

# NDCEE

*National Defense Center for Environmental Excellence*

Newsletter ■ Summer/Fall 2007

## NDCEE Demonstrates Small Mobile Radar to Reduce Bird Strike Hazards at Two Air Force Bases

Bird strikes or bird/aircraft collisions have been an issue since the beginning of flight. Today with more airplanes in the sky and increasing populations of birds, reducing bird strikes is a challenge, particularly for the military. Approximately 5,000 bird strikes occur annually and estimates put the cost of bird strike damage at \$1.5 billion per year. The costs are not only financial; lives have been lost as the result of collisions between airplanes and birds.

The NDCEE, in support of the Defense Safety Oversight Council (DSOC), is currently evaluating a new tool—small mobile radar (SMR) units that have successfully reduced bird strikes at civilian airports. The SMR units are being demonstrated and evaluated at Whiteman and Dover Air Force Bases (AFBs).

The situation at Dover AFB, located in Delaware, illustrates the bird strike challenge and the application of the SMR unit to that challenge. Dover AFB is located in the center of the wintering ground for greater snow geese and along the Atlantic Flyway used by migrating Canada geese. Because of their size, geese pose a significant bird strike hazard. For example, Canada geese are implicated in only 5% of bird strikes, but cause 20% of the strike damage.

Dover AFB has an active and successful Bird Aircraft Strike Hazard (BASH) program that has reduced strike hazards by 55% over the last four years. The base expects to reduce bird strikes further with the SMR unit that is located on the flight line. The unit has two purposes: collecting data on bird movement patterns and providing real-time bird detection.

Understanding bird movement patterns and how birds use the land around the



The NDCEE is demonstrating and evaluating Aircraft Bird Strike Avoidance Radar at Dover AFB.

### In This Issue

NDCEE Supports DSOC Initiative to Reduce HMMWV Rollovers _____	2
NDCEE Demonstrates and Validates Backwash Filtration to Extend the Life of Alkaline Processing Baths _____	3
NDCEE Assesses Near Zero Energy Housing Designs _____	4
Regulatory Insight: New Energy and Fuel Requirements _____	4
Joint Services Environmental Management Presentations Available on the NDCEE Web Site _____	5
NDCEE Upgrades Its Web Site _____	5
NDCEE Provides WMD Training for Emergency Responders _____	6
Bullet Catcher Performs During Cold Climate Test _____	6
Tool for Assessing the Impact of Emerging Contaminants _____	7
NDCEE Project Status _____	8
Calendar of Events _____	10

Continued on back cover

## NDCEE Supports DSOC Initiative to Reduce HMMWV Rollovers

During the first 10 weeks of 2005, 14 soldiers were killed in High Mobility Multi-purpose Wheeled Vehicle (HMMWV) or truck accidents; 13 of those were killed when their HMMWVs rolled over. Armor added to the vehicles to protect their occupants raised the center of gravity and made the vehicles more difficult to control, especially when drivers were speeding through areas where ambushes were common. The casualty rates from HMMWV rollovers drew attention within the DoD safety community.

The Deployment and Operations Task Force (DOTF) identified tactical vehicle rollovers as a key concern to the Defense Safety Oversight Council (DSOC). In October 2005 an initiative was started to address rollovers and accident reports were analyzed to identify the root causes of the problem. Driving too fast, lack of proficiency in the armored HMMWV's handling characteristics with its higher center of gravity, and failing to stay alert were identified as some of the driver-based causes of HMMWV rollovers.

The Joint Tactical DOTF and Military Training Task Force (MTTF) within the DSOC identified rollover alert devices as potential safety technologies to address the rollover issue. The project concept set out to demonstrate that a warning device helps drivers react before a rollover occurs and influences future driving behavior.

Working with the DSOC and the U.S. Army Combat Readiness Center, the NDCEE evaluated a number of devices before selecting one for a proof-of-concept evaluation. The selected device was installed in a HMMWV at the U.S. Army Aberdeen Test Center (ATC) where initial baseline testing was conducted. ATC also issued a Safety Release so that the warning device could be tested in the field. Field testing was carried out at Forts McCoy, Benning, and Polk during the summer and fall of 2006.

The rollover alert device indicator is installed in the top left corner of the HMMWV cab where a driver can refer to it, but where it does not limit the driver's field of vision. It includes an LED display for lateral and vertical directions. A progressively increasing array of warning lights and an audio alarm alert the driver when the safety limits are approached or exceeded. Limits are preset for specific vehicles based on their weight.

