



**PARTNERS IN ENVIRONMENTAL TECHNOLOGY
TECHNICAL SYMPOSIUM & WORKSHOP**

MEETING DoD's ENVIRONMENTAL CHALLENGES

Washington Hilton, Washington, D.C.

November 29 – December 1, 2011

Technical Program and Registration Brochure

ABOUT THE SPONSORS



Partners in Environmental Technology is the hallmark of the annual Technical Symposium & Workshop hosted by the **Strategic Environmental Research and Development Program (SERDP)** and the **Environmental Security Technology Certification Program (ESTCP)**. The concept reflects not only the partnership formed by the two host organizations but, more significantly, highlights the many different partnerships that play a pivotal role in the success of Federal technology development—the partnership between Department of Defense (DoD) research and development programs; the partnership between DoD and the Department of Energy (DOE), the Environmental Protection Agency (EPA), and other Federal agencies; the partnership between Federal agencies, private industry, and academia; and most importantly, the partnership between technology developers, the numerous end users of technology, and environmental regulators and policy developers.

The Symposium & Workshop assembles environmental researchers and technology developers with the defense user and regulatory communities to showcase cutting edge environmental technologies and ideas. Through this forum, managers and regulators responsible for implementing solutions can communicate the most difficult challenges of our defense establishment to the research community. Users in the field have the opportunity to learn about technologies and approaches that offer solutions to their most pressing environmental challenges.



SERDP is DoD's environmental science and technology program, planned and executed in partnership with the DOE and the EPA, with participation by numerous other Federal and non-Federal organizations. The Program focuses on cross-Service requirements and invests across a broad spectrum of basic and applied research, as well as advanced development. The development and application of innovative environmental technologies will reduce the costs, environmental risks, and time required to resolve environmental problems while, at the same time, enhancing and sustaining military readiness.



ESTCP is DoD's environmental technology demonstration and validation program. The Program was established to promote the transfer of innovative technologies that have successfully established proof of concept to field or production use. ESTCP demonstrations collect cost and performance data to overcome the barriers to employ an innovative technology because of concerns regarding technical or programmatic risk. To ensure the demonstrated technologies have a real impact, ESTCP collaborates with end users and regulators throughout the development and execution of each demonstration.

ABOUT THE THEME

MEETING DoD'S ENVIRONMENTAL CHALLENGES

The Department of Defense faces a broad range of energy and environmental challenges. SERDP, ESTCP, and partnering organizations are responding to these challenges with scientific understanding and innovative technologies.

- As the nation's largest single energy consumer, DoD spends close to \$4 billion every year on facility energy consumption. DoD's energy policy places a high priority on improving energy conservation and efficiency, reducing water and energy demand, and increasing the use of renewable energy. Advances will provide military installations increased security and flexibility, lower operating costs, and reduced greenhouse gas emissions.
- DoD has stewardship responsibility for more than 30 million acres of land. In managing this vast amount of land, DoD officials must take into account the unique military aspects of the Department's mission. Understanding and managing the potential impacts of military activities on the sustainability of the installations' natural resources will ensure the continued use of these unique training environments, while preserving the natural resources in perpetuity.
- DoD relies on extensive industrial operations, both within the Department and in the private sector, for manufacturing and maintaining military equipment. Eliminating the sources of hazardous materials will reduce the environmental impact of DoD's industrial activities and the life-cycle costs of weapons systems.
- DoD is subject to a variety of regulations and permitting requirements related to its operations and facilities. Improving the military's ability to monitor, reduce, or eliminate wastes and emissions generated by DoD operations and infrastructure will mitigate future environmental impacts.
- Remediating the legacy of past practices will continue to be a major liability for DoD for decades to come. Innovative remediation technologies improve outcomes and reduce costs.
- Climate change presents a significant challenge to DoD's ability to fulfill its mission in the future. Climate-related effects already are being observed at DoD installations in every region of the United States and its coastal waters. Improving the understanding of the potential impacts of climate change and developing effective adaptation and mitigation strategies will enable DoD to plan and respond appropriately.



This year's Symposium & Workshop will highlight SERDP and ESTCP's recent efforts to improve energy and environmental performance, reduce costs in times of increasing fiscal constraints, and enhance mission capabilities.

ABOUT THIS YEAR'S EVENT

PLENARY SESSION

The Symposium & Workshop will commence on Tuesday morning with presentations by three distinguished Plenary Session speakers who will discuss emerging environmental challenges facing the Department of Defense and solutions for a sustainable future.



Dr. John Holdren is Assistant to the President for Science and Technology, Director of the White House Office of Science and Technology Policy, and Co-Chair of the President's Council of Advisors on Science and Technology (PCAST). Prior to joining the Obama administration, Dr. Holdren was the Teresa and John Heinz Professor of Environmental Policy and Director of the Program on Science, Technology, and Public Policy at Harvard University's Kennedy School of Government, as well as a professor in Harvard's Department of Earth and Planetary Sciences and Director of the independent, nonprofit Woods Hole Research Center. Previously he was on the faculty of the University of California, Berkeley, where he co-founded in 1973 and co-led until 1996 the interdisciplinary graduate degree program in energy and resources. During the Clinton administration, Dr. Holdren served as a member of PCAST through both terms and, in that capacity, chaired studies requested by President Clinton on preventing theft of nuclear materials, disposition of surplus weapon plutonium, the prospects of fusion energy, U.S. energy R&D strategy, and international cooperation on energy-technology innovation. Dr. Holdren holds advanced degrees in aerospace engineering and theoretical plasma physics from MIT and Stanford.



The Honorable Terry Yonkers is the Assistant Secretary of the Air Force for Installations, Environment and Logistics. He is responsible for providing oversight for all matters pertaining to the formulation, review, and execution of plans, policies, programs, and budgets for installations, energy, environment, safety and occupational health, as well as weapon systems logistics support. Mr. Yonkers has more than 35 years experience developing and managing environmental, safety, and occupational health (ESOH) programs. He has worked extensively within DoD's planning, programming, budgeting and resource allocation, as well as congressional budgeting processes. As the acting Deputy Assistant Secretary of the Air Force for Environment, Safety and Occupational Health, he developed strategic policies, guided and oversaw Air Force's ESOH programs worldwide and a \$1.5 billion annual appropriation. As Senior Vice President, ARCADIS, Inc., Mr. Yonkers advised government clients on innovative and cost-saving environmental and energy security solutions as well as represented business interests in national forums seeking process improvements to environmental security, energy security, climate change, environmental cleanup and compliance, and property redevelopment. His education includes a bachelor's degree in Biology from the University of California, Riverside; a master's degree in National Security Studies from the Industrial College of the Armed Forces, National Defense University; and a master's degree in Public Administration from George Mason University.



