

The R&T Connection Newsletter

A Publication for the Research and Technology Directorate

April 2011

IN THIS ISSUE

- Senior Technologist Visits Germany... page 2
- Inter-Directorate Collaboration Resolves Issue... page 3
- R&T Scientist Speaks About Technologies... page 4
- Microbial Forensics Study Published... page 4
- Disability Committee Rep Completes Course... page 5
- Paper Published Linking Hardiness and Cholesterol... page 5
- BioSciences Staff Recognized with Awards... page 6
- Recent Staff Patents... page 6
- GFEBs Deployed in October... page 7
- International Obscurants Symposium... page 8
- Upcoming S&T Conferences/ Meetings... page 8

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R&T Connection

Have an item for the **R&T Connection**? Whether it's a technical accomplishment, an upcoming speech, an employee award or any other news story, please share it with R&T Communications Officer Mia Scharper at mia.scharper@us.army.mil or 410.436.2262.

Message from the Director



Well-deserved congratulations to Ms. Suzanne Milchling on behalf of the Research and Technology Directorate! Ms. Milchling was appointed by the Secretary of Army as the Director of Program Integration, and she is the first female Senior Executive Service member at ECBC. Not only does she have extensive experience and a talent for getting things done, but she has proven that she keeps the warfighter – our ultimate customer – as her first priority. As director, Ms. Milchling manages the business activities and operating processes at ECBC, and directs interagency activities with organizations such as the Department of Homeland Security, Environmental Protection Agency, Department of Energy, as well as various state/local government and commercial entities with chemical and biological protection homeland security responsibilities. I'm very much looking forward to working with Ms. Milchling in this new role.

I'd also like to extend congratulations to you for displaying such flexibility and professionalism through the talk of the possible government shutdown. I am pleased that a continuing resolution was passed in the nick of time and appreciate your patience throughout this process. Once again, you have demonstrated why R&T people are truly extraordinary. Thank you for your support during this process, and I know you will continue to deliver great work for our clients.

PUTTING SHAREPOINT TO WORK FOR YOU

Is your team using SharePoint yet? If not, please visit <https://ecbcsharepoint.apgea.army.mil> to explore this tool. You'll notice that within R&T, each division and branch has its own page, which can be customized as you like. Teams can add work pages and set specific permissions. SharePoint has become a staple work product for many of ECBC's employees and leadership during the last few years. Teams use it to facilitate knowledge management and collaboration, and now that ECBC has dedicated support staff and training available, it makes sense to think about how you can put SharePoint to work. Please watch your email for training opportunities.



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Senior Technologist Visits Germany in Exchange Program

Jose-Luis Sagripanti, Ph.D., senior technologist in biochemistry at the U.S. Army Edgewood Chemical Biological Center (ECBC), spent six months in Munster, Germany, leading research at the Wehrwissenschaftliches Institut für Schutztechnologien - ABC-Schutz (WIS).

The organization's name translates to the Research Institute for Protective Technologies and Nuclear, Biological and Chemical Protection. WIS is ECBC's sister organization in Germany, said Sagripanti, who worked at the institute from April 2010 to October 2010 under the U.S. Army-Bundeswehr Exchange Technical Officers Program. Experts in their field are selected to participate in this Pentagon-managed program.

Before his six-month rotational assignment, Sagripanti had already contributed his expertise to WIS by providing journal article reprints and speaking at WIS's annual conference. "I must have fooled them into thinking I knew something, so they invited me for an extended stay," he said with his characteristic blend of modesty and humor.

The director of WIS, Roland Dierstein, Ph.D., noted that Sagripanti was both "a human asset and a great scientific benefit to our institute and the international cooperation in a very interesting and pioneering project." Sagripanti's project was called "Universal Microbial Inactivation for Safe and Rapid Diagnostics of Biological Threat Agents."

Sagripanti said that he enjoyed working at WIS, noting that he worked with approximately 40 scientists, who were especially responsive and professional.



