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Spring 2012

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Register Now! ASETSDefense Workshop To Be Held August 28-30 - [See Details](#)

DoD and EPA Sign Memorandum of Understanding to Increase Sustainability of Military Bases

The Deputy Under Secretary of Defense for Installations and Environment, Dorothy Robyn, and the Environmental Protection Agency



(EPA) Assistant Administrator, Paul Anastas, signed an agreement on February 7, 2012, that formalizes the partnership between the Department of Defense (DoD) and EPA to develop and implement technologies that will help create sustainable American military bases all over the world.

Under this Memorandum of Understanding (MOU), DoD and the EPA's Office of Research and Development will collaborate in the development of innovative technologies to help DoD create sustainable and resilient military bases across the country and overseas. The cutting-edge research of EPA and DoD scientists and engineers will be used to develop and demonstrate tools and technologies that will aid DoD in achieving its vision of sustainability.

The mission of DoD is to provide the military forces needed to deter war and protect the security of our country. To successfully execute this mission, our Military Departments must have the energy, land, air, and water resources necessary to train and operate, today and in the future, in a world where there is increasing competition for resources. Sustainability provides the framework necessary to ensure the longevity of these resources, by attending to energy, environmental, safety, and occupational health considerations.

This MOU underscores the Administration's commitment to fostering collaboration among Federal agencies. In addition to enabling the sharing of resources, this agreement provides an opportunity for DoD, in collaboration with EPA, to use its military bases as test beds for innovative technologies that can then be shared more broadly in communities across the country. **MOU**

Installation Energy Test Bed Initiative Key to DoD and DOE Joint R&D Agenda

New SERDP and ESTCP Resources - [Browse by Program Area](#)

2012 Symposium Technical Program Announced - [View Topics](#)
Coming Soon! Call for Poster Abstracts to be Released in May

CALENDAR

June 19-20: SERDP Scientific Advisory Board Meeting (Arlington, VA)

July 15: SERDP and ESTCP Quarterly Progress Reports Due

RELATED EVENTS

May 21-24: Eighth International Conference on Remediation of Chlorinated and Recalcitrant Compounds (Monterey, CA)

May 21-24: Environment, Energy Security & Sustainability Symposium & Exhibition (New Orleans, LA)

June 11-13: SUR/FIN Manufacturing & Technology Tradeshow & Conference (Las Vegas, NV)

July 15-18: Society for Conservation Biology North America Congress for Conservation Biology (Oakland, CA)

August 5-10: Ecological Society of America - 97th Annual Meeting (Portland, OR)

August 19-22: GovEnergy - 15th Annual Workshop and Trade Show (St. Louis, MO)

August 28-30: ASETSDefense 2012: Sustainable Surface Engineering for Aerospace and Defense

In a keynote speech at the 2012 Advanced Research Projects Agency–Energy (ARPA-E) Innovation Summit, which brought together



researchers, entrepreneurs, investors, corporate executives, and government officials, Deputy Secretary of Defense Ashton B. Carter referred to ESTCP's Installation Energy Test Bed initiative as an example of how DoD is aligning itself with the research and development agenda of the Department of Energy (DOE). Deputy Secretary Carter cited the Installation Energy Test Bed initiative to illustrate how DoD is working to make its installations available for DOE testing: "You provide the know-how. You provide the real research content. We in the Department of Defense won't try to compete with you there, but we will provide an installation on which you can try it out." [Full Article](#)

Converting Solar Energy to Electricity and Heat

DoD spends about \$4 billion per year on facility energy and is the largest single energy consumer in the nation. To reduce this demand, DoD has established a goal of producing or procuring 25 percent of its energy from renewable energy sources by 2025, including requirements for the production of 30 percent of hot water in new and renovated federal buildings from solar sources. With ESTCP support, Infinia Corporation is demonstrating the capability of an innovative combined heat and power (CHP) technology that converts solar energy into thermal energy for both electricity and heat at efficiencies projected to reach 70 percent. The Infinia Concentrated Solar Power System was installed in the Hazardous Waste Processing Facility at Fort Carson, Colorado, and is generating approximately 21 kWh of electrical energy and 55 kWh of thermal energy daily. In addition to the high conversion efficiencies achieved, the Infinia CHP technology is adaptable, mobile and scalable. Deployment throughout DoD operations, both domestic and in-theater, will offer a single renewable energy technology that provides both heat and power and holds promise for greatly reducing the need for costly diesel fuel supplies. [Full Article](#)



Erosion Resistant Coating Improves Engine Efficiency

DoD operates in harsh environments that accelerate the

(San Diego, CA)