Dr. Naomi Oreskes is Professor of History and Science Studies at the University of California, San Diego; Adjunct Professor of Geosciences at the Scripps Institution of Oceanography; and an internationally renowned historian of science and author. Having started her career as a geologist, Professor Oreskes received her B.S. (1st class Honours) from the Royal School of Mines, Imperial College London, and then worked for three years as an exploration geologist in the Australian outback. She returned to the United States to receive an inter-disciplinary Ph.D. in geological research and history of science from Stanford University. For the past decade, Professor Oreskes has primarily been interested in the problem of anthropogenic climate change. Her 2004 essay "The Scientific Consensus on Climate Change" (*Science* 306: 1686) has been widely cited, both in the United States and abroad, including in the Royal Society's publication, "A Guide to Facts and Fictions about Climate Change," in the Academy-award winning film, *An Inconvenient Truth*, and in Ian McEwan's novel, *Solar*. Her opinion pieces have appeared in *The New York Times*, *The Washington Post*, *The Los Angeles Times*, *Nature*, *Science*, *The New Statesman*, and elsewhere. Her 2010 book, *Merchants of Doubt, How a Handful of Scientists Obscured the Truth on Issues from Tobacco to Global Warming*, co-authored with Erik M. Conway, was shortlisted for the Los Angeles Times Book Prize.

PROJECT-OF-THE-YEAR AWARDS

During the Plenary Session, SERDP and ESTCP will recognize top researchers with the annual Project-of-the-Year Awards.

Dr. Jeffrey Marqusee, Executive Director of SERDP and ESTCP, and **Dr. Anne Andrews**, Deputy Director of SERDP and ESTCP, will present these awards to principal investigators who, through their outstanding efforts, have helped DoD achieve its mission while improving its environmental performance.

TECHNICAL SESSIONS & SHORT COURSES

During the Symposium & Workshop, attendees will have the opportunity to choose from among 15 technical sessions and four short courses. Technical sessions will highlight research and innovative technologies that address DoD's increasingly complex environmental and mission sustainability challenges. On the last day of the event, short courses will offer unique training opportunities on recent advancements in select technologies and alternative approaches for environmental restoration and munitions response.

Professional development hours (PDH) will be available for short courses.

sessions, **featuring two groups of posters, more than 450 in all**, also will enable you to learn firsthand about many ongoing and recently completed SERDP research projects and ESTCP technology demonstrations.

FUNDING OPPORTUNITIES BRIEFING

On **Thursday, December 1, 12:15 to 1:00 p.m.**, SERDP and ESTCP Executive Director **Dr. Jeffrey Marqusee** will provide an overview of investment strategies, funding levels, and areas of emphasis; explain the proposal submittal processes; and discuss opportunities to conduct research and technology demonstrations. This "how to play" briefing will offer valuable information about **new funding opportunities in SERDP and ESTCP**. Plan your travel schedule to accommodate attending this session!



Be sure to review the technical program and short course descriptions on the pages that follow to identify the offerings that match your areas of interest. Space in short courses is limited, so register soon.

EXHIBIT HALL

This year's Symposium & Workshop **poster and exhibit booth sessions** will showcase technologies and scientific advancements from a variety of environmental research programs. These



EVENING TECHNICAL EXCHANGE RECEPTIONS

Join your colleagues on November 29 and 30 at the popular **evening technical exchange receptions** that will offer opportunities for attendees to tour posters and exhibit booths, exchange information, and discuss technology transfer and partnerships. New this year, the networking receptions will be lengthened to allow more time for interaction with presenters.



SYMPOSIUM TECHNICAL PROGRAM

TUESDAY, NOVEMBER 29 (9:00–11:30 a.m.)

PLENARY SESSION

Symposium Opening

Dr. Jeffrey Marqusee

Executive Director
SERDP and ESTCP

Keynote Speakers

Dr. John Holdren

Assistant to the President for Science and Technology and Director of the White House Office of Science and Technology Policy

The Honorable Terry Yonkers

Assistant Secretary of the Air Force for Installations, Environment and Logistics

Dr. Naomi Oreskes

Historian of Science and Author of *Merchants of Doubt, How a Handful of Scientists Obscured the Truth on Issues from Tobacco to Global Warming*

Project-of-the-Year Awards

Dr. Jeffrey Marqusee and

Dr. Anne Andrews

Deputy Director
SERDP and ESTCP

Plenary Session Closing

Dr. Anne Andrews

TUESDAY, NOVEMBER 29 (1:45–4:30 p.m.)

Afternoon Concurrent Technical Sessions

TECHNICAL SESSION 1A

Topic: *Role of Fire in the Carbon Cycle under Climate Change*

Chair: **Dr. Brooke Hemming**

U.S. Environmental Protection Agency – National Center for Environmental Assessment, Global Change Research Program

Keynote: **Dr. Matthew Hurteau**

Pennsylvania State University – School of Forest Resources

Depending on land use, vegetation type, and management, Department of Defense lands may act as overall carbon sinks or sources. In a carbon-constrained world, appropriate management of the carbon

cycle to achieve carbon sequestration is an ecosystem service that needs to be considered. Land-use practices affect the rates of carbon cycling and storage within the soil and vegetation over both spatial and temporal horizons. The use of fire as a management tool is one such practice that will undergo increased scrutiny because of the trade-offs involved related to air quality, carbon cycling, and ecosystem resilience and its relationship to the continued provisioning of desired ecosystem services. This session will explore the role of fire in the carbon cycle from the standpoint of the types of carbon emissions involved and their impact on climate change, emerging technologies to characterize and monitor these emissions, the life cycle of fire and its role in the carbon cycle of fire-adapted ecosystems, and best practices associated with the use of fire as a management tool to foster multiple desired ecosystem services.

