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# Introduction

## **Purpose**

To protect the health of the American public, it is crucial that we ensure that drinking water is safe for human and animal use, especially within the agricultural and food sector. Everyone involved in the treatment, storage and distribution of water is responsible for ensuring the safety [and defense] of our water supply. In addition, everyone involved in the food chain, from farmer through consumer, has a responsibility in keeping the food supply safe.

At any point during production or distribution, food can be contaminated either accidentally from employee error, or on purpose from sabotage, fraud, or terrorist activities. Regardless of the circumstances, the U.S. [Food and Drug Administration](http://www.fda.gov) (FDA) and United States Department of Agriculture (USDA) [Food Safety and Inspection Service](http://www.fsis.usda.gov/) (FSIS), collaborating with State and local agencies, work closely to safeguard the American food supply.

Through this working relationship, the FDA and USDA FSIS continuously seek new ideas and strategies to reduce the incidence of human health emergencies and to support food defense-related innovation. In light of food defense concerns, it is incumbent that local, State, and Federal governments and industry partners understand the roles and responsibilities of all participating entities.

This scenario focuses on the investigation of a foodborne illness outbreak during a large event and illustrates the importance of collaborating in a diverse team of professionals, establishing roles and responsibilities, and responding to an urgent mass contamination event.

## **Participants**

Through the collaboration and coordination with multiple stakeholders, many will benefit from participating in this scenario. We encourage as many of the following groups as possible to participate in this exercise so that they can contribute to the overall understanding of the scenario, develop and/or strengthen working relationships with other organizations, and benefit from the collective dialogue.

Participants in this scenario should include: private and public health clinical practitioners, hospitals, health care providers, laboratorians, local, State, Tribal, and territorial epidemiologists and regulatory agencies, food industry representatives, and risk communicators.

## **Exercise Objectives**

At the conclusion of this tabletop exercise, participants will be able to:

* Propose comprehensive, collaborative, and effective ideas, strategies, and solutions to ensure the timely remediation of the contamination event
* Define their role in interacting with a large, diverse team of professionals who must work together to address a complex and urgent food contamination incident
* Understand the importance of gathering and cataloging critical information needed when making decisions in rapidly developing situations
* Use a collaborative approach to efficiently utilize the skills of each agency and discipline and identify proactive solutions

## **Exercise Structure**

This exercise is designed to be an interactive, facilitated tabletop exercise. Participants are encouraged to learn from each other and ask questions of one another. The scenario was designed by a group of subject matter and instructional design experts to provide participants with a plausible food and water safety scenario. While this scenario is simplified in order to present the information in an effective way, the scenario itself and the discussion questions are designed to encourage participant dialogue, and surface topics that are critically important to reacting to such incidents. The exercise is also developed to provide participants with an opportunity to explore important topics like interagency collaboration, jurisdictional issues, and risk communication.

The information in this scenario reflects the policies and procedures currently in use and is accurate as of August 2014. If there has been an update to the procedure in your jurisdiction, please be sure to make the group aware of the change and work with the facilitator to ensure that all participants understand the update.

This exercise was initially developed by Consolidated Safety Services and revised by the Institute of Food Technologists (IFT) on behalf of the FDA CFSAN Food Defense Oversight Team. This scenario was also produced in cooperation with the Centers for Disease Control and Prevention (CDC).

This exercise is a multimedia, facilitated tabletop exercise. Participants will respond to one module:

* **Module 1** **–** Unconventional Incident
* **Module 2 –** Information and Investigation
* **Module 3** – Confirmation and Conclusion

## **Exercise Guidelines**

As with any learning experience, it is important that this exercise is conducted in a safe learning environment so that all participants can share and explore concepts with one another while discussing multiple solutions and options for a given issue. This exercise will operate under the following guidelines:

* This will be an open, low-stress, and non-public learning environment and is not intended to set precedents.
* Participants are expected to listen to and respect the varying viewpoints of all other participants.
* The scenario that will be discussed is plausible and the events could occur as presented. Suspend your disbelief and feel free to discuss differing policies and procedures during the breakout discussion.
* Today’s facilitator is not necessarily a subject matter expert, and participants are expected to provide the expertise needed to ensure that the discussion is accurate and thorough.
* Findings from today’s activities will be applied to the participants job/functions and key findings will be shared with colleagues.

