



CBARR News

February 2012

CBARR Validates Decontamination Efficacy Test Procedures for Endospores

By: Debbie Menking

Scientists from the Edgewood Chemical Biological Center (ECBC) Chemical Biological Applications and Risk Reduction Business Unit (CBARR) recently completed Verification & Validation (V&V) testing for *Bacillus anthracis* Sterne endospores (BA) on four coupon materials. The testing is for future analysis of surety agent neutralization by chemicals and decontaminants.

During the first phase of a Technology Support Agreement with Joint Research and Development (JRAD), CBARR developed a V&V plan establishing standardized test and evaluation methods for competitive prototype testing for biological decontamination. The V&V Plan establishes and documents performance metrics for biological agent test procedures and analytical laboratory test support systems and protocols that include both Data Quality Objectives and Quality Assurance/Quality Control (QA/QC) monitoring.

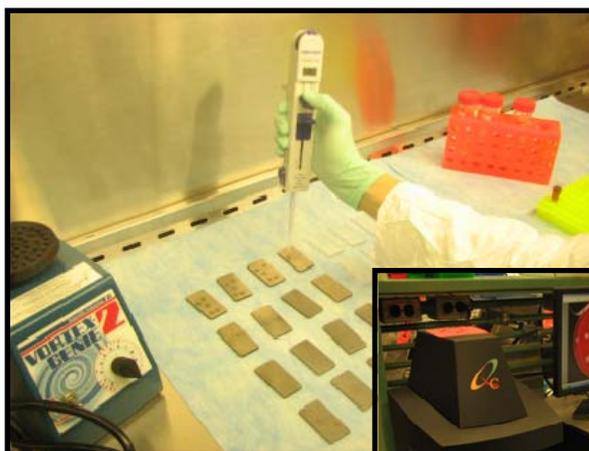
The scientists have recently entered into the second phase by developing reproducible protocols and QA/QC metrics for coupon handling, agent deposition, coupon extraction and post-extraction quantification for bacterial agents and viruses. This phase is focusing on not only BA, but also the vegetative cell *Pantoea agglomerans* (PA).

Testing was executed using analytical methods developed during a seven-step verification process. It began with coupon inoculation and moved into a visual inspection of the time required for the BA to dry on the coupon surfaces. An evaluation of three candidate sample extraction buffers was performed to select the optimal buffer for extraction of BA spores, followed by evaluation and selection of the

optimal vortex speed and time to reproducibly extract BA spores off coupon surfaces. The extraction procedure reproducibility and percent recovery of BA was verified, followed by determination of the extraction efficiency. A side-by-side quantitative evaluation of post-extraction colony formations using both manual and automated counting methods provided insight into accuracy and precision for colony enumeration in cases requiring higher sample throughput. Finally, the survivability of BA endospores over a two-hour timeframe after deposition onto coupon material types was evaluated to aid in future test scenarios, such as decontamination, where the coupons may have a hold time or delay after drying until further processing.

The results from the BA method validation demonstrated reproducible test results with excellent extraction recoveries and efficiencies on all four coupon material types. Testing with PA is ongoing and should be completed in March 2012.

These essential test methods represent a new capability for CBARR and will support future test and evaluation for Large Frame Aircraft and other full-scale operational tests at ECBC.



Scientists conduct V&V testing in ECBC's Bio Laboratory

Columboola, Australia, February

Average High: 88F Average Low: 61F Average Rainfall: 0.5 in.



Dining With Doctors: Perspectives on the Movie *Contagion*

Excerpt from the R&T Connection Newsletter, Fall 2011 edition.

Four ECBC microbiologists gathered after hours recently to view *Contagion* and offer their perspectives on the film's portrayal of a lethal, fictional pandemic. The R&T Connection was invited to listen in on the discussion. Spoiler Alert: If you're intending to watch the movie, you may want to delay reading this discussion.

Participants included Peter Emanuel, Ph.D., BioSciences division chief; Mary Wade, Ph.D., BioDefense branch chief; Researchers Calvin Chue, Ph.D.; and Jennifer Sekowski, Ph.D.

