCs in June.

In November 2005, SERDP released a separate special solicitation for the newly formed Defense Coastal/ Estuarine Research Program (DCERP). SERDP requested proposals for research to evaluate the effects of military activities on, and to support the sustainable management of, estuarine and coastal ecosystems, using Marine Corps Base Camp Lejeune, North Carolina, and the New River estuary as a test site. Proposals were received on February 16, 2006, and are currently under review.

For further details on the solicitations listed above, please visit www.serdp.org under the *Funding & Opportunities* link.

ESTCP

On January 5, ESTCP released both an FY 2007 Call for Proposals to non-DoD federal organizations and a Broad Agency

Announcement for the private sector requesting pre-proposals. The Call solicited pre-proposals under three topics within the Environmental Restoration, Munitions Management, and Sustainable Infrastructure Focus Areas. All pre-proposals are due at the ESTCP Program Office on March 9. Based on a relevancy review, qualified proposers will be asked to submit a full proposal for review later this summer. Also on January 5, a Call for Proposals was sent to DoD organizations soliciting pre-proposals in the Environmental Restoration, Munitions Management, Sustainable Infrastructure, and Weapons Systems and Platforms Focus Areas to be submitted by March 9. The ESTCP Technical Committees (ETC) will review all pre-proposals through May and recommend that successful proposers submit full proposals for review by the multi-Agency ETC in September. For additional details on all ESTCP solicitations, please visit www.estcp.org under the *Opportunities* link. ♦

Recent Additions to the SERDP and ESTCP Online Library

The following new publications are now available in the SERDP & ESTCP Online Library (<http://docs.serdp-estcp.org>). Conduct search by entering project number (e.g., 0125) under Search Phrase.

Environmental Restoration

- Final Report: Principles and Practices of Enhanced Anaerobic Bioremediation of Chlorinated Solvents (ESTCP ER-0125)
- Technical Report: SERDP and ESTCP Expert Panel Workshop on Research and Development Needs for the Environmental Remediation Application of Molecular Biological Tools, October 2005
- Final Report: Reduction of Particulate Emissions from Turbine Engines Using the +100 Additive (ESTCP WP-0121)
- Final Report: Optimization of an Innovative Biofiltration System as a VOC Control Technology for Aircraft Painting Facilities (SERDP WP-1104)
- Final Report: Critical Factors for the Transition from Chromate to Chromate-Free Corrosion Protection (SERDP WP-1119)

Munitions Management

- Final Report: UXO Target Detection and Discrimination with Electromagnetic Differential Illumination (SEED Project) (SERDP MM-1355)
- Final Report: Nondestructive Testing of Corrosion Under Coatings (SERDP WP-1137)

Weapons Systems and Platforms

- Final Report: Replacement of Chromium Electroplating on Gas Turbine Engine (GTE) Components Using Advanced Thermal Spray Technologies (ESTCP WP-0023)
- Final Report: Investigation of MIC Materials for Electrically Initiated Lead Free Primers (SEED Project) (SERDP WP-1183)
- Final Report: Investigation of Alternative Energetic Compositions for Small Electro-Explosive Devices for Medium Caliber Ammunition (SERDP WP-1307)
- Final Report: Portable Handheld Laser Small Area Supplemental Coatings Removal System (ESTCP WP-0027)

◆ SYMPOSIUM, from page 8

ESTCP and the Joint Group on Pollution Prevention, Mr. Mongelli and his team from Headquarters Air Force Material Command and the Air Force Research Laboratory demonstrated that the innovative coating removal system using handheld portable laser technology is effective and environmentally friendly, without causing damage to substrate materials.

As a result of this demonstration, changes to Technical Order 1-1-8 that will implement the technology are pending. Cost benefit analysis estimates annual savings of \$100,000 at one air logistics center. The laser technology now is being implemented in Depot production lines at Hill Air Force Base (AFB), Tinker AFB, and Warner Robins AFB.

At the conclusion of the Plenary Session, Mr. Bradley Smith introduced the comprehensive technical program that would follow over the next two days, focusing on 12 environmental topic areas of high priority to DoD. He also highlighted the new format for the Exhibit Hall, which for the first time featured a split poster session to accommodate a record 350 poster presentations. The split poster session enabled the presentation of approximately 100 more posters this year than last year. Throughout the

Symposium & Workshop, the Exhibit Hall remained a hub of activity, offering both scheduled and impromptu opportunities for participants to interact with technical presenters and other attendees.

For more information on the 2005 Partners in Environmental Technology Technical Symposium & Workshop including the Project of the Year Awards, visit www.serdp.org under the *Symposiums & Workshops* link or www.estcp.org under the Related Events section of the *Calendar/Events* link.

