

International Collaboration at

SERDP/ESTCP Symposium

Projects of the Year Showcase Cutting-Edge Technologies

International partnerships formed to address environmental challenges facing the military were apparent in all aspects of the Partners in Environmental Technology Technical Symposium and Workshop held 2–4 December 2003 in Washington, D.C.

This annual conference, sponsored by the Strategic Environmental Research and Development Program (SERDP) and the Environmental Security Technology Certification Program

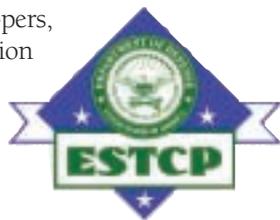
(ESTCP), highlights the many different partnerships among federal agencies, private industry, and academia, as well as between technology developers, end users, and regulators. In addition to attendees from across the United States, representatives from six other countries including Canada, England, Australia, Sweden, the Czech Republic, Germany, and the Netherlands also participated in the Symposium. In all, approximately 750 participants attended the Symposium which focused on important and timely environmental issues.

The theme of this event, “Meeting Department of Defense (DoD) Environmental Challenges: Sustaining Our Ranges; Reducing Environmental Liabilities,” was introduced in a plenary session of distinguished speakers including Ms. Maureen T. Koetz, Deputy Assistant Secretary of the Air Force for Environment, Safety, and Occupational Health;

Brigadier-General H.M. Petras, CD, Director of General Land Combat Development for the Canadian Forces; and Mr. Ray C. Anderson, Chairman of the Board of Interface, Inc. Their messages conveyed different approaches to achieve sustainability in the military. At the conclusion of the Plenary Session, Dr. C. Herb Ward, the Chair of SERDP’s Scientific Advisory Board, presented five SERDP and one ESTCP Project of the Year Awards to recognize successful research and technology developments with significant benefits to DoD. Recipients of this honor and a description of their projects follow.

2003 SERDP Project of the Year—Cleanup

The presentation of the 2003 Cleanup Project of the Year Award demonstrated the international cooperative spirit fostered through the SERDP Program. The recipient, Dr. Jalal Hawari of Canada’s National Research Council Biotechnology Research Institute in Montreal, is the first SERDP Principal Investigator (PI) from outside the United States to be selected for this honor. Dr. Hawari has performed revolutionary work involving the enzymatic and microbial processes that aid in the degradation of hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) and octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX) under both aerobic and anaerobic conditions. Dr. Hawari and his international team of researchers, including Drs. Jim Spain and Shirley Nishino of the U.S. Air Force Research Laboratory and Drs. Guy Ampleman and Sonia Thiboutot of Defence Research and Development Canada, have discovered key metabolites and intermediates that can be used to further elucidate the degradation pathways of these explosive compounds. This increased fundamental understanding of the microbial and enzymatic degradation of RDX and HMX provides a foundation for future pilot-scale demonstrations and the development of cost-effective bioremediation technologies that will be suitable for the cleanup of contaminated sites.



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Dr. Jalal Hawari (center) and his international team of researchers were awarded the 2003 SERDP Cleanup Project of the Year and receive congratulations from SERDP Executive Director Mr. Bradley Smith (far right) and ESTCP Director Dr. Jeffrey Marqusee (far left).

2003 SERDP Project of the Year—Pollution Prevention

Mr. John Weir and Dr. Don DiMarzio of the Northrop Grumman Corporation were selected for their innovative research in the non-destructive investigation of corrosion that may be present beneath the painted or coated surfaces of aircraft components. This effort succeeded in using enhanced, hand-held infra-red sensors to produce quality images that can inspect aircraft structural integrity, including cracks and corrosion, under coatings. The results of this research will greatly reduce the frequency and area of paint stripping necessary to complete inspections. This innovative technique will enable maintenance facilities to reduce by an order of magnitude the use of hazardous solvents and the associated creation of solid waste as well as emissions from stripping organic coat-

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ings. As an added benefit, this advanced inspection technology now makes possible the practical use of extended-life topcoat systems that have the potential to protect aircraft structures for up to ten years. Annual cost savings for the DoD are projected at \$40 million per year, and four times this amount may be saved in the commercial sector. Under ESTCP sponsorship, Northrop Grumman is scheduled to fully demonstrate this technology for use at DoD facilities.



