PARTNERS IN ENVIRONMENTAL TECHNOLOGY

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ESTCP

INFORMATION B•U•L•L•E•T•I•N

INSIDE THIS ISSUE

SERDP and ESTCP Efforts Identify and Distinguish Military, Non-Military, and Natural Sources of Perchlorate

Since perchlorate's identification as a chemical of concern in 1997, improved analytical methods have increased the frequency of detecting perchlorate in groundwater and drinking water supplies. Current estimates indicate perchlorate is present in groundwater in at least 30 states and may affect the drinking water supplies of more than 20 million people in the southwestern United States. While the source of perchlorate in water supplies has long been attributed to the Department of Defense (DoD), National Aeronautics and Space Administration (NASA), and defense contractor facilities, non-military sources of perchlorate also have been documented. Further, perchlorate-contaminated sites have been identified for which anthropogenic sources of contamination are unlikely, raising questions about the role of natural sources. With SERDP and ESTCP support, researchers are identifying and assessing anthropogenic and natural sources of perchlorate as well as developing and demonstrating innovative tools capable of distinguishing perchlorate origins.

Anthropogenic, non-military sources of perchlorate are being examined under the SERDP project *Evaluation of Alternative Causes of Wide-Spread, Low Concentration Perchlorate Impacts to Groundwater (ER-1429)*. Researchers from

See PERCHLORATE SOURCES, page 2

PARTNERS IN ENVIRONMENTAL TECHNOLOGY TECHNICAL SYMPOSIUM & WORKSHOP

Meeting DoD's Environmental Challenges

November 28–30, 2006
Marriott Wardman Park Hotel ✦ Washington, D.C.
Sponsored by SERDP and ESTCP

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Featuring comprehensive technical sessions highlighting research and innovative technologies that are assisting the Department of Defense to address environmental challenges:

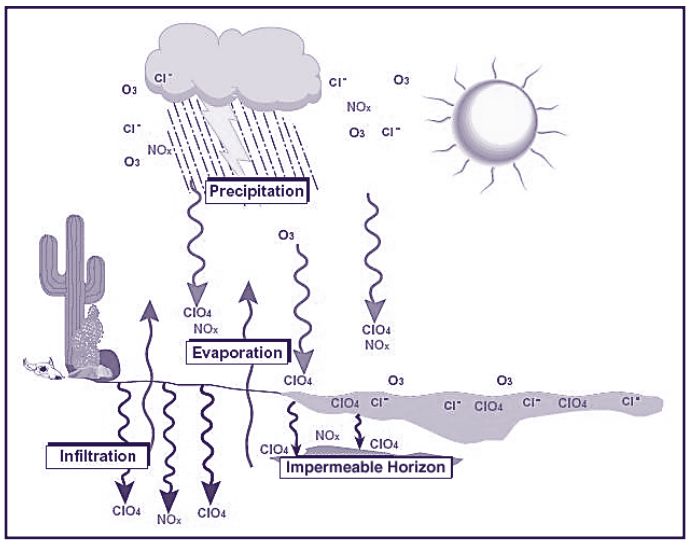
- **Meeting DoD's Energy Challenges: Energy Efficiency and Alternative Sources**
- **Metal Finishing: Addressing Emerging Regulatory Requirements**
- **In Situ Management and Remediation of Contaminated Sediments**
- **Recent Advances in the Characterization and Remediation of DNAPL**
- **Innovative Approaches to Remediating Emerging Contaminants**
- **Air Quality Challenges on Military Ranges**
- **Invasive Species on Military Lands: Susceptibility and Resistance**
- **Ecosystem Goods and Services on DoD Installations**
- **Ecosystem Management: Thinking Outside the Base**
- **Military Munitions Response: UXO Wide Area Assessment**
- **Military Munitions Response: Emerging Detection and Discrimination Technologies for UXO**
- **Assessing and Managing Munitions Constituents on Military Ranges**

Online registration is now available, and a block of hotel rooms has been set aside for attendees at the government per diem rate. For details on registration and hotel reservations as well as the latest event information, visit www.serdp.org or www.estcp.org or call (703) 736-4548 for assistance.