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erosion of the compressor airfoils in gas turbine engines used in fixed and rotary-winged aircraft as well as certain ground vehicles. Erosion of the compressor airfoils can increase fuel consumption by as much as 5 percent and increase the frequency of repairs required to keep engines in service, leading to an increase in industrial waste streams associated with the life cycle of the engine. Additionally, engines with worn compressor airfoils generally produce between 10 and 25 percent more nitrogen oxide (NOx) emissions than a new or rebuilt engine. To address these concerns, the U.S. Navy and U.S. Air Force in collaboration with ESTCP are demonstrating a novel erosion/corrosion resistant coating developed by MDS Coating Technologies on several types of engines, including the T56 used in the C-130 and E-2 aircraft, the AGT1500 used in the Abrams M1A tank, and the F414 used in the F/A-18 aircraft. Based on the results to date, the coating is expected to reduce wear on compressor airfoils, significantly increase fuel efficiency, and reduce overhaul and maintenance requirements. Additional benefits for DoD include substantial cost savings and a reduction in its overall industrial footprint. [Full Article](#)



Ecological Forestry & DoD's Carbon Footprint

The Department of Defense strives for ecologically sustainable management of its forests to maintain desired ecosystem services, including realistic training settings, native biological diversity, and carbon storage. In a carbon-constrained world, how DoD manages its forested land base will determine whether alternative land use and silvicultural practices within these ecosystems will be a positive or negative contribution to an installation's overall carbon footprint. Ecological forestry is a silvicultural approach that perpetuates ecosystem integrity at landscape spatial scales while continuing to provide wood products and other ecosystem services. Four SERDP projects are now under way to investigate the interactions between ecological forestry-based silvicultural prescriptions and carbon management in the context of maintaining other desired ecosystem services. The knowledge and products generated by these efforts will enable DoD managers to better determine appropriate objectives for carbon management that ensure compatibility with maintaining other desired ecosystem services, supporting the military mission, and maintaining native biological diversity. [Full Article](#)



Success Classifying Munitions in Wooded Areas

A recent demonstration of newly developed man-portable electromagnetic induction (EMI) systems by the ESTCP Classification Pilot Program resulted in the successful discrimination of munitions from nonhazardous items under challenging site conditions. The man-portable systems demonstrated at the former Camp Beale, California, included the Naval Research Laboratory's TEMENTADS 2x2x3 cart, the Lawrence Berkeley National Laboratory's portable Berkeley UXO Discriminator (BUD), and Sky Research's Man-Portable Vector (MPV) handheld system. The data was analyzed by several groups using a number of feature extraction and classification algorithms. Demonstrators were scored based on their ability to eliminate nonhazardous items while retaining all detected munitions, and all sensors achieved exceptional classification performance despite the presence of a small munition type, tree cover, and sloped terrain. The systems were able to achieve 100 percent classification for targets-of-interest while rejecting more than 80 percent of the nonhazardous clutter. A simple cost model based on these results shows the potential for large savings as the classification approach is adopted on munitions response sites. Classification significantly accelerates the timeline for remediating munitions-contaminated sites. [Full Article](#)



Practitioners' Guide to Delivery and Mixing in the Subsurface

Delivery and Mixing in the Subsurface: Processes and Design Principles for In Situ Remediation, the fourth installment in a Remediation Technology Monograph Series, describes the principles of chemical delivery and mixing systems and their design and implementation for effective in situ remediation.



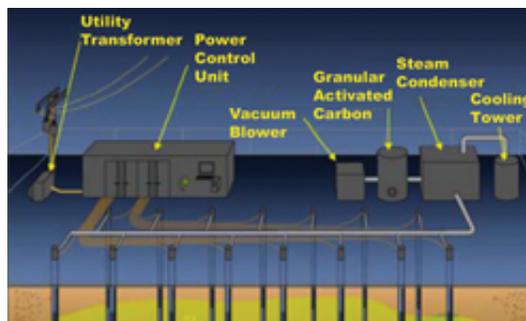
Numerous case studies are provided.

Released in March, this monograph was written by several leading experts from academia and industry and edited by Dr. Peter K. Kitanidis and Dr. Perry L. McCarty of Stanford University. It will serve as a reference for decision makers, practicing engineers, and hydrogeologists who select, design, and operate remedial systems, as well as the researchers seeking to improve the current state of the science and technology.

Delivery and Mixing Monograph

On-Demand Video: Thermal Treatment Lessons Learned

In situ thermal treatment technologies have attracted the interest of owners and regulators of contaminated sites, especially in cases where expedited cleanup is desired or where subsurface heterogeneities are likely to limit the performance of other in situ treatment alternatives. There has been, however, a general lack of information on the costs and performance of the various approaches, making them difficult to implement. To help practitioners realize the potential of thermal treatment technologies, a short course covering lessons learned was presented in December 2011 at the SERDP and ESTCP Partners in Environmental Technology Technical Symposium & Workshop. An on-demand video of the short course summarizes the results from several recent research and demonstration projects focused on improving the technology and understanding its performance, especially for difficult sites such as those with dense non-aqueous phase liquid (DNAPL) contamination in fractured bedrock. Combined remedy approaches are also discussed. **On-Demand Video**