While in Berlin, Jose-Luis Sagripanti, Ph.D., visited the Robert Koch Institute. (Source: Bredow, Robert Koch Institute)

During his time at WIS, Sagripanti directed many activities, including experiments on the microbial effectiveness of chemical disinfectants, the photochemical inactivation of viruses and bacteria, and an electron microscopy for microbial structural effects of inactivating agents on bacteria and viruses.

Sagripanti also delivered lectures on threat characterization and biodefense.

Sagripanti's team tested a wide variety of microbicidal compounds on the survival of vegetative bacteria, bacterial spores, DNA viruses and RNA viruses; the performance of DNA-based detection and diagnostic methods; and the performance of immune-based detection and diagnostic methods. The team discovered chemical compositions that completely kill all the tested organisms while preserving the performance of detection and diagnostic methods.

While in Germany, Sagripanti was invited to speak to the medical command in Munich and the Robert Koch Institute in Berlin. "I received the red carpet treatment there," he said. Sagripanti spoke to several hundred people in Berlin about his recent research projects at WIS.

He was one of the few visitors invited to visit the mausoleum that holds Koch's remains. "Being so close to a giant in the microbiology field was an unbelievable experience," he said. "I was really touched."

Sagripanti said that his time in Germany was an impressive experience professionally. WIS "is a well-run, very efficient organization," he said.



The R&T Connection Newsletter

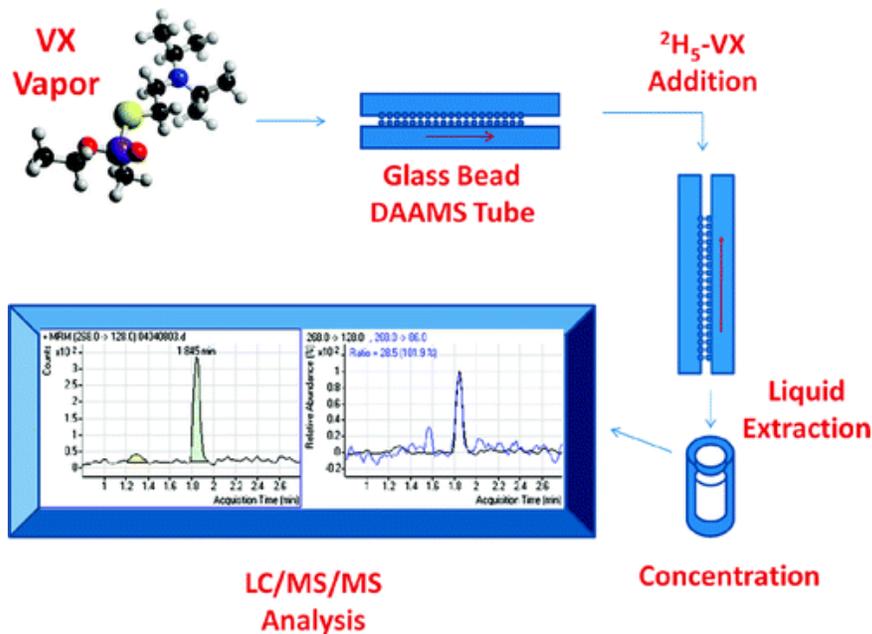
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April 2011

Inter-Directorate Collaboration Resolves VX Monitoring Issue

R&T's Analytical Toxicology Branch collaborated with DPI's Environmental Monitoring Laboratory to resolve a nagging issue with the existing methods being used to monitor for VX. The collaboration led to the development of a new method that – in addition to resolving previous issues – offers lower detection limits and a decreased percentage of false positives in comparison to the former monitoring methods. Additionally, it improved the quality, accuracy and efficiency of the skills and services ECBC provides to customers.

“This method represents a significant improvement in both selectivity and sensitivity by analyzing for VX directly using advanced instrumentation, using a second ion transition for confirmation purposes in the same analysis,” said Ron Evans, a chemist with the Analytical Toxicology Branch. “The method does not consume the entire sample, which allows for further investigation if necessary.”