After the devices were installed for the demonstration tests, drivers were introduced to them and then tested them in extreme driving environments that paralleled conditions in Iraq. Following the test, the drivers were surveyed to determine if the warning devices were helpful. Of the drivers surveyed, more than 88% felt that the tool was effective at preventing rollovers, more than 78% felt that it influenced them to correct their driving behavior, and more than 76% believed that the Army should further investigate this technology which is adaptable to all vehicle types.

Rollover alert devices are one facet of the DoD's initiative to reduce rollover accidents. Since the rollover initiative began two years ago, rollovers have dramatically decreased. Warning drivers before they exceed the limits of their vehicles has the potential to further reduce rollover casualties.

For more information on the HMMWV rollover alert device, contact:

Lt. Col. Paul Guemmer, Joint Staff, (703) 693-5462,  
[paul.guemmer@js.pentagon.mil](mailto:paul.guemmer@js.pentagon.mil)

Ms. Peggy Adams, U.S. Army Combat Readiness Center, (334) 255-1141,  
[peggy.adams@crc.army.mil](mailto:peggy.adams@crc.army.mil)

Mr. Robert Gardiner, NDCEE/CTC, (703) 310-5656,  
[Robert.gardiner.ctr@osd.mil](mailto:Robert.gardiner.ctr@osd.mil)



Tactical vehicle rollovers are a key concern. The NDCEE evaluated audio and visual alert devices for HMMWV; one device was tested at the Aberdeen Test Center where drivers found that it allowed them to avoid rollovers.



The rollover alert device was installed in the top left corner of the HMMWV cab where a driver could refer to it.

## NDCEE Demonstrates and Validates Backwash Filtration to Extend the Life of Alkaline Processing Baths

Concentrated sodium hydroxide solutions are commonly used in surface finishing to chemically mill aluminum and strip electroplated chromium coatings. Salts that form during these processes settle out and form sludge that limits the performance of the solution, which then must be disposed as a hazardous waste. The NDCEE has demonstrated and validated a backwash filter technology to extend the useful life of alkaline processing baths at Warner Robins Air Logistics Center (ALC) in a project conducted with Air Force Research Laboratory (AFRL). This technology aligns with the ALC's lean manufacturing philosophy and environmental compliance requirements.

Before selecting the backwash filter technology, the NDCEE evaluated several potential alternatives. Methods to separate dissolved salts were too expensive or would not work for the ALC's application so the NDCEE team evaluated methods to separate particulate solids. Two options, decanting and filtration, were selected for testing. Decanting proved to work too slowly, so the team focused on filtration, conducting pilot-scale tests on both backwash and vibratory filtration.

Both filtration systems performed well, meeting or exceeding the 90% solids removal goal. Vibratory filtration was particularly effective, achieving a solids removal rate of more than 99%. However, backwash filtration was selected for demonstration based on a combination of technical and economic considerations.

The NDCEE designed a system that was installed on the aluminum chemical milling tank in the Plating Shop at Warner Robins ALC. The test unit was installed in three days. The system was pressure tested with chemical milling rinse water before being used on the aluminum chemical milling solution. The test results showed that the filter was processing a lower concentration of solids compared to the pilot test with a far lower percentage of solids removal. Based on these data, the NDCEE team inspected the purge filter function, particularly the seals and joints. A loose seam that leaked solids into the processing tank was identified and sealed and adjustments were made to the system. Following the adjustments, the system performed as expected.

The demonstration/validation showed that the backwash filter technology offers financial and environmental safety and occupational health benefits. It captures particulates that interfere with the performance of the alkaline processing baths and cause quality problems and thereby extends the useful life of the bath. It conserves process chemicals and reduces waste disposal costs. It reduces the incidence of personnel exposure to the alkaline baths or to the sludge during disposal. The automatic unit also requires low additional maintenance, which supports ALC's lean manufacturing objectives.

