

15 June 2009

## Chem-Bio News

- 1. EXTENDING THE LIFE OF ANTHRAX VACCINES:** *“Emergent BioSolutions Inc. announced that its BioThrax®, its anthrax vaccine adsorbed, has now been granted a shelf life extension from 3 to 4 years by the FDA.”*
- 2. A NOVEL APPROACH TO MULTHAZARD MODELING AND SIMULATION:** *“An agent-based disaster simulation model was developed incorporating the principles of dose response, surge response, and psychosocial characteristics superimposed on topographically accurate geographic information system architecture.”*
- 3. GADDAFI COMPLAINS NOT "REWARDED" FOR RENOUNCING WMD:** *“Muammar Gaddafi faced protests by students on Thursday during his first visit to former colonial power Italy, where he said the world had not rewarded Libya for giving up its ambitions to have weapons of mass destruction.”*
- 4. FUNDAMENTAL REEXAMINATION OF SYSTEM IS NEEDED TO HELP PROTECT CRITICAL TECHNOLOGIES:** *“As with many of the government’s programs to protect critical technologies, the U.S. export control system has faced a number of challenges. Specifically, poor interagency coordination, inefficiencies in processing licensing applications, and a lack of systematic assessments have created significant vulnerabilities in the export control system.”*
- 5. DISEASE-SPREAD MODELING GETS HELP FROM FACEBOOK:** *“I didn’t want to miss the opportunity to gather data on early reactions to the outbreak,” says Lauren Ancel Meyers, a mathematical biologist at the University of Texas at Austin who models disease spread and who posted the questions.”*
- 6. PENTAGON ORDERS MASSIVE BUNKER-BUSTERS FOR UNDERGROUND WMD:** *“Which is why the U.S. Defense Threat Reduction Agency has an ambitious goal of developing a bunker buster five times as strong as the current models by the end of the year, and ten times more powerful by 2013.”*

# CB Daily Report

## Chem-Bio News

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### EXTENDING THE LIFE OF ANTHRAX VACCINES

BioHealth Investor

June 10, 2009

“Emergent BioSolutions Inc.) announced that its BioThrax®, its anthrax vaccine adsorbed, has now been granted a shelf life extension from 3 to 4 years by the FDA. This generates a contract milestone warranting a payment of approximately \$30 million for doses previously delivered to the Strategic National Stockpile (SNS) with the Department of Health and Human Services.”

The full article can be found at: <http://www.biohealthinvestor.com/2009/06/extending-the-life-of-anthrax-vaccines-ebs.html>

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## **A NOVEL APPROACH TO MULTHAZARD MODELING AND SIMULATION**

By Silas W. Smith, MD, Ian Portelli, PhD, MScCRA, Giuseppe Narzisi, PhD, Lewis S. Nelson, MD, Fabian Menges, Cand.Ing., E. Dianne Rekow, DDS, PhD, Joshua S. Mincer, MD, PhD, Bhubaneswar Mishra, PhD, MS and Lewis R. Goldfrank, MD

Disaster Medicine and Public Health Preparedness

June 2009

**Objective:** To develop and apply a novel modeling approach to support medical and public health disaster planning and response using a sarin release scenario in a metropolitan environment.

**Methods:** An agent-based disaster simulation model was developed incorporating the principles of dose response, surge response, and psychosocial characteristics superimposed on topographically accurate geographic information system architecture. The modeling scenarios involved passive and active releases of sarin in multiple transportation hubs in a metropolitan city. Parameters evaluated included emergency medical services, hospital surge capacity (including implementation of disaster plan), and behavioral and psychosocial characteristics of the victims.

**Results:** In passive sarin release scenarios of 5 to 15 L, mortality increased nonlinearly from 0.13% to 8.69%, reaching 55.4% with active dispersion, reflecting higher initial doses. Cumulative mortality rates from releases in 1 to 3 major transportation hubs similarly increased nonlinearly as a function of dose and systemic stress. The increase in mortality rate was most pronounced in the 80% to 100% emergency department occupancy range, analogous to the previously observed queuing phenomenon. Effective implementation of hospital disaster plans decreased mortality and injury severity. Decreasing ambulance response time and increasing available responding units reduced mortality among potentially salvageable patients. Adverse psychosocial characteristics (excess worry and low compliance) increased demands on health care resources. Transfer to alternative urban sites was possible.

**Conclusions:** An agent-based modeling approach provides a mechanism to assess complex individual and systemwide effects in rare events."

The article can be found at: <http://www.dmph.org/cgi/content/abstract/3/2/75>

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**GADDAFI COMPLAINS NOT "REWARDED" FOR RENOUNCING WMD**

By Stephen Brown and Philip Pullella  
Reuters  
June 11, 2009

"Muammar Gaddafi faced protests by students on Thursday during his first visit to former colonial power Italy, where he said the world had not rewarded Libya for giving up its ambitions to have weapons of mass destruction.

"We cannot accept living in the shadow of intercontinental missiles and nuclear weapons, which is why we decided to change route," the Libyan leader told Italian senators.

"We had hoped Libya would be an example to other countries," Gaddafi said. "But we have not been rewarded by the world."

