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Nature and Extent of the Agro-terrorism Threat to Food Systems and Preparing a Response

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Introduction.

To appraise the nature and the extent of the threat of agro-terrorism, it is important to have knowledge of the complexities and rapid changes of food-systems in today's world. Each food comes from its ingredients source (e.g., grain farm for bread) to consumption through a variety of systems. For example, bread may come from domestically or foreign raised grain; ingredients used in preparing the dough may be processed from nearly anywhere in the world; baked and sold locally or baked, frozen and shipped half-way around the world.

Impact of globalization and urbanization

The number of variations of systems from which a food-type may evolve are diverse and numerous. Increasingly, food systems are part of "globalization" and all of the forces at play in this world-wide phenomenon such as increased travel and immigration, improved communication and technical transfer, distribution of capital and influence of "global politics." There are two other worldwide forces occurring simultaneously, "urbanization" and "consolidation of sectors in the food industry," that are also very important in terrorist-threat evaluation. These are also global events; each having profound effects on food systems. Certainly, the increase in terrorist threats, itself, is impacting the practices at every step along the continuum for different food systems.

Governments are recognizing that agro-terrorism could cause both major public health and economic harm, and that attacks on the food system will accomplish the goals of many terrorist groups. Within the past year, there have been new assessments of the most vulnerable points in particular food systems. These analyses have used crude parameters to assess the "level of risk." There is a need to refine these risk assessments in order to identify the nodes of risk in many different food systems.

Risk assessment

A first step in identifying nodes of risk is conducting a systems analysis of food systems. The first object of the systems analysis is to determine how the particular system works and what the variations around the system are. For example, what are the steps in the system for milk from the dairy to the child lunch program (grass to glass)?, and what are the variations to the

major pathway? The second objective is to identify where in the system there are points that are particularly vulnerable to terrorists' activities; e.g., contamination of the milk with toxins or human pathogens. Finding the nodes of risk in a system enables us to focus our efforts toward changing technologies and/or practices to lower or eliminate the risks at these nodes.

A team approach

A team of frontline personnel including researchers, managers, public health officials, veterinarians, law enforcement officials and others have the overall objective and responsibility to address terrorists' threats by focusing on *prevention, detection, response* and *recovery*. *Prevention* strategies include, 1) preventing access to the system, 2) introducing techniques that nullify terrorist attacks (e.g., pasteurization kills many microbial contaminants), 3) rapid detection and elimination of harmful agents reduces the appeal to terrorists for a target, and 4) rapid detection and prevention of harmful outcomes reduces the risk of attack on a system. All of these prevention strategies need to be developed, implemented and tested in the food systems. A huge area of need is in the area of *detection* development. This is particularly challenging because of the wide variety of potentially harmful agents that need to be detected before they reach consumers. Of course what is needed is rapid detection up-stream in the food system to prevent spread of the harmful agent in the food system and certainly before it reaches consumers. To be useful, the detection devices cannot be intrusive in the production system, they must be affordable, durable enough to work well in field conditions. The *response* to an event must be prompt and appropriate. A lesson learned from natural or other catastrophic events is the response to crises must be rapid, appropriate, comprehensive and sustained. The successful response is usually multi-agency and very well coordinated. Preparation for response is essential, which is complex because the exact nature of an event is never completely predictable. The response too often is not prepared to deal with publics' reaction and their need for information. Planning for how to deal with all aspects of *recovery* is an on-going process to keep the recovery teams prepared. There are many facets to the recovery effort including; public health, economic stability, government stability, law enforcement, and the public's need for reliable information, to name a few.

Conclusion

Planning, coordination, integration of effort and funding to assure the appropriate response at the local, state, region, national and international level is a huge challenge but necessary, if we are to forestall the devastation possible by agro-terrorism. It will require a very systematic approach to the very complex food systems. While attention must be paid to local preparedness, this cannot be done without an understanding of the global dimensions of the food system.

Abstract

The complexities and rapid changes of food-systems in today's world must be taken in account to develop a comprehensive strategies to assure an appropriate response to agro-terrorism. A comprehensive risk assessment should be performed to identify the nodes of risk in many different food systems. This approach enables us to focus our efforts toward changing technologies and/or practices to lower or eliminate the risks at these nodes. A team approach, including researchers, managers, public health officials, veterinarians, law enforcement officials and others is needed to address terrorists' threats.

Résumé

Les changements et la complexité des modes de production des aliments doivent être considérés dans le développement de stratégies visant à assurer une bonne réponse pour contrer l'agro-terrorisme. Une évaluation du risque complète doit être effectuée pour identifier les endroits et situations à risque dans les différents systèmes de production des aliments et ainsi minimiser ou éliminer les risques associés à ces situations. Une approche pluridisciplinaire incluant des chercheurs, des gestionnaires, officiers de santé publique, des vétérinaires, des juristes et plusieurs autres est nécessaire pour contrer les risques associés à agro-terrorisme.