For more information on the backwash filtration technology and its use in extending the life of alkaline processing baths, contact:

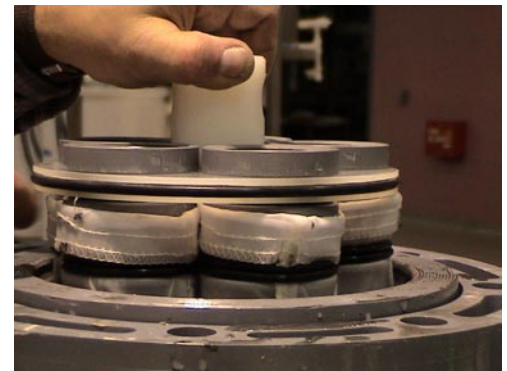
Mr. Tom Naguy AFRL/MLSC (937) 656-5709, [thomas.naguy@wpafb.af.mil](mailto:thomas.naguy@wpafb.af.mil)

Dr. Elizabeth Berman, AFRL/MLSC, (937) 656-5700,  
[elizabeth.berman@wpafb.af.mil](mailto:elizabeth.berman@wpafb.af.mil)

Mr. Paul Brezovec, NDCEE/CTC, (814) 269-2844, [Brezovec@ctc.com](mailto:Brezovec@ctc.com)



A backwash filter system was designed and constructed for a pilot-scale test.



Filter fabric on five filter sleeves separates precipitates from the alkaline processing bath solution.



Vibratory filtration was also tested on a pilot scale.

## NDCEE Assesses Near Zero Energy Housing Designs

Installations that are gaining troops as part of Base Realignment and Closure may require new military housing. New housing offers an opportunity for these installations to implement sustainable building practices to increase energy efficiency. At Fort Campbell, KY the NDCEE is teaming with installation personnel and the housing developer, Actus Lend Lease, to assess and design near zero energy housing. A near zero energy house (ZEH) offsets most of its energy needs by integrating energy efficient design with use of photovoltaics or other renewable energy technologies.

The NDCEE used an energy modeling software package called eQUEST to evaluate potential energy consumption of a baseline house and of near ZEH designs. eQUEST is a comprehensive energy simulation tool that is publicly available and uses a simulation "engine" based on DOE-2 building design software. The user inputs building system and weather information and the model predicts annual energy requirements and life cycle costs. The energy requirements for the standard (baseline) house were estimated and a comparative analysis of energy-saving technologies was conducted to identify a potential ZEH design.

For Fort Campbell the NDCEE used a baseline single family house with 2,100 square feet of living space constructed on a slab foundation. The house included a garage, an asphalt shingle roof, R-38 blown in cellulose insulation, double low-emittance windows, a heat pump, and both incandescent and fluorescent lighting. The project team established energy consumption profiles for various aspects of the baseline house.

Using the model, the project team evaluated different technologies for wall construction; types of insulation,

Continued on page 5

## Regulatory Insight: New Energy and Fuel Requirements

The energy landscape for DoD facilities and operations has changed significantly in 2007, with Executive Orders, a Supreme Court decision, and new regulations all impacting the types of fuels and other sources of energy, as well as energy consuming devices and facilities, that DoD will be utilizing in the near and distant future. While the ultimate impact of these changes is yet to be determined, it is certain that the DoD must now work to become a cleaner, more energy efficient organization as a result of these new requirements.

The series of new requirements began with the President's signing of Executive Order (EO) 13423 on January 24, 2007. EO 13423 requires federal agencies to "conduct their environmental, transportation, and energy-related activities . . . in an environmentally, economically and fiscally sound, integrated, continuously improving, efficient, and sustainable manner." To meet that overarching goal, Section 2 of the EO directs federal agencies to achieve the following targets:

- Increase purchase of alternative fuel, hybrid, and plug-in hybrid vehicles.
- Reduce petroleum consumption in fleet vehicles by 2% annually through 2015.
- Increase alternative fuel consumption at least 10% annually.
- Reduce energy intensity by 3% annually through 2015 or by 30% by 2015.
- Reduce greenhouse gas emissions by reducing energy intensity.
- At least 50% of renewable energy purchases must come from new renewable sources.
- Construct or renovate buildings to be sustainable.
- Reduce water consumption by 2% annually or by a total of 16% by the end of FY15.
- Expand purchases of green goods and services.
- Engage in environmentally sound and energy efficient electronics stewardship.

Given the aggressive and comprehensive energy targets established, complying with the new EO will have a major impact on DoD operations. To assist DoD and other federal agencies with meeting these targets, on March 29, 2007, the Council on Environmental Quality (CEQ) issued instructions on implementing the EO. The March 29 instructions, the first in a series of instructions, outline the mandatory activities Executive departments and agencies must undertake to fully comply with the EO. While the instructions provide a great deal more detail than the EO itself, the various military branches are expected to issue their own specific guidance documents for meeting the EO in the near future.