TECHNICAL SESSION 1B

Topic: *National and International Regulatory Impacts on DoD Operations: Refining the Goals of DoD's Strategic Plan for 'REACH'*

Chair: **Dr. Carole LeBlanc**

Office of the Deputy
Under Secretary of Defense,
Installations and Environment

Keynote: **Mr. Kurt Lengert**

U.S. Air Forces in Europe

DoD must plan for the European Union Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) regulation in order to safeguard military readiness. While REACH is not a compliance issue for DoD, it poses potential threats to defense chemical and product availability, performance, and cost, especially with regard to commercial off-the-shelf products acquired under the same National Stock Number. Communication and cooperation with original equipment manufacturers and other defense industrial suppliers are essential to track formulatory changes and even possible counterfeit products before they enter defense supply chains as unqualified substitutes in mission-critical applications. This session will delineate the various roles of defense, non-defense, and industrial stakeholders in implementing the Department of Defense's strategic plan for REACH.

TECHNICAL SESSION 1C

WEDNESDAY, NOVEMBER 30 (8:30–11:45 a.m.)

Topic: *Energy Management and Technologies for DoD Buildings*

Chair: **Dr. James Galvin**
SERDP and ESTCP

Keynote: **Mr. Roland Risser**
U.S. Department of Energy –
Office of Energy Efficiency &
Renewable Energy, Building
Technologies Program

The Department of Defense spends nearly \$4 billion per year on facility energy. The dominant use of this energy is for the 300,000 buildings on DoD installations. Increasing energy efficiency in DoD buildings will contribute to energy security goals and reduce energy costs for military installations. This session will address the reduction of energy usage in DoD buildings through efficient technology, improved management systems, and modeling initiatives that aid analysis and decision making.

Morning Concurrent Technical Sessions

TECHNICAL SESSION 2A

Topic: *Challenges to Military Readiness Posed by Climate Change*

Chair: **To Be Announced – Associate Director for Readiness Resources**
Office of the Deputy Assistant
Secretary of Defense (Readiness)

Keynote: **Mr. Gerald “Fred” Pease Jr.**
U.S. Department of the Interior –
Immediate Office of the Secretary

Military activities and the infrastructure that supports them are impacted by the vagaries of weather. Climate change, however, poses unique challenges to military readiness. The combination of climate trajectory changes and variability, and secondary effects such as changes in sea level, can significantly impact DoD’s ability to access and use training and testing areas. For example, thawing permafrost may reduce access to training lands in Alaska, increased flooding in coastal and other areas puts infrastructure at risk, increased heat and humidity could reduce the number of available training days in the Southeast, and prolonged drought in the Southwest may exacerbate air quality issues related to fugitive dust and reduce habitat for listed species, which may further constrain training and testing activities. This session will investigate the potential challenges to military readiness posed by climate change and also outline potential metrics that could be tracked over time as indicators of the effects on readiness.

TECHNICAL SESSION 1D

Topic: *Improving Our Understanding of the Impact of Contaminants Stored in Low Permeability Zones*

Chair: **Dr. Charles Newell**
GSI Environmental Inc.

Keynote: **Dr. Thomas Sale**
Colorado State University –
Department of Civil &
Environmental Engineering

Contaminant storage in low permeability zones (LPZs) occurs through diffusion or sorption of dissolved-phase contaminants over time. It is increasingly clear that understanding the potential for contaminant storage and subsequent release from LPZs is critical to effective site management. LPZs may serve as long-term sources of contaminants, thus limiting our ability to reach groundwater cleanup goals. Alternatively, processes within or near LPZs may control any back diffusion of contaminants. This session will focus on current efforts to improve the characterization and treatment of contaminants in LPZs.

TECHNICAL SESSION 2B

Topic: *Classification Applied to Munitions Response – Development*

Chair: **Ms. Tracie White**
Colorado Department of Public
Health and Environment

Keynote: **Mr. Andrew Schwartz**
U.S. Army Corps of Engineers –
Engineering and Support Center,
Huntsville

Until recently, it has been common practice to dig every target on the detection list during a munitions response, with the result that often as few as one percent of the items excavated are actually hazardous. Innovative

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munitions response technologies offer a rigorous, effective, and transparent method for classifying and distinguishing between harmless subsurface scrap and dangerous buried UXO. These technologies are now making a transition to the field through demonstrations on live munitions response sites. Presentations in this first of two sessions will focus on technology developments demonstrated in the 2011 demonstrations.

TECHNICAL SESSION 2C

Topic: *Impact of Particulate Emissions from Gas Turbine Powered Aircraft*

Chair: **Dr. Mel Roquemore**
Air Force Research Laboratory – Propulsion Directorate

Keynote: **Dr. Günter Oberdörster**
University of Rochester – School of Medicine & Dentistry

A major DoD source of particulate matter (PM) emissions is the operation of gas turbine engines powering military aircraft. PM emissions have become a growing concern because these small particles can have significant impact on human health and the environment. This session will provide overviews of the human health and environmental impacts of aircraft particulates and the means by which they are being measured. A short history of aircraft PM emissions will be presented along with the status of characterizing these emissions. SERDP is also supporting research to establish a fundamental science and technology base that can be used to develop and evaluate PM models for designing future low emissions gas turbine combustors. The results from these studies will be highlighted along with projections of the impact of particulate emissions from future gas turbine engines.

TECHNICAL SESSION 2D

Topic: *Incorporating Innovative Technologies to Meet DoD Restoration Goals from Remedy in Place to Response Complete*

Chairs: **Ms. Kim Parker Brown**
Naval Facilities Engineering Command Headquarters – Environmental Restoration Division and
Mr. Charles Coyle
U.S. Army Corps of Engineers – Environmental and Munitions Center of Expertise

Keynote: **Dr. Richard Anderson**
Air Force Center for Engineering and the Environment – Restoration Branch

DoD's Installation Restoration Program has set goals to achieve Response Complete (RC) at 90 percent of sites at active installations and Formerly Used Defense Sites properties by FY 2018 and to achieve RC at 95 percent of these sites by FY 2021. Despite substantial progress made in the past 20 years, significant challenges still remain for remediation of contaminated groundwater at some sites. The Cost to Complete is generally driven by high remedial costs at these difficult sites. Given the current DoD restoration goals, future research and demonstration efforts need to be integrated with current practices. This session will cover the current cleanup goals and management processes of the different Services and provide a forum for discussing how innovative technologies can be incorporated into existing restoration goals to minimize the Cost to Complete.