PERCHLORATE SOURCES, from page 1

GeoSyntec Consultants and the University of Rhode Island are quantifying the impact of perchlorate from past and ongoing fertilizer practices and from the use of explosives for construction, quarrying, and mining; road flares; electrochemically prepared (ECP) products; and fireworks. Chilean nitrate fertilizers, which are now known to contain perchlorate, were used on tobacco, cotton, and fruit and nut crops from the 1900s to 1960 in the United States. SERDP researchers are collecting and analyzing soil samples from these areas to determine the extent and concentration of perchlorate. The concentration of perchlorate in road flares has been tested, and researchers will conduct experiments to quantify the residual concentrations in highway environments. Similarly, perchlorate concentrations in ECP products such as weed killer and bleach have been tested for several manufacturers, and results will be compared to real-world samples such as cotton field soil and paper mill effluent. Work to quantify potential contributions from commercial explosives and fireworks is ongoing. These anthropogenic, non-military sources of perchlorate are discussed in a technical report now available in the SERDP and ESTCP Online Library (http://docs.serdp-estcp.org/). This project also is investigating false positives for perchlorate detection as a result of sulfonate interferences. Data have been gathered supporting the theory that Environmental Protection Agency Method 314 leads to false positives for perchlorate in the presence of sulfonate. These results question whether low concentrations actually indicate the presence of perchlorate at all.

A new technical report authored by SERDP investigators provides information on non-military, anthropogenic sources of perchlorate such as road flares (above), which may contribute to widespread, low concentration impacts to groundwater.



SERDP researchers are assessing natural sources of perchlorate, which may be formed by atmospheric and geochemical processes in near-surface environments.

Low levels of perchlorate groundwater contamination also have been detected in areas with no anthropogenic source of contamination. In the 2005 *Environmental Science & Technology (ES&T)* paper of the year, Texas Tech University researchers, referencing just such an area in Texas, showed that perchlorate could be readily formed by a variety of simulated atmospheric processes and reported perchlorate in many rain and snow samples. Their results strongly suggested that some perchlorate is formed in the atmosphere and that a natural perchlorate background of atmospheric origin should exist.

Natural sources of perchlorate, methods of concentration, and the distribution of natural perchlorate contamination are being addressed under the SERDP project *Identification and Characterization of Natural Sources of Perchlorate (ER-1435)*. Researchers from Wright Patterson Air Force Base, Texas Tech University, and the U.S. Geological Survey (USGS) have identified perchlorate in geological samples and in atmospheric samples exposed to lightning. They also have produced perchlorate in the laboratory under conditions similar to atmospheric lightning discharges in the presence of ozone. Correspondingly, they have detected perchlorate in low concentrations in precipitation collected in every month of the year. Their goal now is to determine the hydrology and geochemistry required to concentrate perchlorate in saturated or unsaturated zones. This SERDP research team has begun to document and characterize perchlorate in geologic materials, kelp, and other plant materials and has identified perchlorate in plants, soil, and groundwater in desert environments in the western and southwestern United States.

To distinguish natural from anthropogenic perchlorate in the environment, investigators from Shaw Environmental, the University of Illinois at Chicago, USGS, and Oak Ridge National Laboratory are developing and validating stable isotope methods under the ESTCP project *Validation of Chlorine and Oxygen Isotope Ratio Analysis to Differentiate Perchlorate Sources and to Document*

See PERCHLORATE SOURCES, page 6

Performance Data on Munitions Response Technologies Compiled By SERDP, ESTCP, and ITRC Partnership

SERDP and ESTCP, in collaboration with the Interstate Technology Regulatory Council (ITRC), have jointly developed a new reference document for evaluating and selecting technologies throughout the munitions response process. The document is written for regulators, community stakeholders, site program managers, and technology developers working on munitions response site investigation and remediation projects.