EO 13423 is part of the President's "Twenty-in-Ten" goal, announced in his 2007 State of the Union address, to reduce gasoline consumption by 20 percent in ten years. Another part of the "Twenty-in-Ten" goal was announced by the U.S. Environmental Protection Agency (EPA) on April 10, 2007. Created in accordance with the Energy Policy Act of 2005, the national Renewable Fuel Standard (RFS) program mandates an increase in the minimum volume of renewable fuel, such as ethanol and biodiesel, required to be blended into gasoline, starting with 4.0 billion gallons in 2006 and reaching 7.5 billion gallons by 2012. While the RFS program applies to major American refiners, blenders, and importers, it will impact the types and amounts of fuels that DoD uses in a wide range of vehicles and equipment. The RFS program requirements go into effect on September 1, 2007.

In addition, a separate executive proposal called the Alternative Fuel Standard (AFS) builds on the RFS program and requires the use of 35 billion gallons of renewable and alternative fuels by 2017. The AFS proposal is expected

Continued on page 7

## Joint Services Environmental Management (JSEM) Presentations Available on the NDCEE Web Site

The NDCEE presented sixteen technical presentations at the JSEM Conference held May 21-24, 2007 in Columbus, Ohio. These presentations are now available on the NDCEE web site at [www.ndcee.ctc.com](http://www.ndcee.ctc.com).

- Advanced Internet Data Search Portal for Environmental Applications
- Alternatives for Deployment Waste
- Biodiesel Use in DoD Tactical Vehicles
- Bullet Traps—Evaluations With Multiple Demonstrations/Validations
- CONSolidated and Deployable Omni-Recycling (CONDOR) Waste to Resource System
- Decision-Support Tools for Getting to LEED™ Silver
- Evaluating the Environmental Impact, Cost, and Performance of Bio-based Alternatives
- Evaluating the Impact of Emerging Contaminants Using ECAT<sup>SM</sup> and ICAT<sup>SM</sup>
- Evaluating Useful Life Extension of Acidic Processing Baths
- Evaluating Useful Life Extension of Alkaline Processing Baths
- Feasibility Study: Conversion of Wood Debris into Alternative Construction Materials
- Near Zero Energy Home at Fort Campbell
- Re-addressing Buildings and Interior Areas at Tobyhanna Army Depot
- Regional Indicators for Strategic Sustainability Assessment
- Resource Scarcity and Impacts to the Triple Bottom Line
- Sustainability Analysis and Natural Infrastructure for Global Basing Strategies

## NDCEE Upgrades Its Web Site

The NDCEE has upgraded its web site, reorganizing content to be more user friendly and adding new features. Among the new features are an enhanced section on NDCEE technologies, a section highlighting NDCEE success stories and links to articles on NDCEE-related projects and technologies that have appeared in the media, a What's New section with the latest information on NDCEE activities, and keyword searchable functionality.

A key feature of the upgraded site is a password-protected Team Site for NDCEE project teams and stakeholders. The Team Site will allow collaboration on line and users can post messages, comment on documents, and share scheduled events.

The NDCEE web site is located at [www.ndcee.ctc.com](http://www.ndcee.ctc.com).

## NDCEE Supports Near Zero Energy Housing

Continued from page 4

windows, doors, roofing, and foundations; technologies that can be applied to reduce energy consumption in attic spaces; and types of lighting, hot water heating, appliances, and heating and cooling systems. The model was then used to calculate the expected ZEH energy consumption to determine the renewable energy requirements.



Fluorescent lighting, like this bulb designed to function as a replacement for incandescent lighting, was evaluated as part of the energy assessment.

The data from the model will be integrated into the design process to develop synergies between architecture and mechanical/electrical systems. Construction cost estimates will be developed to determine the cost effectiveness of the technologies that were modeled and construction codes will be reviewed to determine the minimum requirements for the building envelope and mechanical/electrical systems.