## **Roles and Responsibilities**

**Lead Planner –** Has overall responsibility for the Tabletop Exercise (TTX), to include convening the Planning Team and all pre- and post-exercise needs.

**Participants –** Respond to the scenario based on their first-hand, experiential knowledge; current plans and procedures of their individual entity, agency, or jurisdiction; and insights from personal training and experience.

**Evaluator(s) –** Record the highlights of the discussion at each breakout table. These individuals do not participate in the exercise but capture the essence of the dialog for use in the After Action Report. They are chosen based on their expertise in the areas they are to observe.

**Facilitator –** Generally leads the exercise, provides situation updates and moderates discussions. Also provides additional information and resolves questions as needed. Key officials may also assist with the facilitation as subject matter experts during the exercise.

**Group Leader –** Representative from each table (volunteered by the group) who leads the group as it explores discussion questions and the breakout activities.

**Group Recorder/Reporter –** Representative from each table (volunteered by the group) who ensures that the group discussions are kept on time, records the key themes discussed at the table, and is responsible for reporting out during the large group dialogue.

# Module 1 – Unconventional Incident

A large popular show known for bringing the latest gadgets and inventions together under one roof is an annual event that occurs in <CITY>, <STATE> over the course of five days during the winter months. Approximately 100,000 people of all ages are expected to attend the event throughout the week. There are over 20 small food vendors in the vicinity as well as a large central kitchen for the venue.

Three days into the event, a local emergency room has seen four cases of severe vomiting and diarrhea, two of which contained blood. One person is also complaining about a sudden onset of respiratory distress. Noting that all patients attended the same event, the attending physician notifies the local department of health (DOH). DOH advised medical staff to get a food history on the patients and any others presenting with similar symptoms. Additionally, two of the patients begin to exhibit symptoms of multiple organ failure, and one patient experiences seizures. By the next morning, 30 additional patients with similar symptoms were treated; they all shared one common element—visiting the event. Due to the number of patients and development of symptoms, local poison control was notified.

Authorities initially suspected a gastrointestinal (GI), infectious etiology. Blood, stool, and vomit samples are collected and sent to a state laboratory for analysis, to rule out the most common food- and water-borne pathogens. DOH and Poison Control are investigating the following as possible causes of the illnesses: staphylococcus enterotoxin*, Bacillus cereus* toxins, heavy metals, and other toxins.

Environmental health investigators and a team of epidemiologists from DOH are sent to the convention center to obtain food and water samples and to interview food vendors. Health investigators arrived to conduct appropriate interviews and inspect the kitchen area. Investigators determined that six food workers from the main food concession stand were not available for interview; two of these individuals were unable to be contacted and could not be located. The workers in question were scheduled to be on duty but had not been present at work all day. Investigators suspected that they could possibly be sick as well because often workers consume food from their work establishments. Investigators also discovered two containers with no labels that contain powdery residues of an unknown substance.

On the day symptoms were first reported an unknown number of attendees may have visited the event. By interviewing vendors, investigators estimated that approximately 40,000 individuals may have consumed food or drinks at the site. Similar numbers of individuals visited the event on the previous days. According to the estimates, more than 20,000 individuals may have been exposed to the suspected source food or drinks.

## **Task**

Use your allotted time to consider the developments and questions assigned to your group for Module 1.

* Identify any additional requirements, critical issues, decisions and questions you think should be addressed at this time.
* Unanswered questions should be recorded for discussion with the entire group.

## **Questions for Participant Groups**

**Regulatory Agencies**

1. How and when would you expect your agency to learn about these illnesses?
2. What action, if any, would your agency take when you learned that the illnesses occurred and screening was planned or underway?
3. Would the State Operations Center (SOC) be activated?
4. At what point during the day would the incident command be established? What agency would take the lead in the incident command? What agencies would participate in the incident command? Who would the incident command notify after initial notification, activation, and setup?
5. What other actions would the incident command take early on, after setting up?
6. Who would make contact with the other states that may be hosting similar large scale events? Who all would be included in these notifications?

**Laboratories**

1. How quickly would you expect to learn about the illnesses at the large scale event?
2. What preparatory actions, if any, would you make after learning about the possibility of a food contamination emergency that would require large-scale sample screening? Would your preparations include alerting other laboratories with which you have mutual aid agreements?
3. Do you have established mutual aid agreements with other laboratories? With whom?
4. How would you continue to communicate if the incident command had been established? Who would you contact?
5. Who would deliver the patient’s samples to the labs?
6. If the incident happened on a weekend, would this slow down the screenings? Could your staff handle this workload or would you need additional surge capacity? If support is needed, where would you go for backup screening assistance? Do you have established agreements for this kind of surge support?
7. Would there be any coordination calls taking place related to this event? If so, what would the calls cover and who all would be involved? How often would these take place?
8. Would you expect to screen any food samples at this point in the incident?
9. What would be your next steps after completing the screenings?