WEDNESDAY, NOVEMBER 30 (1:45–4:30 p.m.)

Afternoon Concurrent Technical Sessions

TECHNICAL SESSION 3A

Topic: *Next Generation Energetic Materials – Striking a Balance between Performance, Insensitivity, and Environmental Sustainability*

Chair: **Mr. Noah Lieb**
Hughes Associates, Inc.

Keynote: **Mr. Charlie Patel**
U.S. Army – Project Manager Combat Ammunition Systems (PM CAS)

Munitions contain energetic materials that perform specific functions including propulsion, blast, initiation, and generating visual and audible signals. These materials are highly reactive by their nature, which has made it difficult to manufacture, transport, store, use, and dispose of them. This session will address the challenging issues of how to balance the inherent danger of these materials with the need to give our warfighters safe munitions that are cleanly producible and not harmful to the environment.

TECHNICAL SESSION 3B

Topic: *Classification Applied to Munitions Response – Production Applications*

Chair: **Ms. Amy Walker**
U.S. Army Corps of Engineers –
Engineering and Support Center,
Huntsville

Keynote: **Ms. Victoria Kantsios**
National Association of
OEW Contractors

Until recently, it has been common practice to dig every target on the detection list during a munitions response, with the result that often as few as one percent of the items excavated are actually hazardous. Innovative munitions response technologies offer a rigorous, effective, and transparent method for classifying and distinguishing between harmless subsurface scrap and dangerous buried UXO. These technologies are now making a transition to the field through demonstrations on live munitions response sites. Presentations in this second of two sessions will focus on application of these technologies by production firms during the 2011 demonstrations.

TECHNICAL SESSION 3C

Topic: *Renewable Energy on DoD Installations*

Chair: **Dr. James Galvin**
SERDP and ESTCP

Keynote: **Mr. Brian Stone**
Nanosolar, Inc.

Initiatives to implement renewable energy technologies on military installations reveal a variety of challenges and opportunities. Projects that overcome the challenges and take advantage of the opportunities provide excellent examples of how DoD can achieve energy security and substantially reduce energy costs. This session will highlight efforts that are bringing innovative renewable energy technologies to military facilities.

TECHNICAL SESSION 3D

Topic: *Environmental Molecular Diagnostic Tools: Innovations and Applications*

Chairs: **Ms. Carmen Lebrón**
Naval Facilities Engineering
Command – Engineering Service
Center
Dr. Paul Hatzinger
Shaw Environmental, Inc.

Keynote: **Dr. Frank Löffler**

The University of Tennessee,
Knoxville – Department of
Microbiology

Environmental molecular diagnostics (EMDs) encompass a range of innovative techniques used to analyze biological and chemical processes in soils, sediments, water, and air. These techniques focus on the analysis of stable isotopes and biological molecules such as DNA or enzymes. EMDs, particularly compound-specific isotope analysis and quantitative polymerase chain reaction analysis, are increasingly used in environmental site characterization and remediation, notably for chlorinated solvents and perchlorate. EMDs also hold promise for identifying and quantifying degradation processes for other contaminants. This session will examine the current and potential future applications of these techniques in environmental restoration.

THURSDAY, DECEMBER 1 (8:30 a.m. – 12:30 p.m.)

Morning Concurrent Technical Sessions and Short Courses

TECHNICAL SESSION 4A

Topic: *Pacific Island Restoration Challenges*

Chairs: **Dr. Gordon Rodda** and
Dr. Robert Reed
U.S. Geological Survey –
Fort Collins Science Center

Keynote: **Dr. Peter Vitousek**
Stanford University –
Department of Biology

The Pacific Islands, because of their isolation by distance and time, possess unique biological diversity. This evolutionary legacy also makes the natural biotic communities that DoD manages susceptible to anthropogenic disturbance, be it human development or the introduction of non-native species. In particular, introduced species that have become invasive have altered the composition, structure, and ecological function of Pacific Island ecosystems. Responses to date have focused primarily on control and eradication strategies for the worse invaders. In the long term, however, restoration strategies will need to recognize that non-native species will likely remain at certain levels and native species extirpations may not be reversed. As a

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result, this session will look beyond control of invasive species and examine other challenges associated with restoration, or recovery, of Pacific Island ecosystems and the implications of climate change for restoration.

TECHNICAL SESSION 4B

Topic: *Microgrids for Energy Security on DoD Installations*

Chair: **Dr. James Galvin**
SERDP and ESTCP

Keynote: **Ms. Merrill Smith**
U.S. Department of Energy –
Office of Electricity Delivery &
Energy Reliability

The leaders at many military installations are creating microgrids to increase energy security in the event the main electric grid fails. Microgrids can improve operating efficiency, enhance the use of renewables, and reduce energy costs through effective energy management. This session will highlight microgrid design and implementation initiatives and describe current efforts aimed at achieving broad-scale microgrid implementation on DoD installations.

TECHNICAL SESSION 4C

Topic: *Best Management Practices for Controlling Munitions Constituents on Operational Ranges*

Chairs: **Ms. Catherine Vogel**
Noblis, Inc.
and
Dr. Thomas Jenkins
Private Consultant

Keynote: **Major Robert Lajoie**
Canadian Army – Director Land
Environment

Over the past several years, DoD has funded a significant body of basic and applied research to gain a better understanding of the munitions constituents (MCs) resulting from military training activities on ranges, to characterize the environmental deposition of MCs on military ranges, and to develop technologies to treat or contain MCs in soil and groundwater. However, the results from these efforts are contained in numerous technical reports and journal articles that are not easily accessible to the operational range community. This session will provide an overview of the Best Management Practices for selecting and applying methodologies and technologies to manage MCs on DoD operational testing and training ranges.