For more information on the near zero energy housing evaluation, contact:

Dr. Chris Rewerts, U.S. Army CERL,  
(217) 373-5825,  
[chris.rewerts@us.army.mil](mailto:chris.rewerts@us.army.mil)

Ms. Anne Kaltenhauser, (502) 897-7815,  
[kaltenha@ctc.com](mailto:kaltenha@ctc.com)

## Back To School: NDCEE Provides WMD Training for Emergency Responders

To effectively respond to an incident involving weapons of mass destruction (WMD), emergency responders must be thoroughly trained. The NDCEE has been supporting the National Guard Bureau (NGB) by providing WMD-REALITI Sustainment Training and WMD-Civil Support Team (CST) Microscopy Specialty Training.



WMD training includes a laboratory component as well as emergency response exercises.

During August, the NDCEE conducted two training courses: the WMD-REALITI Level 4 Course and Iteration 4-Applied Polarized Light Microscopy Course.

The 22-day WMD-REALITI Level 4 Course, held at a university in Pennsylvania, is an interdisciplinary course that includes topics in biology, chemistry, and radiation. It integrates advanced safety techniques in handling microbes with basic principles and applications of polymerase chain reactions. The chemistry component is designed to acquaint students with the dangers of Toxic Industrial Chemicals (TICs) and Toxic Industrial Materials (TIMs). The radiation segment of the course covers advanced radiation detection as well as radiology.

Continued on page 8

## Bullet Catcher Performs During Cold Climate Test

The NDCEE conducted a cold climate test of the STAPP Bullet Catcher to validate vendor claims that the technology would perform reliably in a cold climate. The test was conducted at Fort Drum, New York in January 2007 and followed a hot climate test that was conducted in Yuma, Arizona in August 2006 (see the NDCEE Spring 2007 Newsletter).

The Bullet Catcher was installed on Range 20 (offset) at Fort Drum. This range is typically closed during the winter because the frozen soil of the earth berm creates a ricochet hazard.

The Bullet Catcher uses granular rubber derived from recycled automobile and truck tires as the stopping media. The stopping media is placed within a support frame of recycled polyethylene after a bottom rubber liner is placed on the ground and a water collection system is installed. A top rubber cover is placed over the media and secured to the polyethylene frame. When range users fire on the trap, bullets penetrate the cover and are stopped by and trapped within the granular rubber. The elastic properties of the top cover allow the bullet holes to close after the bullets enter the trap.

The cold climate test was conducted to validate claims that the technology would perform reliably in cold weather settings. The settings test began at 8:15 am on January 23, 2007 when the air temperature was 14.3°F and the temperature of the rubber media at the center of the impact area was 22.6°F. The NDCEE team fired upon a 2-foot by 2-foot vertical target area that was marked on the surface of the bullet catcher using M249 squad automatic weapons firing 5.56 mm bullets. At intervals throughout the test the team inspected the trap and collected temperature data.

The NDCEE team fired 4,800 bullets into the trap in just over one hour. No maintenance of the Bullet Catcher was required during the test.

Because of heavy snowfall, the project team returned in May to sift bullets from the target areas. Approximately 85% of the total bullet weight fired was recovered from the target area. As a result of the cold climate test, the vendor claims were validated.

For more information on the STAPP Bullet Catcher, contact:

Mr. Jim Gleason, ODASA(ESOH), (703) 602-5514,  
james.gleason@hqda.army.mil

Mr. Gino Spinos, NDCEE/CTC, (814) 269-2894,  
spinosg@ctc.com



The performance of the STAPP Bullet Catcher was successfully validated during a cold climate test at Fort Drum, New York.

## Tool for Assessing the Impact of Emerging Contaminants

Emerging contaminants may have a critical impact on military operations, but quantifying that impact is often difficult. The Impact Criteria Assessment Tool (ICAT) developed by an NDCEE-led team as part of the Emerging Contaminants Impact Assessment Project allows the DoD to assess the operational impact of emerging contaminants and potential regulations that may be issued to manage them.

An emerging contaminant is defined as a chemical or material that has a real or perceived human health or environmental threat, is subject to evolving regulatory interest, has no peer-reviewed health data, or for which an existing regulation may change to become more stringent. Emerging contaminants include materials like perchlorate and chromium, both of which serve critical technical needs in the defense industrial base.

The NDCEE demonstrated the ICAT using two emerging contaminants: naphthalene and hexavalent chromium. Naphthalene is a constituent of petroleum products including fuels, and chromium serves as an anti-corrosive agent. Both are widely used across the DoD.

The ICAT analysis of naphthalene focused on the potential carcinogenicity of the chemical. The U.S. Environmental Protection Agency (USEPA) has proposed that naphthalene be designated as a possible nasal carcinogen. Given the wide spread fuel use in the DoD, the EC Directorate decided to elevate naphthalene to the EC action list.