Novel infra-red technology applied to painted surfaces reveals the underlying condition not visible to the naked eye. This 2003 SERDP Pollution Prevention Project of the Year award-winning research eliminates the need to remove coatings to inspect aircraft.

2003 SERDP Project of the Year—Compliance

The 2003 Project of the Year Award for Compliance was presented jointly to Dr. Stephen Skrabal of the University of North Carolina at Wilmington and Dr. Martin Shafer of the University of Wisconsin—Madison for their research on the

effects of dissolved copper and zinc in three marine estuaries—San Diego Bay, California; Cape Fear, North Carolina; and Norfolk Harbor, Virginia. Through their projects, Drs. Skrabal and Shafer collectively demonstrated first, how

DoD now can evaluate its water quality compliance criteria and more accurately assess potential impacts on the harbor biological environment.

ligands, or organic molecules with one or more unshared pairs of electrons, serve to bind with metallic ions and make them no longer bioavailable, and second, how these ligands can be used as a metric for water quality purposes. Dr. Skrabal's investigations revealed the potentially important role that sediment-water exchange can play as a source of the strong complexing ligands that control the speciation of these two potentially toxic metals in estuarine and harbor environments. Dr. Shafer complemented Dr. Skrabal's efforts by demonstrating that the amount of copper uptake in algal cells directly correlates to the presence and quantity of copper-binding complex ligands in the estuary. This research substantiates that accounting for metal speciation will enable a more realistic estimation of acute and chronic risk, and these results will ultimately lead to the development of scientifically-based water quality standards for copper and zinc in the aquatic environment. With these data, DoD now can evaluate its water quality compliance criteria and more accurately assess potential impacts on the harbor biological environment.

SERDP Executive Director Mr. Bradley Smith (far right) and ESTCP Director Dr. Jeffrey Marqusee (far left) congratulate Drs. Stephen Skrabal (second from left) and Martin Shafer, recipients of SERDP's 2003 Compliance Project of the Year Award.





The 2003 SERDP Conservation Project of the Year Award highlights the development of acoustic monitoring for endangered bird species, including the Black-Capped Vireo, on military lands.

2003 SERDP Project of the Year—Conservation

The 2003 Conservation Project of the Year Award was presented to Dr. Kurt Fristrup from the Cornell Laboratory of Ornithology for his innovative research in Threatened and Endangered Species (TES) monitoring. Dr. Fristrup and his team collaborated on a project to successfully develop and implement autonomous digital recording systems and signal processing algorithms that automatically localize and classify bird songs. This innovative system was installed on both fixed and mobile platforms to monitor the Black-Capped Vireo and Golden-Cheeked Warbler over large areas of Fort Hood, Texas, including

This unique approach to threatened and endangered species monitoring provides for monitoring in areas that previously had been inaccessible to installation natural resource managers.

live-fire and artillery impact areas. This unique approach to TES monitoring not only provides an enormous amount of detailed information on these two endangered bird species but also now provides for monitoring in areas that previously had been inaccessible to installation natural resource managers. With modification to the automatic recognition algorithms, the system is applicable not only to other avian species, but other TES as well.

2003 SERDP Project of the Year—Unexploded Ordnance

Mr. George Robitaille of the U.S. Army Environmental Center was selected for establishing the UXO Standardized Test Sites for technology testing and demonstration at Aberdeen Proving Ground, Maryland, and Yuma Proving Ground, Arizona. The test sites facilitate the transition of technologies to detect and discriminate unexploded ordnance through independent testing. The test sites promote the full characterization of these technologies by tracking performance with system development,

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comparing performance of different systems, and comparing performance in different environments. The standardized procedures and performance metrics developed as part of this project help to ensure that comparisons of UXO sensor technologies are

consistent and valid. Mr. Robitaille, with the contributions of a large project team, has created a resource for site managers in need of technology, as well as an invaluable test bed for the research community.