Detection capabilities of geophysical technologies are the main focus of this document because of their importance in the success of munitions response projects. Data gathered on various detection and discrimination technologies via the U.S. Army's Standardized Test Sites program, supported by SERDP and ESTCP, were analyzed to assess the current state of technology under controlled but realistic conditions. This study of the demonstrator's data represents an extension of the U.S. Army's analysis in the Standardized Scoring Reports. Detection performance was evaluated by determining which ordnance items were detected at various depths by sensor type and cleanup objective.

Through a parallel effort, real-world geophysical case studies were compiled to identify technologies currently used in the field, their effectiveness, and the overall state of the practice. Performance parameters from Geophysical Prove Outs were compared with the results from the Standardized Test Sites to assess how performance changes and degrades as real-world challenges are encountered.

The performance information gathered on various munitions response technologies and made available through this collaborative effort will aid site managers and the regulatory community with selecting the most appropriate systems for specific applications. The document is available on the SERDP (www.serdp.org), ESTCP (www.estcp.org), and ITRC (www.itrcweb.org) web sites. ◆

SERDP SAB TOURS ABERDEEN TEST CENTER

As part of the June 2006 meeting of the SERDP Scientific Advisory Board (SAB) in Aberdeen, Maryland, the Board and SERDP staff toured facilities at the Aberdeen Test Center (ATC) located on the U.S. Army Aberdeen Proving Grounds in northern Maryland. The purpose of the tour was to provide Board members with an overview of testing and evaluation operations conducted at ATC as well as ongoing environmental technology research and demonstration activities that are co-sponsored or performed in collaboration with SERDP and ESTCP.

The first stop on the tour, led by Mr. Bill Bolt and Mr. Charlie Valz, was the Aberdeen Test Center (ATC) Headquarters Command, where Board members were presented an overview of ATC Command activities. Among other capabilities, ATC is the lead DoD test center for manned and unmanned ground vehicles, guns and ammunition testing, and automotive testing. The overview was followed by a stop at the Munson Test Area, where members were briefed on the roadways and test tracks used to evaluate a wide variety of Army ground vehicles.

The tour then proceeded to the SERDP- and ESTCP-supported Standardized UXO Technology Demonstration Site, an 18-acre test site where technologies to detect and discriminate UXO are tested and evaluated for their ability to identify UXO as well as distinguish UXO from metal scrap. This site was designed to enable standardized technology evaluation of critical parameters such as UXO detection capability, false alarm rates, discrimination, reacquisition, and system efficiency.

The last stop of the tour was Range 18, where Board members were briefed on ATC's Blast Sphere Emissions Program, an ongoing effort to characterize and quantify emissions resulting from munitions use and to assess the potential health and environmental impact of these emissions.

Board members noted that the tour was extremely informative and greatly enhanced their understanding of environmental challenges associated with DoD testing and evaluation operations. ◆

SERDP and ESTCP Award FY 2006 In

Throughout 2006, new initiatives in all SERDP and ESTCP focus areas will be hig

SERDP and ESTCP initiatives in Sustainable Infrastructure focus on the science and technologies required to sustain military training and testing areas as well as the natural and cultural resources and built infrastructure that supports these areas and the active forces. In 2006, SERDP research and development efforts are examining threatened and endangered species (TES) habitat fragmentation; developing protocols for restoring longleaf pine for the red-cockaded woodpecker; quantifying scientifically defensible population recovery goals for listed species; reducing solid packaging material waste; and developing environmentally benign runway deicing technologies. **SE**RDP **E**xploratory **D**evelopment (SEED) efforts are developing miniaturized sensors to monitor environmental parameters; researching innovative methods to manage invasive species; and developing tools to further the understanding and management of TES. ESTCP investigators are demonstrating technologies to cost-effectively survey desert tortoises, streamline data processing when excavating and evaluating archaeological sites, remove hazardous polychlorinated biphenyls (PCB) from older structures, and monitor fugitive air emissions. Collectively, the results from these projects will help DoD in its ongoing efforts to achieve sustainability.