**Rapid Response Teams (RRT) Group**

1. Would you expect to learn about the illnesses at the large venue event? At what point? Who would inform you?
2. Would you have consultations with Rapid Response Teams (RRTs) in other states or with FDA or USDA after learning of the illnesses?
3. Once you knew that a large-scale food sampling operation was possible, what preparations (if any) would you initiate?
4. What procedures, if any, are in place for the RRTs to go on alert? Are these procedures specified in a standard operating procedure? Have these procedures for placing the RRTs on alert been exercised or practiced?
5. RRTs in surrounding states: When would you expect to learn about these illnesses? At this point, what preparations, if any, would you make, knowing that there is another large venue event on-going in your state similar to the one in this state where unusual illnesses had taken place?

# Module 2 – Information and Investigation

Exposure interviews, administered by DOH, of 32 ill persons who attended the large venue event yield the following results:

**Figure 1: DOH Interview Results**

| Food Vendor or Item | No. Ill persons (n=32) | % |
| --- | --- | --- |
| City’s Best Pizza | 32 | 100.0 |
| Cheese pizza | 8 | 25.0 |
| Pepperoni Pizza | 20 | 62.5 |
| Sausage Pizza | 4 | 12.5 |
| Red pepper topping | 6 | 18.8 |
| Oregano topping | 5 | 15.6 |
| Parmesan cheese topping | 30 | 92.8 |
| Bread sticks | 4 | 12.5 |
| Pepsi | 10 | 32.3 |
| Mountain Dew | 3 | 9.4 |
| Tea | 9 | 28.1 |
| Other beverage | 2 | 6.3 |
| Other Vendors |  |  |
| Pop corn | 4 | 12.5 |
| Cotton candy | 7 | 21.9 |
| Candy | 3 | 9.4 |
| Sweet tea | 11 | 34.4 |
| Beer | 14 | 43.8 |
| Other alcoholic beverage | 2 | 6.3 |
| Hot Dog | 3 | 9.4 |
| BBQ Sandwich | 1 | 3.1 |
| French Fries | 3 | 9.4 |

All persons interviewed ate at City’s Best Pizza and the most common food items they consumed included pepperoni pizza and Parmesan cheese toppings. Investigators notice that the symptoms are inconsistent with a bacterial culprit. Lab samples are unable to confirm the presence of the suspect bacterial toxins. Environmental health inspections of the kitchen area reveal no major public health threats. In fact, the only unusual thing about the kitchen inspection was the presence of two containers with no labels containing powdery residues of an unknown substance. The owner of the operation was unable to explain them.

Through a combination of DOH interviews and randomized sampling of the limited foods offered for sale at the convention center, investigators suspect some unusual chemical may be present in the food and that it most likely is associated with the Parmesan cheese. DOH investigators suggest field tests for chemicals, starting with the shakers and bulk packages of the Parmesan cheese. Rapid response teams make a preliminary screening that finds traces of ricin in the Parmesan cheese shakers.

## **Task**

Use your allotted time to consider the developments and questions assigned to your group for Module 2.

* Identify any additional requirements, critical issues, decisions, and questions you think should be addressed at this time.
* Unanswered questions should be recorded for discussion with the entire group.