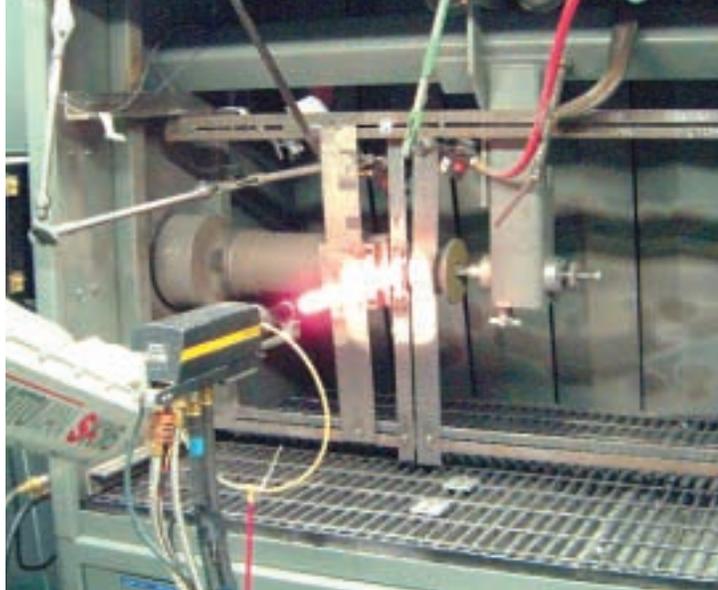


2003 ESTCP Project of the Year

The 2003 ESTCP Project of the Year Award was presented to Mr. Bruce Sartwell of the Naval Research Laboratory for demonstrating and validating High Velocity Oxygen-Fuel (HVOF) thermal spray technology to deposit tungsten carbide-cobalt coatings on landing gear. The project team has demonstrated that tungsten carbide-cobalt coatings provide improved wear and corrosion performance, substantially reduced life cycle maintenance costs, and an environmentally acceptable alternative to electrolytic hard chrome plating. Additionally, in 1998, Mr. Sartwell, assisted by Dr. Keith Legg of Rowan Technology Group, established the Hard Chrome Alternatives Team (HCAT) to develop a joint test protocol defining the qualification criteria for the HVOF process and coatings for line-of-sight aerospace applications. This industry and DoD team has become an international forum to coordinate the development and evaluation of chrome alternatives for the aerospace

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The HVOF technology, used to apply tungsten carbide-cobalt coatings with improved performance over electrolytic hard chrome plating for landing gear, merited ESTCP's 2003 Project of the Year Award.



Plenary Session Speaker
Mr. Ray C. Anderson, Chairman
of the Board of Interface, Inc.,
presented his company's vision for
becoming completely sustainable.



Plenary Session Speakers Brigadier-General H.M. Petras, CD, of the Canadian Forces (left) and Ms. Maureen T. Koetz, Deputy Assistant Secretary of the Air Force for Environment, Safety, and Occupational Health, met with Dr. C. Herb Ward, the Chair of SERDP's Scientific Advisory Board.

community and continues today to refine the HVOF process and oversee materials testing. Through his noteworthy efforts, Mr. Sartwell has not only developed a viable replacement for line-of-sight hard chrome applications, but he also established an international forum that will continue to coordinate similar efforts for other applications.

An intensive technical program on 12 topical areas, the true substance of the Symposium, followed the plenary session and provided both stimulating presentations from acknowledged experts, as well as presentations of examples of cutting-edge technological solutions for addressing military range sustainability issues. In between technical sessions and during evening receptions, participants interacted with technical presenters and other attendees as well as with the record-breaking number of nearly 250 poster presenters and 20 exhibitors from various departments and agencies. The number of international poster presenters at last year's event also surpassed previous events, a testament to SERDP and ESTCP's success in fostering international partnerships to solve environmental problems.

The Partners in Environmental Technology Technical Symposium and Workshop draws a unique mix of attendees from the military services; state and federal regulatory agencies; federal, state, and local policymaking organizations; private sector environmental firms; and academic and research institutions. This year's meeting will be held 29 November through 2 December 2004 in Washington, D.C. [↕](#)

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