Chemist Ron Evans holds a glass-bead filled DAAMS tube used to collect air samples. The instrument used for the sample analysis is a combination of a liquid chromatograph and tandem mass spectrometer, which allows for trace level detection of VX.

The new analysis method is discussed in an article published in February 2011 in *Analytical Chemistry*. The article is titled “Quantification of VX Vapor in Ambient Air by Liquid Chromatography Isotope Dilution Tandem Mass Spectrometric Analysis of Glass Bead Filled Sampling Tubes.”

According to Michael Jakubowski, chief of the Analytical Toxicology Branch, “This project utilized the expertise of the personnel of both branches to develop a method that is capable of being transferred from one laboratory to another. The exchange of ideas and the cooperative use of materials between the laboratories allowed the method to be developed and validated in a manner that satisfies the needs of the air monitoring program.”

“The use of this monitoring technology across the Center has resulted in improved quality and confidence for data results for worker protection, lab safety and the clearing of laboratory wastes,” said John Schwarz, a chemist with DPI's Environmental Monitoring Laboratory.



The R&T Connection Newsletter

A Publication for the Research and Technology Directorate

April 2011

R&T Scientist Speaks About Next Generation Sequencing Technologies

Did you know that U.S. Army Edgewood Chemical Biological Center (ECBC) experts frequently speak at international conferences? Scientist Lauren McNew of R&T's BioChemistry Branch spoke to an audience of 400 attendees at the 12th annual Advances in Genome Biology and Technology Conference (AGBT), held in Florida in February.



ECBC scientist Lauren McNew spoke about next generation sequencing technologies at the 12th annual Advances in Genome Biology and Technology Conference.

McNew spoke about next generation sequencing technologies for rapid response to bio threat events and included information about operational exercises being conducted in the ECBC Genomics Center to respond to potential biological threats.

The AGBT meeting has become the most complete scientific forum for acquiring information about the latest advances in DNA sequencing technologies and their myriad applications. Attendees represent both national and international organizations from the fields of cancer genomics, metagenomics, genomic and personalized medicine, population and evolutionary genomics, and societal implications of genomics research, as well as cutting-edge bioinformatics technologies.

"The AGBT meeting is the most visible international genomic sequencing meeting," said McNew. "The inclusion of ECBC and its applications for next generation sequencing has allowed us to bring forth the capability of the center to those who would not otherwise be aware of our work. This year, there was a marked increase in presentations for biosurveillance and biodefense applications. I believe this trend will continue going forward creating a niche for ECBC and other government agencies to fill given our ability to perform genomics 'behind the fence' for microbial forensics."

Microbial Forensics Study on Historical Biowarfare Simulant Published

H. Sandy Gibbons, Ph.D., of R&T's BioSciences Division, recently published "Genomic signatures of strain selection and enhancement in *Bacillus atrophaeus* var. *globigii*, a historical biowarfare simulant" in the journal *PLoS One*.



H. Sandy Gibbons, Ph.D.

The study uses high-throughput genomic sequencing to detail the strain history of *B. atrophaeus* and its adaptation for use as a simulant strain in the biodefense community during the 1940s. In particular, the study notes that the strains transferred to Camp Detrick were deliberately "enhanced," beginning with an adaptation to the medium used to grow the strains, then by selection of a mutant that sporulated readily. The approach to identifying these mutations is broadly applicable to the emerging science of microbial forensics.

"This study sets a framework for interpreting and assigning meaning to very large data sets and also to the function and effects of mutations that initially seem uncertain," Gibbons said. "We are now a step closer to rapidly identifying an organism as enhanced, engineered or as a particularly threatening natural isolate. And, the knowledge that we have generated can be used to develop future detection technologies and assays."

"I am extremely proud of the relevant work ECBC's employees contribute to the greater CB community every day," said ECBC Technical Director Joseph Wienand. "The research detailed in this report not only advances technology in microbial forensics, but more importantly helps protect the warfighter and homeland against potential emerging biological threats."