Emanuel: To start, it struck me that the film *Contagion* was drawing on events from the 2009/2010 H1N1 pandemic. The government spent a lot of money on a vaccine, closed schools, and the public health officials did a lot of messaging about social distancing and vaccine safety. When the vaccine took longer than promised to manufacture and the H1N1 turned out to be less deadly than expected, the public perception was that the federal government had wasted money. This movie showed what could have happened if the H1N1 virus had been as deadly as it appeared in April 2009. Back in April, all we knew was that it was spreading fast in Mexico and we learned soon after that it was targeting young people.

Sekowski: Typically, flu infects people that are over 65 years of age. Young people tend to be the least demographically infected. The last time that happened was in 1918 with the Spanish flu pandemic. That killed somewhere between 50 and 100 million people.

Emanuel: Yes, I liked that scene where Kate Winslet talks about the infectivity calculation. I remember we were desperate to get data to accurately calculate that value. WHO [World Health Organization] and CDC [Centers for Disease Control] had little data from Mexico early on and we knew later about the preference for young people. Then there was an outbreak at a grade school in New York City and that created a high emotional tempo. In the real world, these events slowly roll out over weeks, but in a movie the director paces them so months can pass in a matter of minutes. It's easy to play Monday night quarterback but, had we waited until a few months into the spread of H1N1, and the virus had proved deadly, that hesitation would have been a disaster.



Wade: One thing that I thought was inaccurate about the movie is that researchers seemed to be working alone whereas we would be working in teams. Dr. Cheever and the epidemiologist, for example, were working alone rather than with a partner in the labs.

Sekowski: Yes, the labs were very quiet. There was one post-doc and one PI [principal investigator].

Chue: A real CDC lab could have 60 people.

Emanuel: Yes, they showed the character Ian Sussman working alone when he disobeyed CDC orders to destroy his samples. He sent the other scientist home and worked alone on the infected samples. Hollywood makes that kind of reckless behavior okay because Sussman solved the problem. But what if he hadn't solved the problem?

Sekowski: He could have infected himself.

For the full transcript of "Dining With Doctors: Perspectives on the Movie *Contagion*" please visit the CBARR page on CBConnect at https://cbconnect.apgea.army.mil/DPI/ops/CBARR%20docs/Dining_With_Doctors_Contagion.docx



John Ditillo

John is recognized as a leader on the Project Management Team for his efforts to energize and rejuvenate CBARR's relationship with the U.S. Army Corps of Engineers (COE).

He has traveled to Alabama, Arkansas and Utah for various commitments with the COE. John's efforts to prepare improved and detailed project proposals, new detailed cost estimate formats and concepts of operations documentations has resulted in increased communication, request for proposals and detailed scopes of work from the customer.

His customer service focus throughout this period has resulted in more than a dozen COE projects scheduled for various levels of support in FY12 when only a year ago we believed this work may end.

Dugway Proving Ground Agent Project Support

Chris Druyor, Jen Exelby, John Loss, Wyatt McNutt, Jerry Pfarr and Andrea Travers

A special CBARR Star recognition to the Chemical Transfer Facility (CTF) Team for their support to the Dugway Proving Ground agent shipment project in 2011 and 2012. The CTF Team's persistence and creativeness was crucial in developing new agent packaging procedures using non-specialized off-the-shelf steel cylinders. In addition to the Team's admirable determination was their consistency in maintaining a great attitude during stressful times of accelerated delivery schedules.

"I am grateful for their high level of support and truly enjoy their good-natured working attitude. Thanks guys!" said CBARR Project Engineer Joe Baranoski.