On-Demand Video: Implementing Classification on a Munitions Response Project

Advanced classification methods for use in munitions

response are now making a transition to the field through demonstrations on live munitions response sites. To ensure these technologies are well understood and accepted by site managers and regulators, a short course intended to provide a summary of classification was presented in December 2011 at the SERDP and ESTCP Partners in Environmental Technology Technical Symposium & Workshop. An on-demand video of the short course begins with an overview of innovative electromagnetic induction (EMI) technology and the classification process. The remainder of the presentation focuses on the practical aspects of implementing these technologies, including documentation that should be expected from the contractor, decision criteria for the stop-digging decision, and the required quality control procedures. [On-Demand Video](#)

SERDP and ESTCP Program Update

SERDP

By early February 2012, SERDP requested full proposals for the most qualified pre-proposals submitted in response to the FY 2013 Core Solicitation Federal Call for Proposals and the Broad Agency Announcement. The 117 full proposals received by March 8, 2012, are currently undergoing peer review prior to review by the SERDP Technical Committees (STCs). In June, the STCs will meet to deliberate on which proposals they recommend be considered for funding. The 18 proposals submitted in response to the FY 2013 SERDP Exploratory Development (SEED) Solicitation for the Munitions Response Statement of Need are also under review.

At the end of April, the STC provided selection recommendations to the SERDP Executive Director for the FY 2013 SERDP Defense Coastal/Estuarine Research Program Solicitation. Proposals for this solicitation were due in January 2012. Prospective investigators recommended for funding will brief the SERDP Scientific Advisory Board at its June meeting.

ESTCP

By the March 15 deadline, 256 pre-proposals were received in response to the FY 2013 ESTCP Environmental Technologies Solicitations. The pre-proposals are currently under review by the ESTCP Technical Committees (ETCs). Following their meetings in May and June, the ETCs will provide recommendations for full proposal requests to the ESTCP Director. Full proposal requests and instructions will be disseminated in June with a full proposal due date in August.

By the March 29 deadline, 468 pre-proposals were received in response to the FY 2013 ESTCP Installation Energy Solicitations. The pre-proposals are under review by the ETCs, and recommendations for full proposal requests will be provided to the ESTCP Director in June. Full proposal requests and instructions will be disseminated in June with a full proposal due date in August.

New Members Join SERDP's Scientific Advisory Board

SERDP's Scientific Advisory Board (SAB) helps to ensure that the Program maintains a clear focus on technical quality. The SAB reviews proposed research projects and makes recommendations to the SERDP Council regarding technologies, research, projects, programs, activities, and if appropriate, funding within the scope of SERDP. SERDP is fortunate to have a group of prominent experts in their fields serving on the SAB and welcomes two new members recently appointed by the Secretary of Defense and the Secretary of Energy in consultation with the administrator of the EPA.

Joseph B. Hughes

Dr. Hughes is a Distinguished University Professor and Dean of the College of Engineering at Drexel University. He previously held a number of positions at the Georgia Institute of Technology, including Chair for the School of Civil and Environmental Engineering and Professor for the School of Material Science and Engineering. Dr. Hughes has been a member and chair of a number of committees, including external review committees for The Ohio State University, Cornell University, and The University of Michigan. He was Associate Director for Research at the U.S. EPA Hazardous Substances Research Center South and Southwest, as well as the Director of the Environmental Nanotechnology Research Group for the National Science Foundation (NSF) Center for Biological and Environmental Nanotechnology. In 2011 Dr. Hughes was named Georgia Engineer of the Year. He is the author or co-author of more than 90 scientific journal articles and the book *Metabolism of Nitroaromatics and Explosive Compounds*. He holds a Ph.D. in Civil and Environmental Engineering from The University of Iowa.



Gary S. Sayler

Dr. Sayler is a Beaman Distinguished Professor and Director of the Center for Environmental Biotechnology at The University of Tennessee (UT), as well as the Director of the UT-Oak Ridge National Laboratory Joint Institute for Biological Sciences. He previously served as a Special Government Employee to the U.S. EPA's Science Advisory Board and Board of Scientific Counselors. Dr. Sayler is the co-founder of the China-U.S. Joint Research Center for Ecosystem and Environmental Change and has been an associate editor for the scientific journal *Environmental Science and Technology* since 1999. He is the author or co-author of more than 350 scientific publications and articles, 5 books, and more than 400 international



seminars and lectures, and he holds 16 patents. He received his Ph.D. in Bacteriology and Biochemistry from the University of Idaho.

European Geosciences Union Recognizes Tissa Illangasekare for Excellence in Water Resources Management & Engineering

Congratulations to SERDP researcher **Dr. Tissa Illangasekare**, AMAX Distinguished Chair of Environmental Sciences and Engineering and Professor of Civil Engineering at Colorado School of Mines, who was awarded the 2012 European Geosciences Union's (EGU) Henry Darcy Medal. Through this annual award, EGU recognizes individuals for outstanding scientific



contributions in water resources research and water resources engineering and management. Dr. Illangasekare is widely considered to be a top experimentalist in the area of non-aqueous phase liquid (NAPL) and multiphase flow in porous media, as well as a foremost authority on the integration of novel experimental work with sound theoretical research. He was recognized by the EGU for “fundamental contributions to engineering hydrology and exceptional support to the hydrological community” and was presented with the award at the EGU General Assembly on April 26, 2012, in Vienna, Austria.

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