SERDP Research

Information on these efforts can be found at www.serdp.org under the Research Projects *link.*

Defense Coastal/Estuarine Research Program (SI-1413)

Principal Investigator: Patricia Cunningham/Research Triangle Institute

This umbrella project, conducted at Camp Lejeune, North Carolina, will examine broad-scale ecosystem management of military bases located in the coastal zone. Integrative subprojects will test ecosystem responses to both regional and military-specific disturbances to gain a better understanding of how military activities can coexist with natural resource conservation in this region. Research results and monitoring data will aid in the long-term management of this biologically diverse ecosystem to ensure sustainability for future generations.

MEMS Sensors with Chemically Selective Coatings of Ionic Liquids (SI-1464)

Principal Investigator: Costas Tsouris/Oak Ridge National Laboratory

This SEED project is expected to introduce a new class of microcantilever transducers, based on ionic-liquid coatings, that can be used in miniaturized sensors to detect air and water quality parameters relevant to military activities.

Enhancement of Digital Methods for Determination of Opacity (SI-1465)

Principal Investigator: JoAnn Lighty/University of Utah

Control and quantification of visible emissions is a challenge for DoD facilities. The objective of this SEED project is to develop a small, accurate, and robust system for determining opacity, based on the analysis of digital images.

Miniature and Low-Cost Wireless Sensor Platform for Environmental Monitoring (SI-1466)

Principal Investigator: Yordan Kostov/University of Maryland, Baltimore County

New regulatory requirements addressing water quality have significant impacts on DoD installations. This SEED project will focus on the design and manufacture of an inexpensive, field-deployable sensor platform equipped with three miniature optical sensors for measuring dissolved oxygen, turbidity, and pH.

A Novel Approach to Managing Invasive Termite Species Using Genetically Engineered Bacteria (SI-1467)

Principal Investigator: Claudia Husseneder/Louisiana State University

Invasive termite species are known to damage military structures and training facilities in temperate, tropical, and subtropical regions. The objective of this SEED project is to use microbes detrimental to the survival of termites as an alternative to conventional chemical and bait treatments for termite control.

Bioavailability of Allelochemicals in Soil (SI-1468)

Principal Investigator: Paul Grossl/Utah State University

Frequent disturbances to native vegetation make military training areas susceptible to invasions of knapweed species. This SEED project will identify the optimal soil constituents and conditions that provide maximum sorption of the allelochemicals (-)-catechin and 7, 8-benzoflavone and determine if those conditions can diminish the phytotoxicity of the allelochemicals to native species.

Trading Habitat Patches for the Red-Cockaded Woodpecker: Incorporating the Role of Landscape Structure and Uncertainty in Decision Making (SI-1469)

Principal Investigator: Michael Jones/Michigan State University

On and around military installations, habitat trading has emerged as a useful tool for mitigating habitat fragmentation and its associated impacts on training, management costs, and conservation benefits. This SEED project will conduct a feasibility study on a tradable permit system for red-cockaded woodpecker habitat.

Spatially Explicit Assessments of Genetic Biodiversity and Dispersal in Gopher Tortoises and Gopher Frogs for Evaluation of Habitat Fragmentation at DoD Sites (SI-1470)

Principal Investigator: Christopher Theodorakis/Southern Illinois University, Edwardsville

Sustainable metapopulations of threatened and endangered species (TES) may be maintained through smaller, interconnected habitat patches. Through a series of spatially explicit metapopulation genetic, landscape genetic, and phylogeographic analyses, researchers will determine relative levels of genetic diversity and gene flow for gopher tortoises and gopher frogs in this SEED project.

Habitat Connectivity for Multiple Rare, Threatened and Endangered Species On and Around Military Installations (SI-1471)

Principal Investigator: Aaron Moody/University of North Carolina at Chapel Hill

Habitat fragmentation and land development outside military installations has serious impacts on training goals and on the conservation of TES found on installations. This project aims to develop methods that integrate landscape and animal behavioral approaches in order to identify lands on and around DoD installations that provide high connectivity value for suites of TES.