Spotlight: Bagley and Brown

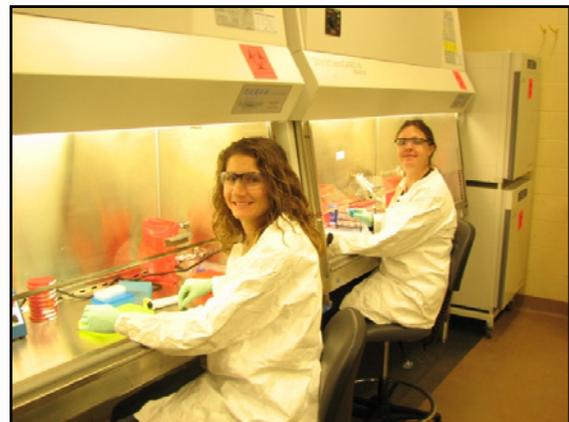
There is a lot of CBARR Star activity going on in the Bio Laboratory! For the past six months, CBARR scientists Rebecca Brown and Jennifer Bagley have channeled their energy and expertise to conduct verification and validation (V&V) for biological decontamination efficacy test procedures.

The pair is no stranger to ECBC, as they have both worked here for nearly a decade. When asked whether she had imagined herself working in such a realm, Bagley admits "I had never heard of ECBC before I started working here, but am very happy to have found it."

The second phase has just begun and will include conducting a similar V&V for a vegetative cell, *Pantoea agglomerans*.

The completion of these tests could provide CBARR with a

new capability to add to its arsenal. These essential test methods will support future test and evaluation for Large Frame Aircraft and other full-scale operational tests at ECBC.



Jennifer Bagley (right) and Rebecca Brown (left) work in the Bio Laboratory

Umatilla, Oregon, February Forecast

Average High: 48F Average Low: 30F Average Snowfall: .5 in.



Tips for Driving in AU

By: Jared Tucker

As CBARR continues support in Australia, each employee should be prepared to drive in the country if and when they need to. Be sure to keep a few things in mind before you start driving on the wrong side of the road:

1. You are most likely to have an accident after you have become acclimated to driving on the opposite side of the road because your instincts override your concentration
2. Always have an experienced co-pilot when you're just starting out
3. Do not be a distracted driver—no cell phones, handheld radios or food
4. Spend time in the backseat behind the driver and take some time to learn how to drive through intersections, traffic circles and parking lots
5. Remember the saying: "Look right, stay left"

As we continue to work on sites that are located "off road," keep these things in mind:

1. Know the vehicle and its limitations before driving
2. Slow down
3. Avoid driving through unknown puddles
4. Do not drive through moving water, only one foot of water may be enough to float the vehicle
5. Wet, muddy roads require a longer stopping distance
6. If you find yourself in a rut, keep tires pointed into the rut to avoid damaging the vehicle



CBARR's Continued Support of Spring Valley Cleanup

The January 2012 issue of CBARR News featured an article on the cleanup efforts taking place in the Spring Valley neighborhood of Washington D.C. The efforts have been ongoing since 1993 when construction workers digging trenches for new homes unearthed dated bombs. This timeline is a continuation of the timeline in last month's newsletter and focuses on efforts that have taken place from 2006 until present. CBARR's work at Spring Valley is projected to continue through 2013.

2006: New debris field found on American University property and was identified as the Public Safety Building Debris Field; it included approximately 4,000 square feet of debris

2009: Cleanup of the Public Safety Building Debris Field is completed

May 2011: U.S. Army Corps of Engineers installed and sampled 16 temporary wells on American University property to identify the highest perchlorate levels and locate a source of contamination

December 2011: All World War I-era related items were safely removed from Spring Valley residential properties with the exception of one property due to access denial by the property owner

2007: Investigation and removal of additional munitions on property at 4825 Glenbrook Road NW began after removal of munitions on coinciding property

2010: Investigation at 4825 Glenbrook Road NW were halted to analyze the site safety control measures following an unexpected chemical recovery

October 2011: Two deep groundwater monitoring wells are installed to determine if perchlorate has migrated into the deeper groundwater flow areas. Quarterly sampling of these wells began to test for season fluctuations.

2012: Monitoring of the Spring Valley area continues for signs of contamination to air, land and water