The work, led by Gibbons, involved an interdisciplinary team of microbiologists, sequencing experts, bioinformaticists and statisticians. Scientists that played an integral role in its completion include ECBC Biologist Stacey Broomall, Research Microbiologist Lauren McNew and Research Biologist Nicole Rosenzweig, Ph.D. as well as Research Associate Carol Chapman from the Naval Medical Research Center and Faculty Associate John Lindquist from the University of Wisconsin's Bacteriology Department.



The R&T Connection Newsletter

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Disability Committee Rep Completes SEPM Course

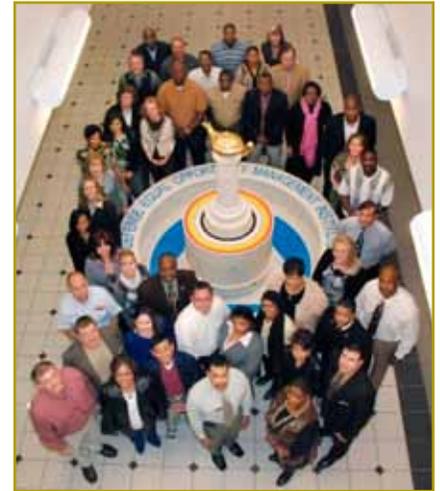
Patricia Reeves, an R&T technical writer and editor, recently completed the Special Emphasis Program Manager (SEPM) course at the Defense Equal Opportunity Management Institute at Patrick Air Force Base in Florida. The course will allow Reeves to serve more effectively as ECBC's representative on the APG Disability Committee.

This training focused on inter- and intrapersonal and organizational aspects of Equal Employment Opportunity (EEO), the causes and effects of discrimination, EEO programs for federal employees, civilian personnel management and the value of diversity. The training concentrated on the roles and responsibilities of SEPMs, communication skills, staff coordination, briefing skills, analyzing EEO data, and planning and managing effective Special Emphasis Programs.

"The course was very intense," Reeves said. "One of our activities included briefing a make-believe general (an instructor) about what the SEPM would do for an organization."

To help our customers and the APG workforce, Reeves volunteered to be a member of the APG Disability Committee to improve the work environment for people who are disabled and other challenged employees, educate people about disabilities and open opportunities for people with disabilities.

In addition to serving on the Disability Committee, Reeves co-teaches free beginner American Sign Language classes in the fall and spring at APG, and she has provided interpreter services for government personnel. To advance her interest in this area, Reeves has applied for the Disability Program Management course in July 2011. Through her participation in these activities, Reeves hopes to help those with disabilities and increase awareness. "I'm a very strong advocate for people who are deaf or disabled," she said.



Patricia Reeves poses with her SEPM classmates at the Defense Equal Opportunity Management Institute. Reeves is pictured third from rear on the far left.

Paper Published Linking Psychological Hardiness and Cholesterol

Jay Valdes, Ph.D., ECBC's senior technologist in biotechnology, co-authored a paper that will be presented as a poster at the May 2011 meeting of the Association for Psychological Science. The paper, "Biomarkers for Hardiness-Resilience: Psychological Hardiness Is Linked to Baseline Cholesterol Levels in Healthy Adults," was co-authored with Paul Bartone, Ph.D., senior research fellow at the National Defense University (NDU); Tony Spinosa, director of the NDU Health & Fitness Directorate; and Lt. Col. Joel Robb, U.S. Air Force.

The psychological characteristic of "hardiness" or "resilience" has been clearly linked to physiological response to stressors including susceptibility to disease, ability to survive stressful situations such as captivity, and may be implicated in post-traumatic stress disorder (PTSD) and suicide.

"The psychological correlates of hardiness/resilience are quite robust," said Valdes. "Identifying underlying biomarkers would allow us to predict performance during stress, as well as possible points of intervention to lessen the effects of PTSD and traumatic brain injury. Such an application of personal medicine is still some years away."

