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Georgia Southern Professor Maps Method to Help Protect Health of Population

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**GEORGIA
SOUTHERN
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Thomas Kollars put several days of work into projects for this year's Democratic and Republican National Conventions and was glad they were never needed.

Kollars, the Director of the Biodefense and Infectious Disease Laboratory in Georgia Southern University's Jiann-Ping Hsu College of Public Health, created bioterrorism threat maps for both conventions. The maps identified how the host cities of Denver and Minneapolis/St. Paul would be affected if biological agents were released into the environment by terrorists.

As a lieutenant colonel in the Army Reserve Consequence Management Unit, Kollars has been conducting bioterrorism research for 10 years. While participating in a Department of

Homeland Security exercise at Fort McCoy, Wis., this summer, he was asked to create the bio-agent maps for the federal government. When he returned home, Kollars spent about three days apiece developing the maps for the two conventions.

"It's a useful tool in case something happens," Kollars said. "For three days' work, you get a lot of information to the first responders and federal agencies. Of course, you really hope it won't have to be used."

To develop the maps, he combined geographic information systems software with environmental modeling software (ArcView and BioTEMS). Data on any number of biological agents can then be plugged into the model, creating a different map for each bio-agent.

The maps identify, in the event of an attack, where the biological agent would spread and how long it would last in the environment. Bio-agents can survive in the soil or spread into the animal population and stay there for months, or even dozens of years.

"The maps show where the bio-agent would survive in the environment for less than 15 days, less than 30 days and less than two years," Kollars said. "Anthrax takes an infective dose of about 8,000 spores to be fatal, whereas Tularemia can take 1 to 10 bacteria to be fatal. So there's a broad range of infective dose of each disease organism, even the strain."

The models indicate where the threat would be the highest. Armed with that information, officials can determine everything from the areas to evacuate, to the best location to set up a field hospital, to the areas to focus the clean-up.

'So instead of trying to clean up the entire Denver or Minneapolis area, which would take a whole lot of dollars and manpower, they can actually go to these specific sites and clean up," Kollars said. 'You can go out and take samples from the soil and water and animals, and test them to see if that agent is persisting there.'

Closer to home, this technology can also be used for planning and consequence management for important areas such as the Port of Savannah, Savannah/Hilton Head International Airport, and other high-value targets such as government buildings, hospitals and research laboratories.

Identifying the environmental consequence from a few hours to several years of each bio-agent makes these models unique, Kollars said. Environmental models are another part of the equation for fighting bioterrorism, along with the population models the Centers for Disease Control and Prevention use to determine how agents are spread from human-to-human contact.

'I'm glad I can contribute," Kollars said. 'I feel that being part of the faculty here, as well as being an Army officer, I can take my skills and actually serve our country and help protect the health of its population.'