## **Questions for Participant Groups**

**Regulatory Agencies**

1. What type of command would be established? What agencies would be represented in the command? Who would lead the command?
2. How would the composition and leadership of the incident command change after a preliminary identification of ricinine?
3. What actions would the command take when the preliminary identification of ricinine was reported?
4. How would the composition and leadership of the incident command change after a preliminary determination that the parmesan cheese contained ricinine?
5. Would a threat evaluation be conducted? If so, by whom?
6. What would the risk assessment rating be: after the preliminary identification of ricinine in human samples? after the preliminary identification of ricinine traces in parmesan cheese?
7. Would the command initiate and oversee sampling of food products at the convention center? If yes, how would it be done? If no, who would initiate and oversee sampling and what line of communication would the command maintain with the initiator of sampling?
8. What agency or organization would conduct the sampling at the convention center?
9. What interaction would the command have with management at the convention center, the pizza vendor company, and the food distribution company whose product was identified as contaminated? Who would give the instructions to perform these operations at each location?
10. What information would you request from convention center management, the pizza vendor, and the distribution company?
11. How would law enforcement interact with the organization(s) sampling the products? What kind of collaboration would be required?
12. What collaboration would be made with other States served by the food distributor whose product appears contaminated?
13. Do vendors at the convention center have established policies on food retention to assist with sampling efforts by the regulating agencies?
14. How difficult would it be to carry out this sampling, given the fact that food vendors are breaking down (or have broken down) their operations by the time the need for sampling is identified?
15. Are there procedures that require vendors to save food samples for instances such as these?
16. Would surrounding States establish separate incident commands in the absence of actual contamination in those States? If so, how would these command structures interface or interact with the command in the State with the incident?
17. What actions would surrounding States take at this point in response to a potential threat?
18. What steps would agency command authorities take to enhance surge capacity for sample collection and laboratory analysis?

**Laboratories**

1. What laboratory or laboratories would be called upon to screen samples for ricin contamination?
2. Who would you expect to deliver the food samples?
3. What is the capability of the State laboratory to do a preliminary screening of food samples for ricin?
4. How quickly could the State laboratory complete the preliminary screening in this incident?
5. What preparations would you make once you knew ricin samples were coming to your lab?
6. Would you call on other laboratories to assist in screening the samples? If so, how would you make these contacts and/or through what channels (formal or informal)?
7. Do you have existing agreements in place for this assistance?
8. Would multiple laboratories be needed? Which ones would participate in your State? What laboratories would be called upon in the surrounding States to assist in lab sampling response?

**Rapid Response Team (RRT) Group**

1. What preparatory actions, if any, would you take when:
   1. Preliminary identification of ricinine was made?
   2. Preliminary identification of ricinine in parmesan cheese at the convention center was made?
   3. The distribution company that produced the parmesan cheese was identified?
2. What do your plans, policies, and standard operating procedures call for you to do to prepare for activation?
3. If asked, what capabilities do you have to participate in food sampling at the convention center when ricin is the target?
4. Could you deliver samples to analytical laboratories if they were collected by other organizations with HAZMAT equipment and training? Who makes the coordination with the HAZMAT teams? What does this coordination effort look like?
5. How quickly could you mobilize resources and arrive at the convention center?
6. What agency or organization do you think would take the lead in the sampling of food for ricin contamination at the convention center?
7. If you participated in this operation, what kind of interaction with law enforcement would you expect?
8. What procedures do you have in place for delivery of samples to laboratories?
9. Would you have any contact with RRTs in other states? How would you reach out to other RRTs, and through what channels (formal or informal)?
10. Who is setting up Incident Command System (ICS) Response Objectives for this incident? How are they coordinated throughout the different agencies?
11. How workers of vendors are handles during investigation?
12. What directions are given to media overall, and for those patrons who handled parmesan cheese containers at venue?

# Module 3 – Confirmation and Conclusion

Upon discovery of the suspect containers, a determination is made by the State Health investigators to notify law enforcement of the situation. A local HAZMAT team is sent to the convention center kitchen to collect the containers and run field tests. One particular field test indicates ricin may be present, and law enforcement is notified. Health officials issue an order ceasing all food operations at the site and all convention center areas are evacuated. In addition all HVAC systems have been shut down. Authorities have indicated that the venue is closed and are not allowing anyone back into the facility. At this time, local law enforcement elevates the issue and contacts the FBI. The State’s Department of Health notifies the local FDA office, CDC’s EOC in Atlanta, and USDA of the incident**.**

Authorities are discussing the situation with activity organizers and will have to make a decision about whether to cancel the event entirely. They are awaiting laboratory confirmation from Laboratory Response Network - Chemical (LRN-C) on environmental and **clinical** specimens collected at the venue and from patients in hospitals. LRN-C requests confirmation from CDC for validation of local test results.

Approximately two hours after the initial Emergency Medical Services’ reports of numerous calls from hotels around the venue and additional cases begin arriving at the hospital, local Emergency Departments are reporting higher than usual number of patients displaying similar symptoms. Six young children arrived with evidence of multisystem organ failure. Doctors think these patients are too ill to be considered having “regular” food poisoning. Due to the overwhelming surge of patients, the main medical center is unable to accept new patients. A Hospital Incident Command System has been established at the medical center in order to pool all available medical resources in the region. Neighboring counties are deploying ground and air units to assist with patient transport to facilities outside the affected area.