SHORT COURSE 1

Topic: *Implementing Classification on a Munitions Response Project*

*(This course will be held from 8:30 – 11:30 a.m.
Refer to page 11 for more information.)*

SHORT COURSE 2

Topic: *Estimating DNAPL Source Zone Natural Attenuation*

*(This course will be held from 8:30 – 10:00 a.m.
Refer to page 11 for more information.)*

SHORT COURSE 3

Topic: *Thermal Treatment Technologies: Lessons Learned*

*(This course will be held from
10:30 a.m. – 12:30 p.m.
Refer to page 12 for more information.)*

THURSDAY, DECEMBER 1 (12:15 – 1:00 p.m.)

BRIEFING/Q&A SESSION

Topic: *SERDP and ESTCP Funding Opportunities*

Speaker: **Dr. Jeffrey Marqusee**
SERDP and ESTCP
Executive Director

During this briefing, Dr. Marqusee will provide an overview of SERDP and ESTCP investment strategies, funding levels, and areas of emphasis as well as a summary of opportunities to conduct research and technology demonstrations. This “how to play” briefing will offer valuable information on the solicitation processes for those who would like to understand how to submit proposals for upcoming funding opportunities.

THURSDAY, DECEMBER 1 (1:30 – 5:30 p.m.)

Afternoon Short Course

SHORT COURSE 4

Topic: *Field Methods to Distinguish between Vapor Intrusion and Indoor Sources of VOCs*

*(This course will be held from 1:30 – 5:30 p.m.
Refer to page 12 for more information.)*

SHORT COURSE DESCRIPTIONS

SHORT COURSE 1

Implementing Classification on a Munitions Response Project

Innovative classification methods for use in munitions response are now making a transition to the field through demonstrations on live munitions response sites. This short course will focus 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. The course will be of particular interest to program managers, site managers, regulators, and other stakeholders.



Instructors:

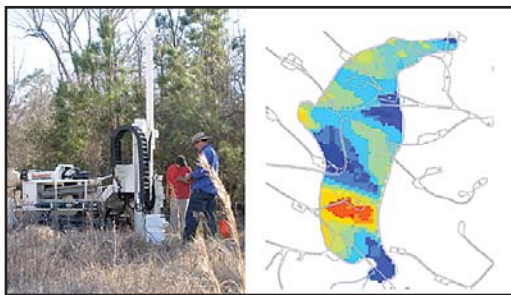
Dr. Anne Andrews (SERDP and ESTCP), **Dr. Thomas Bell** (SAIC), **Mr. Bryan Harre** (Naval Facilities Engineering Command), **Dr. Herb Nelson** (SERDP and ESTCP), and **Mr. Victor Wieszek** (Office of the Deputy Under Secretary of Defense, Installations and Environment)

Participants will receive 3 Professional Development Hours upon course completion.

SHORT COURSE 2

Estimating DNAPL Source Zone Natural Attenuation

Source zone natural attenuation (SZNA) could be used with greater confidence if accepted methodologies for demonstrating and measuring it were available. SZNA is an implicit component of engineered remediation schemes as it is relied upon to provide further reduction of any post-treatment residual contamination. The SZNA assessment approach developed under ESTCP project ER-200705 includes three basic levels of data collection and reduction to provide site-specific evidence for natural attenuation and develop estimates of its rate and the time required for eventual cleanup. This short course will provide an overview of the SZNA assessment approach for assessing DNAPL and mixed DNAPL/LNAPL-impacted sites.



The course will also highlight a technical guidance document, which focuses on the assessment of dissolved plume natural attenuation.

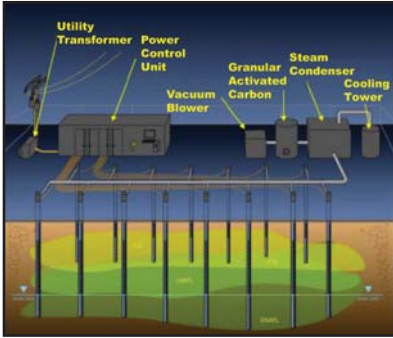
Instructor:

Dr. Paul Johnson (Arizona State University – Ira A. Fulton Schools of Engineering)

Participants will receive 1.5 Professional Development Hours upon course completion.

SHORT COURSE 3

Thermal Treatment Technologies: Lessons Learned



Electrical Resistance Heating

In situ thermal treatment has proven to be an effective, but often expensive, method for treating source zones. However, there has been a lack of information on the costs and performance of the various approaches to thermal treatment. This short course will summarize the results from several recent projects that have focused on improving the technology and understanding its performance, especially for difficult sites such as those with DNAPLs in fractured bedrock. The course will cover the state of the art and recent advances in the fundamental understanding of thermal technologies and also highlight recent field-scale demonstrations. The focus will be on the implications of the findings from recent SERDP and ESTCP projects for both regulators and practitioners.

Instructors:

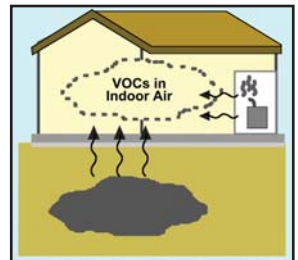
Dr. Ronald Falta (Clemson University – Department of Environmental Engineering and Earth Sciences), **Dr. Paul Johnson** (Arizona State University – Ira A. Fulton Schools of Engineering), **Dr. Bernie Kueper** (Queen's University – Department of Civil Engineering), **Dr. Frank Löffler** (The University of Tennessee, Knoxville – Department of Microbiology), and **Dr. Hans Stroo** (HydroGeoLogic, Inc.)

Participants will receive 2 Professional Development Hours upon course completion.

SHORT COURSE 4

Field Methods to Distinguish between Vapor Intrusion and Indoor Sources of VOCs

Indoor sources of volatile organic compounds (VOCs) are ubiquitous. As a result, when using indoor air measurements to evaluate vapor intrusion, reliable methods are needed to distinguish between vapor intrusion and indoor sources of VOCs. This short course will demonstrate the use of on-site analysis of indoor air samples to identify indoor sources of VOCs and to determine whether vapor intrusion is occurring. Instructors also will discuss supplemental tools such as building pressure control and radon analysis that can be used to minimize the effects of spatial and temporal variability on investigation results. Implementation of the field investigation methods and interpretation of the results as well as method validation and regulatory acceptance will be covered. The course will include hands-on demonstration of the HAPSITE GC/MS for on-site analysis of VOCs in indoor air samples and demonstration of other field investigation equipment used to control and measure building pressure and to measure radon concentrations.