For hexavalent chromium the situation was even clearer. The Occupational Safety and Health Administration (OSHA) proposed a new Permissible Exposure Limit (PEL) to protect workers who are exposed to chromium. The new PEL is 5 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) while the old PEL was 52  $\mu\text{g}/\text{m}^3$ . The proposed PEL was far more stringent, but it had not yet been finalized. Hexavalent chromium was placed on the Action List.

However, on March 9, 2006, several unions and Public Citizen, the group that brought the initial lawsuit that led to the lower PEL, filed a lawsuit challenging the final rule. They claimed that the lower PEL was not low enough and wanted OSHA to issue a PEL of 0.25  $\mu\text{g}/\text{m}^3$ . Because of the lawsuit the ICAT analysis recommended that chromium be placed on the Watch List instead of the Action List.

For more information on the ICAT tool, contact either:

Ms. Sherri Hutchins, CHPPM, (410) 436-8149, [sherri.hutchins@us.army.mil](mailto:sherri.hutchins@us.army.mil)

Mr. Chuck Tomljanovic, NDCEE/CTC, (814) 269-6834, [tomljano@ctc.com](mailto:tomljano@ctc.com)

### Regulatory Insight: New Energy and Fuel Requirements Continued from page 4

to replace 15 percent of projected annual gasoline use in 2017 through the use of alternative fuels, including biodiesel, corn ethanol, cellulosic ethanol, methanol, butanol, and hydrogen. Unlike the RFS program, however, Congress must act on the AFS proposal before any requirements will go into effect.

Furthermore, another energy-specific EO, as well as another component of the "Twenty-in-Ten" plan, was issued by the President on April 14, 2007. EO 13432, entitled "Cooperation Among Agencies in Protecting the Environment With Respect to Greenhouse Gas Emissions From Motor Vehicles, Nonroad Vehicles, and Nonroad Engines," directs EPA, the Department of Energy, the Department of Transportation, and the Department of Agriculture to begin developing regulations that would cut gasoline consumption and greenhouse gas (GHG) emissions from motor vehicles and a variety of other engines. The rulemaking process is currently expected to be completed by the end of 2008.

The new EO is in response to the landmark April 2007 U.S. Supreme Court decision in *Massachusetts v. EPA* in which the Court ruled that EPA has the authority to regulate GHG emissions from motor vehicles. In addition to prompting the issuance of EO 13432, the decision increased the likelihood that EPA will approve California and 11 other state programs to limit vehicle tailpipe emissions, beginning with the 2009 model year.

With such a wide array of new requirements related to energy and fuel acquisition and use, defense facilities need to immediately begin assessing the potential impacts these requirements will have on their operations, particularly with regard to readiness, overseas activities, and specialized equipment compatibility.



The NDCEE will identify and demonstrate technologies to help Army installations to reduce their large volumes of solid waste.

**Back To School: NDCEE Provides WMD Training for Emergency Responders continued from page 6**

The 5-day Iteration 4- Applied Polarized Microscopy Course was held at a specialized training facility outside Chicago. During two sessions, students focused on hands-on laboratory training using specialized analytical equipment. Polarized Light Microscopy is one tool used to analyze unknown substances including white powders that may contain anthrax spores.

For more information on the WMD-CST Sustainment and Training Program, contact:

Mr. Michael Woody,  
NGB-J3 Domestic Operations,  
(703) 607-1809,  
michael.woody@ngb.org.af.mil

Mr. Clint Hospodar, NDCEE/CTC,  
(814) 269-6439, hospodac@ctc.com

## NDCEE Project Status

### New Projects

#### Solid Waste Reduction Systems (Task 458)

NDCEE technology transfer visits conducted under previous NDCEE tasks have verified the need to identify technologies to reduce municipal waste and the cost of waste disposal. At forward operating bases, municipal solid waste disposal is a force protection issue as contractors drive on base to truck waste off base. The NDCEE will assess, test, demonstrate, and validate technologies that may reduce solid waste, particularly those technologies that will function in contingency operations and that may generate energy. Based on the results of a feasibility study, candidate technologies will be proposed and one or two will be selected for demonstration and validation. The NDCEE will develop a test plan, coordinate the demonstration and validation, and produce a final analysis of each technology.