At this time clinical samples have been transported to the state lab and a member of the LRN-C for analysis. Interviews with management of City’s Best Pizza identify the source of the contaminated Parmesan as the ABC Food Distribution Company. This firm is headquartered in another county within the same state. ABC Distribution Company has three additional locations in the state as well as distribution sites in three surrounding states. A coordinated effort, involving RRTs and law enforcement in the involved states and other agencies, is quickly organized to determine the source and extent of the contamination. The FDA District Offices in which the firm’s headquarters and distribution sites are located have established Incident Management Teams to coordinate inspectional activities with state and local partners. FDA’s Office of Crisis Management has established an Incident Management Group, located in the agency’s Emergency Operations Center at FDA headquarters, for the purpose of coordinating the activities and to facilitate collaborations and information sharing with other federal partners.

The FBI is shipping a swab sample collected from one of the containers at the venue and urine samples collected from patients at the hospital to the CDC in Atlanta via dedicated aircraft.

At this time a joint call regarding the incident is conducted between CDC, FDA, FBI, and State DOHs. A team of CDC epidemiologists has been requested to deploy to the city. Their role is to assist DOH officials in setting up surveillance and to help estimate how many people may be at risk. FDA discusses the trace back and trace forward efforts being conducted to determine the extent to which the suspected product may be in interstate commerce. FDA’s Office of Criminal Investigations and CFSAN Food Defense vulnerability experts are actively participating with investigators and other subject matter experts to determine how and when the product may have been adulterated.

The CDC laboratory confirms the presence of ricinine – a castor bean protein present along with ricin in castor pulp extract – in multiple patients’ urine samples. CDC notifies local, State, and Federal authorities about the results. FDA issues a mandatory recall of the product.

An alert has been issued through the Health Alert Network (HAN) to notify all states about the potential for cases. Information for clinicians and health providers is now made available via the CDC website. All Poison Control Centers are provided with clinical guidance for diagnosing and treating suspected cases.

CDC’s Division of Strategic National Stockpile is mobilizing staff, medical materials, and equipment needed to support the health and medical response. CDC is also deploying additional epidemiologists to all U.S. states and territories to assist with the coordination of surveillance activities.

Follow-up screenings confirm that the human samples contain ricinine and that pizza cheese served at the convention center had traces of the ricinine toxin. These results are actionable, so law enforcement authorities begin a criminal investigation, working collaboratively with public safety agencies in the State and other surrounding States. RRTs in all states are activated for participation in the product-sampling phase of this investigation.

The FDA and State inspector’s discussion with ABC Distribution officials determines that two employees at a company facility in a nearby county were taken to the plant nurse with apparent food poisoning and have been treated at a local hospital. The investigation of ABC Distribution Company facilities aims to detect the source of the contamination and provide trace-forward information. Preliminary reports show a large amount of consignee data, indicating a need for federal agency support in response to this large food contamination event in this region of the United States. During the next day, investigators are able to determine basic information about the source and spread of contaminated Parmesan cheese.

## **Task**

Use your allotted time to consider the developments and questions assigned to your group for Module 2.

* Identify any additional requirements, critical issues, decisions, and questions you think should be addressed at this time.
* Unanswered questions should be recorded for discussion with the entire group.

## **Questions for Participant Groups**

**Regulatory Agencies**

1. Would the confirmation of ricin contamination change the incident command structure? How so?
2. What actions would the incident command take once the laboratory made a confirmed identification of ricinine in the patient specimens? Who would lead the investigation? What would the risk assessment rating be at this point?
3. How would state and local agencies participate in this command in the collection, delivery, and screening of food samples?
4. How would the incident command interact with ABC Distribution Company? At what point would a product recall be initiated? By whom?
5. Who would FDA notify about the product retail sites?
6. What action would be taken by the: (a) State Department of Agriculture? (b) State Department of Public Health? (c) State Governor’s Office? (d) Other state RRTs
7. How would a recall effectiveness check be performed?
8. What agency or agencies would generate a disposal plan? How would this plan be implemented and overseen?
9. What actions would law enforcement take before and after the confirmed identification of ricinine was made?
10. Would the site disseminate information about the illnesses before or after the preliminary identification of ricinine was made? How broadly would the information be disseminated by the site?
11. Surrounding States’ agency commands: what action, if any, would you take (both before and after the ricinine identification) after realizing that your states also have similar large scale events planned later that week?