The full article can be found at: <http://www.reuters.com/article/worldNews/idUSTRE55A3J520090611?sp=true>

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## **FUNDAMENTAL REEXAMINATION OF SYSTEM IS NEEDED TO HELP PROTECT CRITICAL TECHNOLOGIES**

US Government Accountability Office  
June 2009

"U.S. government programs for protecting critical technologies may be ill-equipped to overcome challenges in the current security environment. The eight programs that are intended to identify and protect weapons and defense-related technology exports and investigate proposed foreign acquisitions of U.S. national security-related companies—as well as the myriad of related laws, regulations, policies, and processes—are inherently complex. Multiple agencies participate in decisions about the control and protection of critical technologies, including the Departments of Defense, State, Commerce, Homeland Security, the Treasury, Energy, and Justice. Each agency represents various interests, which at times can be competing and even divergent. Moreover, in the decades since these programs were put in place, globalization and terrorist threats have heightened the challenge of appropriately weighing security and economic concerns.

As with many of the government's programs to protect critical technologies, the U.S. export control system has faced a number of challenges. Specifically, poor interagency coordination, inefficiencies in processing licensing applications, and a lack of systematic assessments have created significant vulnerabilities in the export control system.

- Poor coordination among the agencies involved in export controls has resulted in jurisdictional disputes and enforcement challenges. Notably, State and Commerce—the two regulatory agencies for weapons and defense-related technologies—have disagreed on which department controls certain items. These disagreements create considerable challenges for enforcement agencies in carrying out their inspection, investigation, and prosecution responsibilities. The Department of Justice recently established a task force with other

agencies to address jurisdictional and coordination issues in export control enforcement.

- State's backlog of licensing applications topped 10,000 cases at the end of fiscal year 2006. While application reviews may require time to ensure license decisions are appropriate, they should not be unnecessarily delayed due to inefficiencies. Recently, State took steps to restructure its workforce to reduce processing times and the number of open cases.
- Finally, neither State nor Commerce has systematically assessed the overall effectiveness of their export control programs nor identified corrective actions that may be needed to fulfill their missions—despite significant changes in the national security environment. Commerce officials stated they conducted an ad hoc review of its system and determined that no fundamental changes were needed. However, we were unable to assess the sufficiency of this review because Commerce did not document how it conducted the review or reached its conclusions.

As the effectiveness of the system depends on agencies working collectively, we have called for the executive and legislative branches to conduct a fundamental reexamination of the current programs and processes."

The full article can be found at: <http://www.gao.gov/highlights/d09767thigh.pdf>

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## **DISEASE-SPREAD MODELING GETS HELP FROM FACEBOOK**

Infection Control Today Magazine

June 11, 2009

"When did you first learn about the swine flu outbreak?"

"Have you searched the Internet for additional information on the swine flu outbreak?"

"If a vaccine for swine flu became available, would you want to be vaccinated?"

These questions first appeared on Facebook on Saturday, April 25 -- just a day or two after concerns of H1N1, or "swine" flu, swept across the country.

"I didn't want to miss the opportunity to gather data on early reactions to the outbreak," says Lauren Ancel Meyers, a mathematical biologist at the University of Texas at Austin who models disease spread and who posted the questions.

Meyers and her collaborator, Alison Galvani at Yale University, are newcomers to a National Institutes of Health research program called the Models of Infectious Disease Agent Study (MIDAS) that develops computational models of how infectious diseases emerge, spread and can be contained. The results can help public health officials plan for and perhaps even prevent contagious outbreaks.

Key to the researchers' MIDAS modeling project is surveying people on how they perceive health risks. The researchers will use this information to build a dynamic model that simulates how changes in decision-making influence patterns of disease spread. The model will help them and others identify the strategies that improve adherence to interventions and reduce the spread of disease."

The full article can be found at: <http://www.infectioncontroltoday.com/hotnews/facebook-disease-spread-modeling.html>

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## **PENTAGON ORDERS MASSIVE BUNKER-BUSTERS FOR UNDERGROUND WMD**

By David Hambling

Wired.com

June 12, 2009

"North Korea may be readying another nuclear test. And that's swinging the Pentagon's attention back to the always-tricky problem of blasting open hardened bunkers, packed with weapons of mass destruction. To do it, you need something out of the ordinary. Which is why the U.S. Defense Threat Reduction Agency has an ambitious goal of developing a bunker buster five times as strong as the current models by the end of the year, and ten times more powerful by 2013. They're doing it with a combination of improved guidance, "novel payloads"... and much bigger bombs.

One key strand is the Integrated Precision Ordnance Delivery System (IPODS), which will destroy targets "far down a tunnel." How? Rather than simply hitting the bunker, the Defense Threat Reduction Agency is aiming for a small target – those vulnerable blast doors at the tunnel's mouth. As Danger Room revealed previously, the U.S. Air Force has looked at 'skip bombing' with bunker-busting munitions to attack tunnel doors using a special guidance system. Instead of hitting vertically, the bomb is skipped off the ground in front of the door and goes through horizontally. IPODS looks like it may take a similar approach, but perhaps using something even bigger.

(Incidentally, the name keeps changing. In the 2008 budget it was the Precision Large Payload Delivery or PLPD, for 2009 it had become PMOD, now it's IPODS... )"

The full article can be found at: <http://www.wired.com/dangerroom/2009/06/pentagon-orders-massive-bunker-busters-for-underground-wmd/>

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Send subscription requests, unsubscribing requests, questions and comments to:

**Steve Tesko:** [Steve.Tesko@anser.org](mailto:Steve.Tesko@anser.org)

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