#### Parameterization and Documentation of Data for Risk Estimates on New Energetic Compounds (Task 461)

Currently, new energetic compounds with negligible environmental impacts are being identified for use within the DoD. Environmental health assessments are conducted for these compounds, but the process requires sound, defensible data on toxicology and fate and transport. These data may not be available or may require investigation of "gray" literature to obtain the data. A process will be demonstrated for locating, collecting, organizing, and documenting human health and environmental toxicity data for up to 100 substances identified by the government.

#### Mission Critical Environmental, Safety, and Occupational Health (Task 462)

This task will enhance ESOH approaches to acquisition by demonstrating the military utility or cost reduction potential of technology from the laboratory to operational use. Priorities also include the demonstration/validation of processes, practices, prototypes, and proof-of-principle efforts that help expedite technology transition. The Mission Critical ESOH will assess weapons systems for mission critical ESOH issues that may be affecting development, production, and operation; to assist in identifying ESOH technologies that need test and evaluation; to assist test and evaluation for some technologies; and to support technology transfer for successful technologies.

#### Air Force Explosive Ordnance Disposal Support (Task 464)

The NDCEE is providing support technicians to Air Force Explosive Ordnance Disposal (EOD) Flights to assist EOD Flight Chiefs. Support is being provided to 25 Air Force bases and one Headquarters Staff. A number of specific activities are covered including preparing the flights's recurring training program, assisting with flight training, providing plans for combating criminal and terrorist devices, drafting emergency response plans and procedures, developing lesson plans, preparing and maintaining records and reports, and supporting EOD-related environmental programs.

#### Munitions, Metals, and Residues Treatment for Active Ranges Restoration (Task 466)

This task supports the maintenance and sustainability of active ranges by demonstrating and validating a technology to treat explosives residues in the field. The base hydrolysis technology process, the focus of this task, was developed as a team effort by the Strategic Environmental Research and Development Program (SERDP) and the Army Corps of Engineers Cold Regions Research and Engineering Laboratory. It will be modified to increase its efficiency, automation, and ruggedness. This technology differs from other processes in that it can deal

Continued on page 9

## NDCEE Project Status

### New Projects continued

with detonable quantities of explosives, has no waste stream requiring further treatment, and has a throughput of tens of kilograms per day. It is also mobile to meet the needs of range clearance activities. The NDCEE will modify the system, design the equipment to be used with the modified process, conduct bench-scale tests, finalize upgrades to the process, and build a dem/val system. The NDCEE will then demonstrate and validate the process in the field.

### Green Chemistry and Engineering Opportunity Assessment (Task 469)

The NDCEE, in support of the Army Environmental Policy Institute (AEPI), will be conducting an opportunity assessment on the potential to integrate and apply chemical products and processes to reduce or to eliminate the use and generation of hazardous substances from Army processes. AEPI is employing innovative “green” chemical and/or engineering approaches (such as the Twelve Principles of Green Chemistry and the Twelve Principles of Green Engineering, developed by P.T. Anastas and J.C. Warner and P.T. Anastas and J.B. Zimmerman respectively), to identify processes that can be changed or eliminated, using the latest knowledge available, to make them more environmentally friendly. The opportunity assessment will include data collection and analysis and site visits to Army facilities to evaluate daily operations, including manufacturing of equipment and supplies, maintenance, and other logistical activities and laboratories.

### Knowledge-Based System for Querying Chemical Use in the Department of Defense (Task 471)

Emerging contaminants can affect the health of DoD forces, employees, and the public as well as readiness, acquisition programs, operations and maintenance, and cleanup programs. Emerging contaminants are chemicals or materials of interest that have a real or perceived threat to human health or the environment and for which no peer-reviewed toxicity values or regulations currently exist. Materials may not only be considered as emerging contaminants if they are regulated, but also if those regulations are evolving. To support emerging contaminant issues, the NDCEE will research available databases and identify and develop standard accessing procedures for those databases. With the information provided, the DoD will be able to conduct rapid queries to determine if a specific chemical is purchased, specified, used, or released by the department.

### Phase II Impact Assessments and Risk Management Options (Task 472)

This task will continue to support the emerging contaminants program by developing impact assessments and risk management options for hexavalent chromium (CrVI). The NDCEE will conduct a detailed Phase II assessment for CrVI, considering the likelihood of restricted supplies and the impact on DoD readiness and mission. This effort will support a review and update of the Phase I CrVI assessment completed as part of the demonstration and validation of the ICAT<sup>SM</sup> tool. The Phase II assessment will also develop cost estimates of the impact of stricter CrVI regulations on the DoD. The NDCEE will also develop a full range of risk management options for those “critical uses” of CrVI within the DoD; critical uses are those that are vital to the mission and for which no immediate substitutes are available.



