



## Experts Assess U.S. Food Security at Briefing Co-Sponsored by American Association for the Advancement of Science (图)

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16 March 2007, The qualities that have made the American food supply system so efficient—bulk production, just-in-time deliveries, fast turnover of stocks, rapid shipping to many different locations—are the same qualities that make the system attractive for a terrorist attack, a leading food protection specialist said at a 13 March briefing for journalists.

Francis F. Busta, director of the National Center for Food Protection and Defense at the University of Minnesota, said the nation's food supply system is "a very good delivery system for intentional contamination." He spoke at a news briefing organized jointly by the Center for Media and Security and the AAAS Center for Science, Technology and Security Policy.

There has been progress in identifying and eliminating vulnerabilities in the food system since the 9/11 terrorist attacks, Busta said. But he noted that a Government Accountability Office report in January identified the food system as "a high-risk area for homeland security" and a recent RAND report found that food processing and packing plants are especially at risk.

One in six jobs in the United States are involved with the food and agriculture system, Busta said, and there are many points in that system—from the farms and food processing plants to the transportation vehicles, distribution warehouses and retail outlets—where terrorists could attempt to contaminate products.

Accidental events involving the food supply, such as the recent bacterial contamination of bagged spinach and a salmonella outbreak linked to a leading brand of peanut butter, suggest how disruptive a terrorist attack could be, Busta said.

The accidental incidents typically involve low concentrations of a disease organism or toxin, but the result still can leave many people sickened and large economic impacts due to product recalls. A determined effort to deliberately contaminate the food supply likely would involve higher concentrations of pathogens, Busta said, with much more significant effects. Some scenarios project as many as 50,000 dead over a matter of weeks, he said.

Busta declined to discuss threats and vulnerabilities in detail but said he worries about agents for which there are no antidotes and illnesses that could overwhelm the public health system.

One concern is the botulism toxin, a highly lethal agent that could be introduced into the food system, even in a crude form, Busta said. The toxin, which can produce paralysis of the respiratory muscles and death, is a protein produced by the bacterium *C. botulinum*. It is one of the most poisonous naturally occurring substances in the world.

Researchers are working on ways to counter such potential threats to the food supply. Busta mentioned the work of David Beebe and Eric Johnson at the University of Wisconsin. They have developed a "lab on a chip" sensor that can detect the botulism toxin in liquids, such as milk, water or juice, as they flow past the sensor. The detection method is much quicker than conventional lab tests that take several days.

Specialists also are developing computer models that can highlight patterns in disease outbreaks and help identify those that may be intentional rather than accidental. David Hennessy, professor of economics with Iowa State University's Center for Agriculture and Rural Development, said that during an intentional attack of foot-and-mouth disease, a highly contagious viral disease of cattle and pigs, "one might see it in several different places around the country at the same time, just to cause havoc." It might occur in hogs in North Carolina and Iowa, for example, and in beef cattle in Great Plains states.

Shaun Kennedy, deputy director of the Minnesota center, said an intentional outbreak of foodborne illness likely would be more rapid in onset and cause more severe symptoms in victims than a natural outbreak. Terrorists also might try to trigger several different types of foodborne illness in multiple locations, he said.

One key to better defense, Kennedy said, is better surveillance and early warning. Such surveillance is done by state and local health departments. "Some states are a lot better at it than others just because of the level of investment in the public health sector," Kennedy said. "If we could just get all the states to the same level as the best states," he said, "that would significantly improve our ability to identify outbreaks earlier."

Hennessy said it is difficult for economists to estimate the potential costs of a successful terrorist attack on the food system. Consumers may turn to other products, as they did during the accidental contamination of bagged spinach, and non-affected growers might profit. Th

e most readily measured impacts would be the production losses for the affected farms or livestock operations, Hennessy said.

A fairly severe outbreak of foot-and-mouth disease in livestock in the United States might cost \$5 billion to \$18 billion, he said, though such numbers are speculative and depend on where an outbreak occurs, the direction of the wind (since the virus particles can be spread through the air) and the rapidity of the response by authorities.

Farmers can lose huge amounts of money during a foot-and-mouth epidemic, when large numbers of animals are destroyed and revenues from milk and meat production plummet. Hennessy said a foot-and-mouth outbreak in Britain in 2001 also had a dramatic impact on rural tourism due to travel restrictions in affected areas.

"One of our challenges is to educate consumers without scaring them," Busta said. Consumers can play their own role in food system surveillance, he said, by reporting unusual events—such as everyone in the same family becoming ill at the same time—to health authorities.

Kennedy said families also can prepare for possible threats to the food supply by doing disaster preparedness in the home. In his own home, he said, "we always maintain a six-week supply of food in the basement and just rotate it off" as foods are consumed before they reach the end of their shelf life. The food cache includes cans and packages with a one- to three-year shelf life, Kennedy said.

In addition to the 13 March briefing for reporters, Busta, Kennedy and Hennessy also participated in a briefing the following day on Capitol Hill for congressional staff and others. That was the first of two planned Hill briefings on agricultural biosecurity sponsored by the AAAS Center for Science, Technology and Security Policy. The second will be on April 2, featuring Jacqueline Fletcher, Sarkeys Distinguished Professor of plant pathology at Oklahoma State University and chair of the American Phytopathological Society's Public Policy Board; and David Franz, director of the National Agricultural Biosecurity Center at Kansas State University and senior biological scientist at the Midwest Research Institute.

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