Instructors:

Dr. Erik Dettenmaier (Hill Air Force Base – Environmental Restoration Branch), **Mr. Kyle Gorder** (Hill Air Force Base – Environmental Restoration Branch), and **Dr. Thomas McHugh** (GSI Environmental Inc.)

Participants will receive 4 Professional Development Hours upon course completion.

SYMPOSIUM SPECIAL EVENTS

PROJECT-OF-THE-YEAR ANNOUNCEMENT

Tuesday, November 29

At the opening Plenary Session, SERDP and ESTCP will announce the 2011 Projects of the Year. These projects have demonstrated outstanding achievements in various fields, achievements that benefit the military mission while improving environmental performance and often reducing costs. SERDP and ESTCP are proud to honor these investigators and their significant work. Posters highlighting these projects will be on display in the Exhibit Hall throughout the Symposium & Workshop. Stop by to learn more and congratulate the award recipients.

TECHNICAL EXCHANGE RECEPTIONS

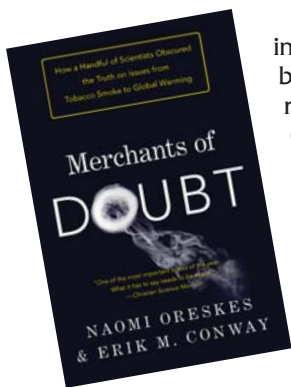
Tuesday, November 29 and Wednesday, November 30

New this year, the evening technical exchange receptions have been lengthened to allow more time for attendees to tour posters and exhibits and meet with presenters. Plan to join your colleagues from 4:30 – 7:00 p.m. each evening to exchange information and discuss opportunities for collaboration and partnerships. There will be other opportunities each day to tour posters as well. A different group of posters, more than 450 in all, will be featured each day.



BOOK SIGNING WITH DR. NAOMI ORESKES

Tuesday, November 29, 4:30-7:00 p.m., in the Exhibit Hall during the Evening Technical Exchange Reception



Plenary Session Speaker **Dr. Naomi Oreskes**—internationally renowned historian of science and author—will be available to greet participants and sign copies of her most recent book *Merchants of Doubt, How a Handful of Scientists Obscured the Truth on Issues from Tobacco to Global Warming*, co-authored with Erik M. Conway. Shortlisted for the Los Angeles Times Book Prize, *Merchants of Doubt* explains how a cadre of influential scientists have clouded public understanding of scientific facts related to tobacco, acid rain, the ozone hole, global warming, and DDT to advance a political and economic agenda.

Copies of *Merchants of Doubt* will be available for purchase during the book signing.

BRIEFING AND Q&A SESSION: SERDP AND ESTCP FUNDING OPPORTUNITIES

Thursday, December 1, 12:15-1:00 p.m.

SERDP and ESTCP Executive Director Dr. Jeffrey Marqusee will present an overview of the Programs' investment strategies, funding levels, and areas of emphasis; outline the proposal submittal processes; and discuss opportunities to conduct research and technology demonstrations. This session will offer valuable information about SERDP and ESTCP funding opportunities while also enabling participants to ask questions and learn from questions posed by other participants.

Be sure to schedule your travel to accommodate attending this session!

GENERAL SYMPOSIUM INFORMATION

NEW VENUE

The Symposium & Workshop will be held November 29 – December 1, 2011, at the Washington Hilton in Washington, D.C.

REGISTRATION

For your convenience, we encourage you to **register for the Symposium online at www.serdp-estcp.org/symposium** using your credit card. You may also register by mail using the registration form at the back of this brochure. Payment in full or a purchase order must accompany your mailed registration form. Please mail the registration form (or a photocopy of the form) along with payment to arrive **no later than Wednesday, November 16, 2011**.

Checks and purchase orders should be made payable to **HydroGeoLogic, Inc.** and mailed to:

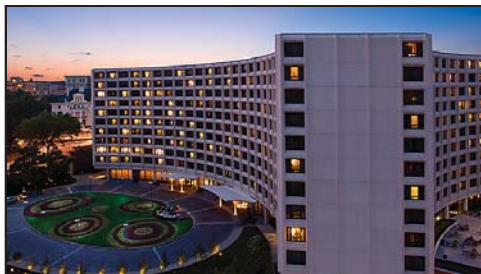
HydroGeoLogic, Inc.
SERDP and ESTCP Registrar
11107 Sunset Hills Road, Suite 400
Reston, VA 20190

You may also register by **faxing** a completed registration form with credit card information to **(703) 478-0526**. All registrations received by November 16 will be confirmed via e-mail.

REGISTRATION FEE

The full Symposium & Workshop registration fee (**\$450 through November 16, \$525 on site**) includes admission to the Plenary Session, technical sessions, Exhibit Hall, evening technical exchange receptions, continental breakfasts, and lunches. **There is also a \$35 materials fee for each short course.** Symposium registration materials will include the final program agenda and an electronic program guide containing abstracts of all Symposium & Workshop technical, poster, and booth presentations. Technical presentations and a final list of attendees will be made available to participants after the event. **A student fee (\$75) and a one-day registration fee (\$250 through November 16, \$275 on site) are also available.**

NOTE: Advance registration is available through November 16. Registrations received after November 16 will be processed at the on-site rate of \$525 for



full registration and \$275 for one-day registration. Please remember that attendance for short courses is limited, so register early.

LIST OF ATTENDEES

A list of pre-registered attendees will be available upon check-in at the Symposium & Workshop. To be included in this listing, you must register no later than Wednesday, November 16. To receive the final attendee list following the event, you must include your e-mail address when registering.

EXHIBITS

The Symposium & Workshop will feature more than 450 posters, half of which will exhibit on Tuesday and the other half on Wednesday. A select group of booths offering information about funding opportunities in related research programs also will be on display both days. The informal one-on-one format of the posters and booths provides a valuable opportunity to network with colleagues and gather information on topics important to you. Exhibitors will be available to talk with you and answer your questions during scheduled times.

If you are unable to attend the Symposium & Workshop but would like to tour the exhibits, you may do so free of charge on Tuesday, November 29, or Wednesday, November 30, between the hours of 12:30 and 3:30 p.m. Presenters will be on hand from 12:30 to 1:45 p.m. If you plan to tour the exhibits, please register prior to the deadline so that we can prepare an entrance badge for you.