The experimental subjects in this study were military and civilian students from the National War College and the Industrial College of the Armed Forces, classes of 2009 and 2010. Statistical support was provided by the University of Bergen in Norway. Future work will be focused on developing a panel of biomarkers with more powerful predictive ability.



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BioSciences Staff Recognized With Bronze Awards

Three BioSciences staff members have been selected to receive Bronze 2011 Excellence in Federal Career Awards.

Lalena Wallace and Lisa Smith, of the BioDefense Branch, will receive a medal for Outstanding Scientific Support Team. Sandy Leonard, project support assistant for the BioChemistry Branch, will receive a medal for Rookie Employee of the Year.



Sandy Leonard



Lalena Wallace



Lisa Smith

National Homeland Security Research Center, and Testing of Hot Air as a Non-invasive Decon Technology for Aircraft Interior from the Defense Threat Reduction Agency's Joint Science and Technology Office. In addition, Wallace provided significant input to the conceptual development of novel Ricin bioassay.

"Congratulations to Lalena and Lisa for being selected as winners," said Vipin Rastogi, Ph.D., of the BioDefense Branch, who nominated the two biologists. "They represent a symbol of maturity, integrity, and utmost professionalism at work place blended with an even temper, team spirit, and safe work ethics."

Wallace and Smith are being recognized for their technical contributions in a number of high-profile programs, including Test Methods Development from the U.S. Environmental Protection Agency's (US EPA's) Office of Pesticide Programs, Detection of Biowarfare pathogen in Drinking Water and Development of Novel Bioassay for the Detection of Ricin Toxin from US EPA's



"Sandy has performed at an exceptional level in developing and maintaining the programmatic operations of the BioChemistry Branch," said Branch Chief

Jim Carney. "Consequently, she has been an invaluable asset to me in carrying out the job of branch chief."

The staff members will receive their awards during an awards luncheon in Baltimore May 6.

Recent Staff Patents

Patent #7,838,476, Generation of Residue-Free Decontaminant Using Hydrogen Peroxide, Ammonia, and Carbon Dioxide, Dr. George Wagner

Patent #7,829,519, Decontamination of Chemical Warfare Agents Using Benign Household Chemicals, Dr. George Wagner

Patent #7,852,469, Particle Detector, David Sickenberger

Patent #7,862,773, Purification Method and Apparatus, Dr. M. Sofi Ibrahim

Patent #7,861,719, High Surface Area Chemical/Biological Air-Purifying Filter, Corey Grove and Daniel Barker

Patent #7,850,908, Detecting Bacteria by Direct Counting of Structural Protein Units or Pili by IVDS and Mass Spectrometry, Dr. Charles Wick

Patent #7,838,227, Simultaneous Detection of Biological Agents by Solid-State Hybridization and Naked Eye Visualization, Dr. Jose-Luis Sagripanti

Patent #7,851,207, Multiplex Field Device to Detect and Identify a Variety of Microbial Agents Simultaneously, Dr. Jose-Luis Sagripanti



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GFEBs to Be Deployed at ECBC in October

The General Fund Enterprise Business System (GFEBs) (Wave 7) will be deployed on Oct. 1, 2011 to the U.S. Army Edgewood Chemical Biological Center (ECBC).

GFEBs is the Army's web-enabled financial, asset and accounting management system that standardizes, streamlines and shares critical data across the active Army, Army National Guard and Army Reserve organizations.

Once fully deployed, GFEBs will replace numerous legacy systems and interface with existing systems like the Defense Travel System, making GFEBs one of the world's largest government Enterprise Resource Planning systems. The primary goal of GFEBs is to capture transactions and provide reliable and current information through a single system, enabling all levels of Army leadership to make better decisions in support of the warfighter.