Planning is already well underway for the 2006 Partners in Environmental Technology Technical Symposium & Workshop, to be held November 28-30, 2006, at the Marriott Wardman Park Hotel in Washington, D.C. Watch the web sites as details become available on the Call for Poster Abstracts (to be released June 1) and an additional SERDP and ESTCP Funding & Opportunities Briefing/Question and Answer Session to be held on the evening of Monday, November 27. This session will be similar to the traditional concluding session held on Thursday afternoon but will also provide introductory information for those attendees who have had little or no prior experience with the SERDP and ESTCP programs. ◆

◆ ANAEROBIC BIOREMEDIATION, from page 2

The Principles and Practices manual and associated tools will accelerate an RPM's ability to make informed decisions regarding the application of enhanced anaerobic bioremediation to treat chlorinated solvents in groundwater, including which substrate offers the best performance for a site. Through this highly successful ESTCP-facilitated tri-service effort,

DoD is expected to realize cost savings in the billions from widespread implementation of this technology.

Should you have questions after visiting the link provided to the Principles and Practices manual and associated tools, please contact Mr. Josh Fortenberry, Naval Facilities Engineering Service Center, Port Hueneme, California, at (805) 982-4990 or via e-mail at josh.fortenberry@navy.mil. ◆



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

INFORMATION
BULLETIN

WINTER 2006

NUMBER 26

SERDP Executive Director	Bradley Smith
ESTCP Director and SERDP Technical Director	Dr. Jeffrey Marquese
Program Manager for Munitions Management	Dr. Anne Andrews
Program Manager for Sustainable Infrastructure	Dr. John Hall
Program Manager for Environmental Restoration	Dr. Andrea Leeson
Program Manager for Weapons Systems and Platforms	Charles Pellerin
Financial Specialist	Jina Banks
Communications and Publications Manager	Valerie Eisenstein

SERDP and ESTCP
Program Office
901 North Stuart Street
Suite 303
Arlington, Virginia 22203
Phone (703) 696-2117
Fax (703) 696-2114
www.serdp.org www.estcp.org
DSN 426-2117

The Partners in Environmental Technology Information Bulletin is written and published quarterly by HydroGeoLogic, Inc., under contract W9128F-04-D-0025. All written information contained in the Information Bulletin is public and not copyrighted.

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

Valerie Eisenstein
SERDP and ESTCP Support Office
c/o HydroGeoLogic, Inc.
1155 Herrndon Parkway
Suite 900
Herrndon, Virginia 20170
e-mail: vke@hgl.com
Phone (703) 736-4513
Fax (703) 478-0526

To be added to our mailing list or request an address change, please send an e-mail to partners@hgl.com.

C ♦ A ♦ L ♦ E ♦ N ♦ D ♦ A ♦ R

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

MARCH 2006

March 9

Pre-proposals due in response to the ESTCP (BAA, Non-DoD, and DoD) FY 2007 Solicitation

March 14-15

SERDP Scientific Advisory Board (SAB) meeting, Arlington, Virginia

March 16

Full proposals due in response to the SERDP FY 2007 Core and SEED (BAA, Non-DoD, and DoD) Solicitations

APRIL 2006

April 4-6

Sustainable Infrastructure (SI) In-Progress Review (IPR) meetings (ongoing projects)

April 25-28

Weapons Systems and Platforms (WP) In-Progress Review (IPR) meetings (ongoing projects)

MAY 2006

May 1-5

Munitions Management (MM) In-Progress Review (IPR) meetings (ongoing projects)

May 8-12

Environmental Restoration (ER) In-Progress Review (IPR) meetings (ongoing projects)

JUNE 2006

June 13-15

SERDP Scientific Advisory Board (SAB) meeting, Aberdeen Proving Ground, Maryland

RELATED CONFERENCES

March 20-23

Joint Services Environmental Management (JSEM) Conference
Denver, Colorado

For more information, visit www.jsemconference.com.

March 21-24

National Military Fish and Wildlife Association Conference
Columbus, Ohio

For more information, visit <http://www.nmfwa.org>.

April 18-20

National Defense Industrial Association (NDIA) 7th Annual Science & Engineering Technology Conference/DoD Tech Expo
Lake Buena Vista, Florida

For more information, visit www.ndia.org.

May 22-25

The Fifth International Conference on Remediation of Chlorinated and Recalcitrant Compounds
Monterey, California

For more information, visit <http://www.battelle.org/environment/er/conferences/chlorcon/default.stm>.

Printed on
recycled paper



Send an e-mail to partners@hgtl.com
Address change?

SERDP and ESTCP
Support Office
c/o Hydrogeologic, Inc.
1155 Herndon Parkway
Suite 900
Herndon, VA 20170



B ♦ U ♦ L ♦ E ♦ T ♦ I ♦ N

INFORMATION

PRESORT STD
U.S. POSTAGE
PAID
RESTON, VA
PERMIT NO. 6342