A Decision Support System for Identifying and Ranking Critical Habitat Parcels On and In the Vicinity of Department of Defense Installations (SI-1472)

Principal Investigator: Jeffrey Walters/Virginia Polytechnic Institute and State University

The objective of this project is to develop a user-friendly spatially explicit decision support system based on a geographic information system and using red-cockaded woodpecker (RCW) habitat and population information. This system ultimately will

help DoD identify and prioritize habitat parcels on and in the vicinity of installations in the southeastern United States based on their contributions to the RCW.

Examination of Habitat Fragmentation and Effects on Species Persistence in the Vicinity of Naval Base Point Loma and Marine Corps Air Station Miramar, San Diego, California (SI-1473)

Principal Investigator: Dawn Lawson/Naval Facilities Engineering Command, Southwest Division

In this project, researchers will develop tools to identify optimal regional habitat configurations for metapopulations of sensitive species. The analysis will identify the size and number of subpopulations needed to sustain stable regional metapopulations and evaluate management actions needed to sustain subpopulations.

Managing Declining Pine Stands for the Restoration of Red-Cockaded Woodpecker Habitat (SI-1474)

Principal Investigator: Joan Walker/U.S. Forest Service, Southern Research Station

Across the southeastern United States, DoD land managers share the challenge of restoring longleaf pine (LLP) forests to support the red-cockaded woodpecker and other species of concern. The overall goals of this project are to develop protocols for restoring LLP to stands currently occupied by declining loblolly pine, model stand vulnerability to decline, and develop recommendations for continued management.

An Ecoinformatic Approach to Developing Recovery Goals and Objectives (SI-1475)

Principal Investigator: William Fagen/University of Maryland, College Park

This project will develop and implement methods to quantify scientifically defensible recovery goals and criteria for federally listed species on DoD managed lands using a sophisticated comparison approach with a diverse set of well-studied species. Such methods will allow DoD land managers to define more precisely the level of conservation effort and recovery actions required for each listed species.

A Risk Assessment Framework for Defining Scientifically Defensible Recovery Goals for Listed Species (SI-1477)

Principal Investigator: Michael Scott/University of Idaho

Military land managers increasingly are faced with the challenges of balancing endangered species conservation with military missions and the need for training readiness. The objective of this project is to develop methods and models for setting recovery goals by applying a risk management approach.

PHA Bioplastic Packaging Materials (SI-1478)

Principal Investigator: Robert Whitehouse/Metabolix, Inc.

Plastic packaging materials are low-cost and effective for many DoD applications. However, the logistics of managing packaging waste in remote areas and foreign countries is becoming increasingly problematic and costly for the military. The objective of this project is to develop polyhydroxyalkanoate (PHA) natural plastics as a biodegradable alternative for foamed packaging and stretch/shrink film applications.

Lightweight and Compostable Packaging for the Military (SI-1479)

Principal Investigator: Jo Ann Ratto/U.S. Army Natick Soldier Center

The military Services consume approximately 46.6 million operational rations each year, generating 14,000 tons of packaging waste. This project aims to reduce the weight of products used to package the Meals, Ready-To-Eat and Unitized Group Rations by developing new lightweight fiberboard and biodegradable polymer-coated fiberboard and paperboard that can be converted to compost.

Development of Environmentally Benign and Reduced Corrosion Runway Deicing Fluid (SI-1535)

Principal Investigator: Satya Chauhan/Battelle Memorial Institute

Because of the toxicity and high biological and chemical oxygen demand of urea, DoD and commercial airports have switched to runway deicers and anti-icers based on propylene glycol or organic salts. This project will develop and evaluate novel chemistries to formulate runway deicing fluids from a cheap raw material to achieve both environmental friendliness and lower corrosivity.

Acoustic Response and Detection of Marine Mammals on Navy Ranges Using a Digital Acoustic Recording Tag (SI-1539)

Principal Investigator: Peter Tyack/Woods Hole Oceanographic Institution

The U.S. Navy needs the ability to detect beaked whale species, characterize their behavior in response to naval operations, and determine safe exposure zones to prevent population declines. Leveraging past research conducted under SERDP project SI-1188, researchers will investigate how man-made sound affects the behavior of these species using digital acoustic recording tags.