HOTEL RESERVATIONS

A block of rooms for Symposium & Workshop participants has been set aside at the prevailing government per diem rate. To make reservations, please contact the hotel directly and identify yourself as a *Partners in Environmental Technology Technical Symposium & Workshop* attendee. Reservations may also be made online at the hotel web address listed below. **To receive this special rate, hotel reservations must be made no later than Monday, November 7, 2011. You are encouraged to make your reservations early to ensure available space in the room block.**

Washington Hilton
1919 Connecticut Avenue, NW
Washington, DC 20009
Phone: (800) 844-6155
Web Site:

www.hilton.com/en/hi/groups/personalized/D/DCAWHHH-HGL-20111125/index.jhtml

Rate: \$181 (plus tax) or prevailing government rate

All hotel changes and cancellations must be made directly with the hotel at (202) 483-3000. It is the responsibility of each participant to **make changes or cancellations no later than 3 days prior to scheduled arrival**. Rooms generally are not available for check-in until 3:00 p.m. on the day of arrival.

Special Note to Army Participants

A non-availability number is not required for conferences held in Washington, D.C.

TRAVEL

The Washington, D.C., metropolitan area is served by three major airports (Ronald Reagan Washington National, Washington Dulles International, and Baltimore/Washington International Thurgood Marshall) and by Amtrak. Ronald Reagan Washington National Airport is the closest airport to the hotel and is located approximately 6 miles from the hotel. The efficient Metrorail system is a convenient mode of transportation from Ronald Reagan Washington National Airport and for local attendees. The hotel is located four blocks from the Dupont Circle Metro Station (on the Red Line).

PARKING

Self-parking is available at the hotel for approximately \$32 per day and/or overnight. Valet parking is available at the hotel for approximately \$37 per day and/or overnight.

CANCELLATIONS & SUBSTITUTIONS

All requests for refunds must be received in writing no later than Wednesday, November 16. The registration fee minus a \$25 processing charge will be refunded. No refunds will be made after November 16. If you must cancel after this date, you may send a substitute.

INQUIRIES

For additional information, please visit www.serdp-estcp.org/symposium, e-mail partners@hgl.com, or call our **contact line at (703) 736-4548**.

Specific questions about **registration** may be directed to **Ms. Jen Rusk at (703) 326-7801** or via e-mail to jrusk@hgl.com.

Poster and booth questions may be directed to **Ms. Lucia Valentino at (703) 736-4549** or via e-mail to valentino@hgl.com.

NOTE: The Call for Poster Abstracts deadline was July 29, 2011.

Partners in Environmental Technology
Technical Symposium & Workshop
Meeting DoD's Environmental Challenges
November 28 - December 1, 2011 • Washington, D.C.

Home | Agenda at a Glance | Plenary Session | Technical Sessions | Exhibits and Booth Display | Registration | Venue

Welcome
The Strategic Environmental Research and Development Program (SERDP) and the Environmental Security Technology Certification Program (ESTCP) will host the 2011 Partners in Environmental Technology Technical Symposium & Workshop November 28 - December 1, 2011 in Washington, D.C.
This annual event assembles more than 1,200 environmental researchers and technology developers with the defense and regulatory communities to discuss cutting edge environmental technologies and ideas, as well as commemorate the most difficult challenges of our defense establishment.
Information about past Partners Symposia is available at the following link:
• November 20-December 1, 2009
• November 20-December 1, 2008
• November 20-December 1, 2007
About the Sponsors

Symposium & Workshop Highlights
The Partners in Environmental Technology Technical Symposium & Workshop is a nationally recognized conference focusing on the Department of Defense's (DoD) priority environmental issues. Attendees join the military services, academic and research institutions, private sector technology and environmental firms and federal, state, and local regulatory and policy making organizations. This year's event will offer an opening Plenary Session where the SERDP and ESTCP Projects of the Year will be announced, 13 technical sessions and four short courses, more than 200 technical poster presentations, and exhibitors from funding and partnering organizations. [About the Sessions](#)

Plenary Session and Project-of-the-Year Awards
The opening Plenary Session will feature three keynote speakers: Dr. John Mathias, Assistant to the President for Science and Technology in the White House Office of Science and Technology Policy; the Honorable Terry Radtke, Assistant Secretary of the Air Force for Intelligence, Environment and Logistics; and Dr. Manuel Mendez, Professor of History and Science Studies at the University of California, San Diego and Adjunct Professor of Geosciences at Scripps Institution of Oceanography who will address environmental challenges facing DoD. Also part of the Plenary Session, SERDP and ESTCP Principal Investigators who have helped DoD achieve its mission will receive DoD environmental performance will be honored at the annual SERDP and ESTCP Project of the Year awards are announced.

Technical Sessions and Short Courses
Technical sessions will highlight research and innovation technologies that address DoD's increasingly complex environmental challenges. On the last day of the event, four short courses in the environmental restoration and monitoring response areas will cover recent advancements in science and technology. To learn more about the year's exciting lineup of topics, refer to [Technical Sessions and Short Courses](#).

Funding Opportunities Briefing
On Thursday, December 1, SERDP and ESTCP Executive Director Dr. Jeffrey Harquess will present an overview of the annual solicitation process and discuss opportunities to

Registration Symposium Registration is now open!
Full advance rate: \$450
One day advance rate: \$250
Student rate: \$75
Online registration will close November 16, 2011. [About](#)

New Symposium Venue
This year's event will be held at a new location at the Washington Hilton. Information about how to make your hotel reservations is now available.

Contact Us
If you have any questions or comments about the Symposium, please e-mail partners@hgl.com or call the contact line at (703) 736-4548.

SYMPOSIUM REGISTRATION

SHORT COURSE REGISTRATION

The four short courses offered this year will all be held on Thursday, December 1. Space is limited and will be available on a first-come, first-served basis.

Please refer to the list of short courses below as you complete the registration form on page 17. When making your selections, note that Short Courses 1-3 run concurrently with the technical sessions. Also, Short Courses 2 and 3 will be held back to back to allow participation in both. Refer to pages 6-10 for the full technical program agenda and to pages 11-12 for descriptions of each short course.