R&T personnel will work with six of the nine modules available: Finance, Funds Management, Spending Chain, Cost Management, Reimbursables and Project Systems. After meeting with personnel in all R&T divisions to collect information regarding functions that are completed within legacy systems, the R&T Directorate has identified personnel roles to the GFEBs Group. These assigned roles correlate with tasks currently performed in legacy systems and those that will be completed when GFEBs is deployed.

If you have an assigned role, you must complete the Common Core courses L101E, L201E, and L303E, which are accessible



through the Army Learning Management System (ALMS) website. Additional training may be necessary, depending upon the roles assigned. Additional role-specific training will be identified in the ALMS computer-based training (CBT) system; at a later date, further direction will be distributed. Without the required training, you will not be able to complete transactions within the GFEBs. For example, if you currently submit PCMS/WRAPS requests and have not completed the training for the GFEBs roles associated with these types of transactions, you will be unable to submit requests for purchases.

Michelle Zadroga, financial management analyst, is the R&T Directorate GFEBs power user and role coordinator. These roles have required her to attend over 150 hours of CBT and 160 classroom hours learning about GFEBs and its processes.

"GFEBs will change the way ECBC does business," Zadroga said. "It will take longer to execute transactions because of the additional steps required to complete activities within the GFEBs system and personnel will be learning to operate within a whole new system. The exceptional talent at ECBC will be able to overcome the GFEBs learning curve; it will just take time and patience."

If you need a role within GFEBs, contact Zadroga. Those holding roles within GFEBs should be on the lookout for an invitation to attend a GFEBs briefing conducted by Zadroga.



Mark Your Calendar!

In honor of Military Appreciation Month, the Engineering Directorate will host an "ECBC Military Appreciation Day" event on May 16 from 11:30 AM - 1 PM at the APG-EA Theater. The purpose of the event is to honor those members of the workforce who have served or are actively serving in the U.S. military. The ECBC workforce is encouraged to attend to honor fellow employees, and hear experiences from their time serving in the military.

The format is a networking lunch followed by a formal agenda including brief remarks from several prominent members of the ECBC workforce, including R&T Senior Technologist Dr. Fountain, and a group presentation honoring all of the ECBC employees who have served in the military. Lunch will be available for purchase.

For more information about the event, please contact Ed Bowen at ed.bowen@us.army.mil.