ESTCP Demonstrations

Information on these efforts can be found at www.estcp.org under the Technologies *link.*

Validation and Development of a Certification Program for Using K9s to Survey Desert Tortoises (SI-0609)

Principal Investigator: Russell Harmon/Army Research Laboratory

Desert tortoises currently are surveyed using methods that involve human visual counts, yet the data and analyses do not provide a statistical means of detecting upward population trends, a primary criteria for delisting this species. This project will develop and validate a certification program for using working dogs trained to locate desert tortoises of all sizes and both sexes on the surface and in burrows.

Application of a Solvent Emulsion Technology for PCB Removal from Older Structures on DoD Facilities (SI-0610)

Principal Investigator: Nancy Ruiz/Naval Facilities Engineering Service Center

Recent demolition and disposal costs associated with a structure coated with polychlorinated biphenyl (PCB)-laden materials have been on the order of $40 per square foot of treated area. This project aims to demonstrate the efficacy and cost benefit of a Bimetallic Treatment System (BTS) to remove and rapidly degrade PCBs found in structural coatings below 50 parts per million.

Streamlined Archaeo-Geophysical Data Processing and Integration for DoD Field Use (SI-0611)

Principal Investigator: Michael Hargrave/U.S. Army Corps of Engineers, Engineer Research and Development Center, Construction Engineering Research Laboratory

Evaluating the eligibility of archaeological sites for the National Register of Historic Places in compliance with federal law is an ongoing activity at DoD installations. Building on research conducted under SERDP project SI-1263, this project will assemble and demonstrate a software package, ArchaeoMapper, that will facilitate widespread use of an integrated, multisensor geophysical approach.

Field Validation of the Digital Opacity Compliance System for Fugitive Emissions Monitoring (SI-0612)

Principal Investigator: Steven Rasmussen/Ogden Air Logistics Center

The objective of this demonstration is to evaluate performance of the digital opacity compliance system (DOCS) for quantifying the regulatory enforceable fugitive emission opacity levels associated with various DoD mission-readiness activities. This technology was previously demonstrated for stack emission opacity compliance under ESTCP project SI-0119.

Program Development Update

SERDP

Following the independent peer review evaluation of the 198 full proposals received in response to the FY 2007 SERDP Core Solicitation, 100 proposals were forwarded for review to the SERDP Technical Committees (STC) in May. The STCs reviewed these proposals in May and June, along with 16 of the 46 proposals received in response to the FY 2007 **SE**RDP **E**xploratory **D**evelopment (SEED) Solicitation. The STC downselect meetings were held in June and July, and recommendations have been made to the SERDP Executive Director for the FY 2007 Core and SEED efforts.

Five proposals were received in response to the FY 2006 Defense Coastal/Estuarine Research Program (DCERP) special SERDP solicitation which 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. Following the external peer review in March and April, the STC reviewed these proposals in May and recommended selection of one proposal to the SERDP Executive Director.

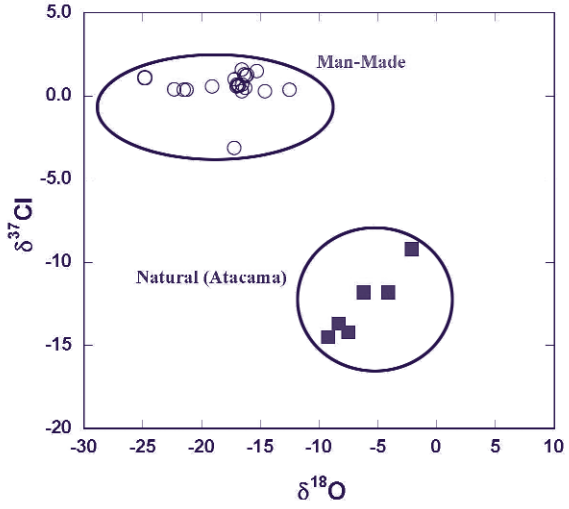
The FY 2008 SERDP Core Solicitation and SEED Solicitation will be released on or around November 9. Refer to www.serdp.org under the *Funding Opportunities* link for specifics about the solicitations and deadlines.