The NDCEE will demonstrate and validate a technology to treat explosives residues on range scrap.



CrVI vapors may be given off during welding of stainless steel. The NDCEE will develop risk management options for CrVI in “critical uses” where no substitutes are available.

## Contacts

### NDCEE Program Director:

Mr. Hew Wolfe  
Office, Assistant Secretary of the Army  
OASA (I&E) - ESOH  
1235 South Clark Street  
Crystal Gateway 1, Suite 307  
Arlington, VA 22202  
(703) 602-5500  
(703) 602-5554 Fax

### NDCEE Program Manager:

Dr. Charles Lechner  
OASA (I&E) - ESOH  
1235 South Clark Street  
Crystal Gateway 1, Suite 307  
Arlington, VA 22202  
(703) 602-5538  
(703) 602-5554 Fax  
charles.lechner@hqda.army.mil

### CTC Program Director:

Mr. Fred Mulkey  
Concurrent Technologies Corporation  
100 CTC Drive  
Johnstown, PA 15904  
(814) 269-2877  
(814) 269-6882 Fax  
mulkey@ctc.com

### CTC Program Manager:

Ms. Heather Moyer  
Concurrent Technologies Corporation  
100 CTC Drive  
Johnstown, PA 15904  
(814) 269-6474  
(814) 269-6882 Fax  
moyer@ctc.com

### Inquiries/Comments:

NDCEE@hqda.army.mil

Many NDCEE products are currently  
restricted to DoD and DoD contractor use.



### DoD Executive Agent

Office of the  
Assistant Secretary  
of the Army  
(Installations and Environment)  
110 Army Pentagon, Room 3D453  
Washington, DC 20310

National Defense Center for  
Environmental Excellence (NDCEE)

Operated by:



## Calendar of Events

**AUSA Annual Meeting**, Washington Convention Center, Washington, DC,  
October 8–10, 2007, [www.ausa.org](http://www.ausa.org)

**SERDP/ESTCP Partners in Environmental Technology Symposium**,  
Washington, DC, December 4–6, 2007,  
[www.serdp.org/Symposium/#UpcomingS&E](http://www.serdp.org/Symposium/#UpcomingS&E)

## Mark Your Calendar November 14–15, 2007

DoubleTree Hotel Crystal City—Arlington, VA



DoD Executive Agent  
Office of the  
Assistant Secretary  
of the Army  
(Installations and  
Environment)

The NDCEE is  
operated by:



## NDCEE

National Defense Center for Environmental Excellence

## Program Review

Information on the Program Review agenda, registration, and  
lodging is now available at [www.ndcee.ctc.com](http://www.ndcee.ctc.com).

For more information, please contact: Gina Hudak,  
CTC Event Coordinator • 814-269-2870 • [hudak@ctc.com](mailto:hudak@ctc.com)



Technology Transfer—Supporting DoD Readiness, Sustainability, and Transformation

### NDCEE Demonstrates Small Mobile Radar to Reduce Bird Strike Hazards at Two Air Force Bases

Continued from cover

base will help the team refine flight scheduling restrictions that are now in place. Bird movement is displayed on the radar screen as a target track over a map. The SMR unit can detect birds at night and during foggy weather when poor visibility makes visual bird spotting difficult or impossible. The SMR unit will scan vertically and horizontally for six nautical miles to provide real-time data on potential bird hazards to pilots and flight personnel.

The NDCEE has deployed the SMR units at both bases and will collect and evaluate data on their performance. Results of the evaluation will be provided to the DSOC so that the technology may be considered for implementation at other installations.

For more information on the small mobile radar units, contact:

Mr. Eugene A. LeBoeuf, Air Force Safety Center,  
Kirtland AFB, (505) 846-5679, [Eugene.leboeuf@kirtland.af.mil](mailto:Eugene.leboeuf@kirtland.af.mil)

Mr. Robert Gardiner, NDCEE/CTC, (703) 310-5656,  
[Robert.gardiner.ctr@osd.mil](mailto:Robert.gardiner.ctr@osd.mil)