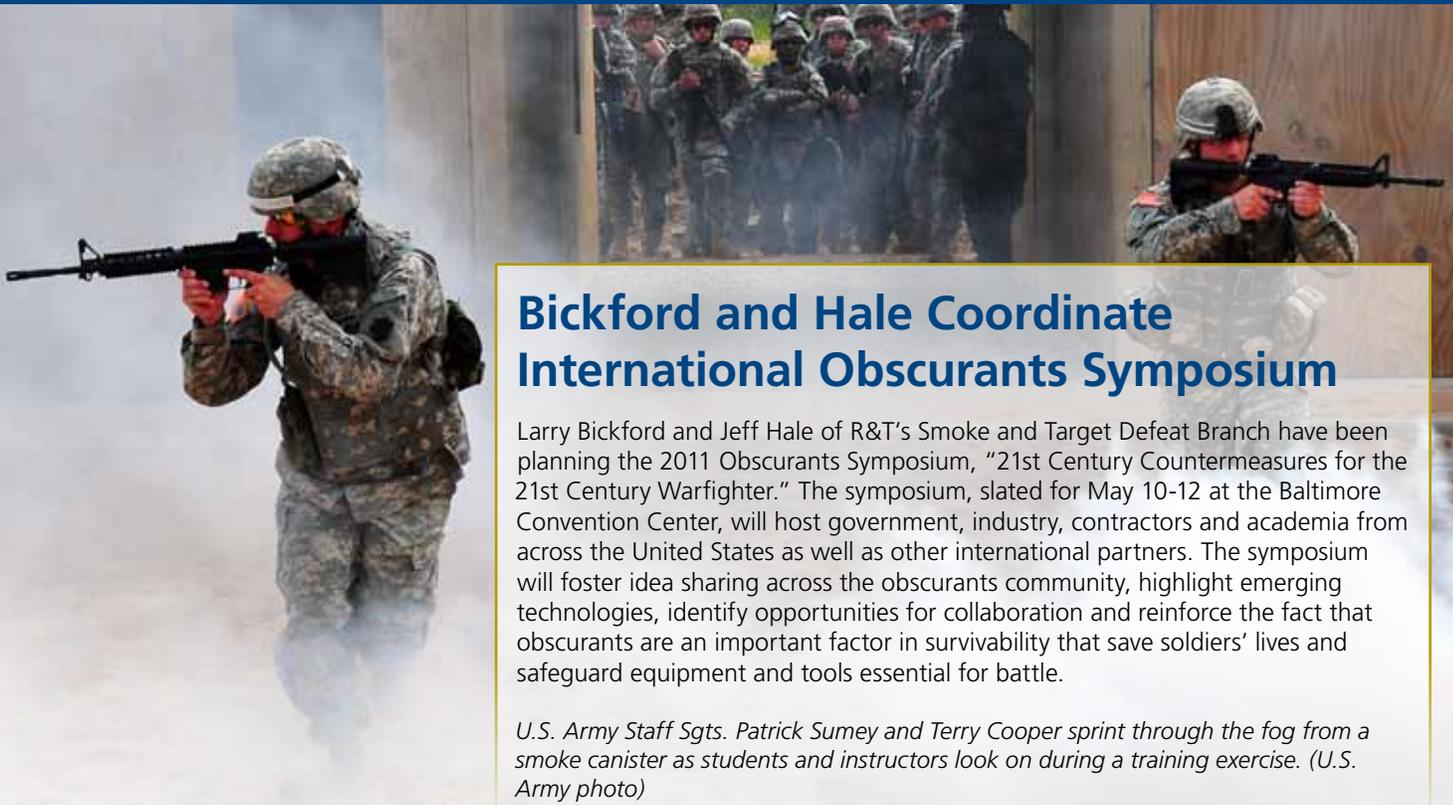
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Bickford and Hale Coordinate International Obscurants Symposium

Larry Bickford and Jeff Hale of R&T's Smoke and Target Defeat Branch have been planning the 2011 Obscurants Symposium, "21st Century Countermeasures for the 21st Century Warfighter." The symposium, slated for May 10-12 at the Baltimore Convention Center, will host government, industry, contractors and academia from across the United States as well as other international partners. The symposium will foster idea sharing across the obscurants community, highlight emerging technologies, identify opportunities for collaboration and reinforce the fact that obscurants are an important factor in survivability that save soldiers' lives and safeguard equipment and tools essential for battle.

U.S. Army Staff Sgts. Patrick Sumei and Terry Cooper sprint through the fog from a smoke canister as students and instructors look on during a training exercise. (U.S. Army photo)

UPCOMING S&T CONFERENCES/MEETINGS

R&T staff get around! This list is just a sampling of the many conferences and workshops we will be supporting in the coming months.

- SPIE Laser Conference, April 25-29, 2011, Orlando, FL [link](#)
- Obscurants Symposium, May 10-12, 2011, Baltimore, MD
- American Society for Mass Spectrometry Conference, June 5-9, 2011, Denver, CO [link](#)
- CBRN 2011/Regimental Week, June 21-23, 2011, Fort Leonard Wood, MO [link](#)
- IEEE International Geoscience and Remote Sensing Symposium (IGARSS), August 1-5, 2011, Sendai, Japan [link](#)
- Society of Environmental Toxicology and Chemistry 32nd Annual Meeting, November 13 - 17, 2011, Boston, MA [link](#)
- CBD S&T Conference, November 14-18, 2011, Las Vegas, NV [link](#)
- Partners in Environmental Technology Technical Symposium & Workshop, November 29 - December 1, 2011, Washington, DC [link](#)

Hold the Date!
Organizational
Day Picnic



JULY 28, 2011



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