ESTCP

Of the 201 pre-proposals received in response to the ESTCP FY 2007 Call for Proposals and Broad Agency Announcement, the ESTCP Technical Committees (ETC) reviewed 153 relevant pre-proposals during April and May. Their recommendations on pre-proposals that merit full proposal requests were made at the end of May. In June, 56 proposers were requested to submit full proposals by August 10. In September, these proposers will be asked to present their proposals to the ETC, following which recommendations for funding will be made to the ESTCP Director. ◆

PERCHLORATE SOURCES, from page 2

Perchlorate Biodegradation (ER-0509). Sample preparation methods have been developed to collect, recover, and purify the perchlorate before analysis. Investigators also have developed methods to analyze chlorine and oxygen isotopes in perchlorate and to use the ratios of the isotopes to distinguish isotope origin. Other geochemical parameters, including iodine and tritium levels, are used to firmly establish perchlorate origin. The technique has been applied to a variety of solid perchlorate samples of differing known origins to develop a broad database of isotopic signatures among natural and anthropogenic materials. Isotope ratios in military, non-military, and natural perchlorate sources clearly reveal which sources are anthropogenic and which are natural. After the database was established, groundwater samples were collected and analyzed from plumes with both anthropogenic perchlorate origin and suspected natural sources. For samples collected from wells on a southern California site, analytical results showed that contamination in two wells was likely due to anthropogenic perchlorate while contamination in three other wells exhibited isotope signatures consistent with natural perchlorate. Additional project tasks include verifying biodegradation of perchlorate using isotope analysis.



To distinguish man-made from natural sources of perchlorate, ESTCP is developing stable isotope methods in which chlorine is markedly "heavier" in anthropogenic perchlorate and oxygen is consistently "heavier" in natural perchlorate.

While perchlorate contamination represents a tremendous potential liability for the Department of Defense, numerous cases have been documented where perchlorate impacts result from combinations of military, non-military, and/or natural sources. Detections of low perchlorate concentrations often have no apparent military source. DoD's ability to accurately apportion the relative contributions from these perchlorate sources and to properly determine liability and control cleanup costs is dependent on an understanding of these sources and the ability to distinguish between them, both aspects of which SERDP and ESTCP continue to address through the projects described in this article.

Additional information about these ongoing efforts to identify perchlorate sources can be found on the SERDP web site at http://www.serdp.org/research/er-perchlorate.cfm and on the ESTCP web site at http://www.estcp.org/technology/er-perchlorate.cfm. ◆

Recent Additions to the SERDP and ESTCP Online Library

The following new publications are now available in the SERDP and ESTCP Online Library (http://docs.serdp-estcp.org). Access them by entering the project number (e.g., 0125) under Search Phrase. Other documents may be accessed by entering a keyword or selecting the relevant search filters.

Environmental Restoration

- Cost & Performance Report: PIMS™: Remediation of Soil and Groundwater Contaminated with Metals (ESTCP ER-0020)