**Laboratories**

1. Are you readily able to do screenings for ricinine? If not, what would you need to do these screenings and where would you get these resources?
2. What is a good estimate for the time needed to screen the patient samples described here for ricinine?
3. Who would you notify after making the confirmatory identification of ricinine?
4. What kind of laboratory screening resources do you think would be necessary in the investigation to determine the source and spread of ricin in products at the ABC Distribution Company locations?
5. What role would laboratories play in the investigation of the ABC Distribution Company?
6. How would you need to prepare for participation?
7. Which laboratories would be needed to participate in this sample screening effort?
8. What are your resources looking like at this point in the investigation? Are there any additional coordination efforts taking place related to the laboratory operation needs?

**Public Health**

1. Would you be able to run the confirmatory screening of ricinine in a short amount of time? How long would it take to complete the testing?

**RRT Group**

1. What role could you play in the investigation of ABC Distribution Company?
2. How would you prepare for participation in the incident response?
3. How quickly could you get to a company facility in the nearby county (216 miles from the city)?
4. Who is updating the Response Objectives for this incident? How are they coordinated throughout the different agencies?
5. How are the results or activities occurring in the other states in this region being coordinated? What agencies are involved in this effort?
6. How is the intelligence or information sharing being coordinated for the response? Who are the State RRTs reporting their updates to in order to help with this coordination effort?

# Wrap-Up Activities

We will spend the remaining time synthesizing what we discussed today, identifying important action steps to include in the After-Action Report and Improvement Plan (AAR/IP), and obtaining your feedback on the overall exercise. An AAR/IP is an important tool used to evaluate the exercise, addressing outcomes, strengths, weaknesses, and lessons learned. The facilitator will let you know when to expect to receive the final AAR/IP. The AAR/IP should be treated as a “For Official Use Only” document and only shared with those having a need to know.

At your table, please take a few minutes to discuss the questions below as directed by the facilitator. We will then take some time as a large group to identify common themes and takeaways. At the conclusion of this discussion, we ask that you complete the feedback form that will be provided by your facilitator.

1. What is the most important thing you learned today in terms of managing a contamination incident that impacts a large scale event?
2. What information do you need to make informed decisions during such an event? If you don’t have that information, how do you get it, or what needs to be done to make a decision without it?
3. Do you think this exercise will prompt your organization to evaluate your protocols, policies, and procedures?
4. What top three actions should be taken to ensure proper event management based upon what you have learned from this exercise?
5. What went right and what can you improve on at each stage of the contamination investigation?
6. What are the roles and responsibilities of the various industry, public health, water, regulatory, and laboratory communities engaged in this investigation?
7. What could be done through all phases to reduce the time from the first signal, to implementation of effective controls, to final resolution, in order to protect public health and reduce the economic impact on the entire industry?
8. What are some key lessons related to risk communication that you discussed today? What can you commit to doing to ensure that your organization supports a consistent, multi-jurisdictional, science-based message in the event of a contamination incident?
9. At any point during the investigation did you consider that contamination might have been intentional? How would this have changed the investigation?

# Appendix A: Resources

**Food and Agriculture Sector**

The Food and Agriculture Sector has the capacity to feed and clothe people well beyond the boundaries of the nation. The sector is almost entirely under private ownership and is comprised of an estimated 2.2 million farms, approximately 880,500 firms, and more than one million facilities. This sector accounts for roughly one-fifth of the nation's economic activity, and is overseen at the federal level by the USDA and the FDA.

The Food and Agriculture Sector has critical dependencies with many sectors, but especially with:

• water, for clean irrigation and processed water;

• transportation systems, for movement of products;

• energy, to power the equipment needed for agriculture production and food processing; and

• banking and finance, chemical, dams, and other sectors as well.

# Appendix B: Frequently Used Acronyms

AAR After-Action Report

AAR/IP After-Action Report and Improvement Plan

CIFOR Council to Improve Foodborne Outbreak Response

DOH Department of Health

FDA Food and Drug Administration

IFT Institute of Food Technologists

RRT Rapid Response Teams

TTX Tabletop Exercise

USDA FSIS United States Department of Agriculture Food Safety Inspection Service