THURSDAY MORNING

Short Course 1

8:30-11:30 a.m.

Implementing Classification on a Munitions Response Project

Short Course 2

8:30-10:00 a.m.

Estimating DNAPL Source Zone Natural Attenuation

Short Course 3

10:30 a.m.-12:30 p.m.

Thermal Treatment Technologies: Lessons Learned

THURSDAY AFTERNOON

Short Course 4

1:30-5:30 p.m.

Field Methods to Distinguish between Vapor Intrusion and Indoor Sources of VOCs

Professional development hours will be available for all short courses.

WHO SHOULD ATTEND THIS SYMPOSIUM

With more than 1,200 participants last year, this annual event is a nationally recognized conference focusing on DoD's priority environmental issues. Attendees span the military Services; academic and research institutions; private sector technology and environmental firms; and Federal, state, and local regulatory and policymaking organizations.

By registering for this event, you will have access to:

- Networking opportunities with environmental professionals from the United States and abroad
- Fifteen technical sessions highlighting the latest in environmental research and technological innovations
- Four short courses providing unique training opportunities on emerging technologies and methods in environmental restoration and munitions response
- Information about world-class research and demonstrations being conducted to address environmental challenges
- More than 450 posters supporting the technical program theme
- Booths offering information about funding opportunities in related research programs

Register Now!
Advance Registration
Deadline Is
November 16.

Registering is easy...

ONLINE

www.serdp-estcp.org/symposium

MAIL

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SERDP and ESTCP Registrar
11107 Sunset Hills Road, Suite 400
Reston, VA 20190

FAX

SERDP and ESTCP Support Office
(703) 478-0526

SYMPOSIUM & WORKSHOP REGISTRATION FORM

(Please type or print clearly)

Mr. Ms. Dr. Military Rank _____

Name _____

Company/Organization _____

Title _____

Mailing Address _____

City _____ State/Province _____ Zip/Postal Code _____

Country _____ Telephone _____

E-Mail _____

Preferred Name for Badge _____

Is this the first time that you will be attending our Symposium & Workshop? Yes No

How did you first learn about this Symposium & Workshop?

This mailing Another conference (please specify) _____

The SERDP and ESTCP web site Colleague

The SERDP and ESTCP e-newsletter Other (please specify) _____

Type of Organization (check one)

Government Employee Industry/Contractor Academia Press

Type of Registration

Attendee (including poster presenters) Short Course Instructor

Technical Session Chair or Keynote Course Name _____

Session Name _____ Tuesday/Wednesday Exhibit Tour Only

Technical Session Speaker

Session Name _____

Have you made your hotel reservations? Yes No Not Applicable

If you have a special need that requires assistance, check here and we will contact you.

Symposium Registration (check one)

Check, credit card, or purchase order information must accompany your registration.

Full Registration **\$450** One-Day Registration **\$250** Student Registration **\$75**

(through November 16) (through November 16) (Student ID required)

_____ Tues _____ Wed _____ Thurs

Short Course Registration

There is a **\$35 materials fee** for each short course. Refer to page 16 for the schedule of short courses, and check below each course that you plan to attend. **Note that Short Courses 2 and 3 will be held back to back, and you can attend both.**

Short Course 1 Short Course 2 Short Course 3 Short Course 4

Payment

Symposium Fee _____ + Total Short Course Materials Fee _____ = Total Due _____

Method of Payment (check one)

Check # _____

(Checks must be drawn on a U.S. bank and payable in U.S. funds to **HydroGeoLogic, Inc.**, Federal ID # 54-1404852.)

Purchase order or SF 182 (Make payable to **HydroGeoLogic, Inc.**)

Please charge my Visa MasterCard American Express Discover

(Note: HydroGeoLogic, Inc. will appear as the "payee" on your credit card statement.)

Account # _____ Security Code _____

Name Imprinted on Card _____ Exp. Date _____

Cardholder Billing Address (including zip code), if different from above _____

Signature _____

PARTNERS IN ENVIRONMENTAL TECHNOLOGY TECHNICAL SYMPOSIUM & WORKSHOP

Washington Hilton • Washington, D.C.
November 29 – December 1, 2011

SCHEDULE AT A GLANCE

MONDAY, NOVEMBER 28	WEDNESDAY, NOVEMBER 30	THURSDAY, DECEMBER 1
<p>3:00 – 7:00 p.m. Registration Open</p>	<p>7:00 a.m. – 6:00 p.m. Registration Open</p> <p>7:30 – 8:30 a.m. Continental Breakfast, Exhibits Open (Poster Group 2)</p> <p>8:30 – 11:45 a.m. Morning Concurrent Technical Sessions</p> <p>11:45 a.m. – 1:00 p.m. Buffet Lunch</p> <p>12:30 – 1:45 p.m. Exhibits Open (Poster Group 2)</p> <p>1:45 – 4:30 p.m. Afternoon Concurrent Technical Sessions</p> <p>4:30 – 7:00 p.m. Technical Exchange Reception, Exhibits Open (Poster Group 2)</p>	<p>7:00 a.m. – 2:00 p.m. Registration Open</p> <p>7:30 – 8:30 a.m. Continental Breakfast</p> <p>8:30 a.m. – 12:30 p.m. Morning Concurrent Technical Sessions and Short Courses 1, 2, and 3</p> <p>12:15 – 1:00 p.m. SERDP and ESTCP Funding Opportunities Briefing</p> <p>1:30 – 5:30 p.m. Short Course 4</p>
TUESDAY, NOVEMBER 29		
<p>7:00 a.m. – 6:00 p.m. Registration Open</p> <p>7:30 – 9:00 a.m. Continental Breakfast, Exhibits Open (Poster Group 1)</p> <p>9:00 – 11:30 a.m. Plenary Session</p> <p>12:15 – 1:15 p.m. Buffet Lunch</p> <p>12:30 – 1:45 p.m. Exhibits Open (Poster Group 1)</p> <p>1:45 – 4:30 p.m. Afternoon Concurrent Technical Sessions</p> <p>4:30 – 7:00 p.m. Technical Exchange Reception, Exhibits Open (Poster Group 1)</p>		



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MAIL ROOM: Please forward this brochure to this person's manager or
replacement if he/she is no longer with the organization.