Munitions Management

- Cost & Performance Report: Laser Neutralization of Hazardous UXO (ESTCP MM-9909)
- Final Report: UXO Detection and Characterization in the Marine Environment (SERDP MM-1225)
- Final Report: Ground Penetrating Radar (GPR) UXO Classification Results for Jefferson Proving Ground V (ESTCP MM-9902)
- Final Report: GPR UXO Classification Results for the Blossom Point Site (ESTCP MM-9902)
- Final Report: Tyndall AFB Site Demonstration: Data Processing Results for UXO Classification Using Ultra-Wideband Full-Polarization GPR System (ESTCP MM-9902)
- Final Report: Ultra-Wideband, Fully Polarimetric Ground Penetrating Radar for UXO Discrimination (ESTCP MM-9902)
- Final Report: Handheld, Broadband Electromagnetic UXO Sensor (ESTCP MM-0036)
- Final Report: Decontamination of Test Range Metal Debris Using a Transportable Flashing Furnace (ESTCP MM-0412)
- Technical Report: Analysis of 2003 Airborne Geophysical Survey at Pueblo of Isleta Bombing Targets, New Mexico (ESTCP MM-0037)
- Technical Report: Analysis of 2002 Airborne Geophysical Survey at Badlands Bombing Range, South Dakota (ESTCP MM-0037)
- Technical Report: Analysis of 2002 Airborne Geophysical Survey at Pueblo of Isleta Bombing Targets, New Mexico (ESTCP MM-0037)
- Technical Report: Analysis of 2002 Airborne Geophysical Survey at Pueblo of Laguna Bombing Targets, New Mexico (ESTCP MM-0037)
- Technical Report: Demonstration of Airborne Electromagnetic Systems for Detection and Characterization of Unexploded Ordnance at the Badlands Bombing Range, South Dakota (ESTCP MM-0101)

Sustainable Infrastructure

- Cost & Performance Report: Portable System for Field-Feeding Greywater Remediation and Recycling (ESTCP SI-0310)

Weapons Systems and Platforms

- Cost & Performance Report: Reduction of Particulate Emissions from Turbine Engines Using the +100 Additive (ESTCP WP-0121)
- Final Report: Diesel-Powered Equipment Properties and Activity Database for DoD Off-Road Sources (SERDP WP-1338)
- Final Report: Environmentally Friendly Advanced Gun Propellants (SERDP WP-1363)
- Final Report: Electroactive Polymers as Environmentally Benign Coating Replacements for Cadmium Plating on High Strength Steels (SERDP WP-1411)

PARTNERS IN ENVIRONMENTAL TECHNOLOGY

STRATEGIC ENVIRONMENTAL RESEARCH AND DEVELOPMENT PROGRAM (SERDP)

&

ENVIRONMENTAL SECURITY TECHNOLOGY CERTIFICATION PROGRAM (ESTCP)

INFORMATION BULLETIN

Summer 2006 NUMBER 28

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FOR SERDP AND ESTCP

SEPTEMBER 2006

September 6-7
Sustainable Infrastructure (SI) ESTCP Technical Committee (ETC) downselect meeting (closed meeting)

September 12-14
SERDP Scientific Advisory Board (SAB) meeting

Mid-September
SERDP Executive Working Group (EWG) meeting

September 18-20
Environmental Restoration (ER) ESTCP Technical Committee (ETC) downselect meeting (closed meeting)

September 21-22
Weapons Systems and Platforms (WP) ESTCP Technical Committee (ETC) downselect meeting (closed meeting)

September 26-27
Munitions Management (MM) ESTCP Technical Committee (ETC) downselect meeting (closed meeting)

Last Week in September
SERDP Council meeting

OCTOBER 2006

October 17-19
SERDP Scientific Advisory Board (SAB) meeting

October 23-25
Environmental Restoration (ER) In-Progress Review (IPR) meetings

October 26
Weapons Systems and Platforms (WP) In-Progress Review (IPR) meetings

October 27
Sustainable Infrastructure (SI) In-Progress Review (IPR) meetings

NOVEMBER 2006

November 1-2
Munitions Management (MM) In-Progress Review meetings

On or Around November 9
SERDP FY 2008 Core Solicitation and **SE**RDP **E**xploratory **D**evelopment (SEED) Solicitation are released

November 28-30
SERDP and ESTCP's Annual Partners in Environmental Technology Technical Symposium & Workshop, Marriott Wardman Park Hotel, Washington, D.C.

RELATED CONFERENCES & EVENTS

October 1-4
Third International Symposium on Aerospace Materials & Manufacturing: Emerging Materials, Processes, and Repair Techniques (ICSOBA 2006) Montreal, Canada

For more information, visit http://www.metsoc.org/com2006/aero.asp?pg=Aerospace.

November 5-9
Society of Environmental Toxicology and Chemistry (SETAC) North America 27th Annual Meeting Montreal, Canada

For more information, visit http://montreal.setac.org/home.asp.

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