Focus Area 8 Worksheet: Environmental Health Investigation

CIFOR Council to Improve Foodborne Outbreak Response

Detect • Investigate • Control • Prevent

FOCUS AREA 8: ENVIRONMENTAL HEALTH INVESTIGATION

Complete this worksheet if "Environmental Health Investigation" is a high priority Focus Area for efforts to improve foodborne disease outbreak response in your agency/jurisdiction. (NOTE: The term "agency/jurisdiction" refers to the entity for which your workgroup is making decisions. See your completed "Document D: Preliminaries" worksheet for a definition.)

List the individuals participating in the discussion of this Focus Area (and their affiliations).

To help you understand what is included in this Focus Area, review the following goals and keys to success.

GOALS FOR THE ENVIRONMENTAL HEALTH INVESTIGATION:

Agency/jurisdiction staff collect, analyze, and interpret information from the implicated facility or production site to determine the etiologic agent, mode of transmission and vehicle, source of contamination, contributing factors, environmental antecedents, and food supply chain.

KEYS TO SUCCESS FOR THE ENVIRONMENTAL HEALTH INVESTIGATION:

"Keys to success" are activities, relationships, and resources that are critical to achieving success in a Focus Area. Determining whether an agency/jurisdiction has a particular key to success in place is somewhat subjective. Metrics, such as measures of time (e.g., rapidly, timely, and quickly), have not been defined. Your workgroup should provide its own definitions for these terms, as is appropriate for your agency/jurisdiction, and use its best judgment in deciding whether a particular key to success is fully or partially in place.

Staff skills and expertise

- Staff have expertise in food production processes, HACCP, and environmental health assessments.
- Staff have expertise in traceback and traceforward investigations (or have access to staff in other agencies with this expertise).
- Staff have good interviewing skills to solicit information from facility managers and food workers.

Investigation

- Agency/jurisdiction has a written protocol outlining the steps in the environmental health investigation of a foodborne disease outbreak. Staff have easy access to the protocol and are trained in its implementation.
- Staff undertake environmental health assessments at facilities or production sites implicated during a foodborne outbreak (not routine food establishment licensing inspections) and identify appropriate contributing factors and environmental antecedents.
- Staff undertake traceback and traceforward investigations (or have access to staff in other agencies that undertake these investigations).

Communication

- Staff communicate in a timely fashion and coordinate activities with epidemiology and laboratory staff.

Making changes

- Agency/jurisdiction conducts a debriefing among investigators following each outbreak response and refines outbreak response protocols based on lessons learned.
- Agency/jurisdiction has performance indicators related to the environmental health investigation and routinely evaluates its performance in this Focus Area.

1. DESCRIBE YOUR CURRENT ACTIVITIES AND PROCEDURES IN THIS FOCUS AREA.

Considering the keys to success on the previous page, describe your agency's/jurisdiction's current activities and procedures in this Focus Area. Refer to written protocols, if available, and materials related to ongoing efforts in capacity development or quality improvement (e.g., FDA Retail and Manufactured Food Regulatory Program Standards). As you list current activities and procedures related to this Focus Area, indicate those which could be changed to improve your agency's/jurisdiction's response to foodborne disease outbreaks.

Activity/Procedure	Needs Improvement? ✓
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2. PRIORITIZE CIFOR RECOMMENDATIONS TO ADDRESS NEEDED IMPROVEMENTS.

Having identified activities and procedures in need of improvement, review the CIFOR recommendations related to this Focus Area (listed below). Rate the priority for implementing each recommendation based on its likely impact on foodborne outbreak response at your agency/jurisdiction and available resources. Use a scale of 1 to 5 to rate each recommendation (1=Low priority for implementation and 5=High priority for implementation). If a recommendation is already in place in your agency/jurisdiction, check the appropriate box. If a recommendation is not relevant to your agency/jurisdiction, select N/A. **Refer to the blue underlined section number following each recommendation to view the recommendation as it appears in the CIFOR Guidelines**.

	Already in place	Priority for Implementation or Improvement in Your Agency/Jurisdiction (LOW 1 2 3 4 5 HIGH N/A)
Staff skills and expertise		
Ensure that the environmental health investigator on the outbreak response team has a good understanding of foodborne agents, factors necessary to cause illness, food vehicles, and possible risk factors in the environment or operation that can contribute to the transmission of the disease agent. (5.2.4.1.5.2)	☐	1 2 3 4 5 N/A
Ensure that the environmental health investigator knows how to collect environmental specimens and store and transport them properly. (3.2.2.4)	☐	1 2 3 4 5 N/A
Provide continuing education to the environmental health investigator to maintain and improve skills within their specialty. (3.2.3.4)	☐	1 2 3 4 5 N/A
Train the environmental health investigator in the agency's/jurisdiction's outbreak response protocols and the environmental health investigator's team role. (3.2.3.4)	☐	1 2 3 4 5 N/A
Assemble a reference library with information about foodborne diseases, enteric illnesses, and control measures. Where possible include electronic resources that can be accessed in the field. (3.3.2.6) (3.2.3.3)	☐	1 2 3 4 5 N/A
Assemble a list of resource persons with expertise in specific disease agents and environmental health investigation methodologies. (3.2.3.3)	☐	1 2 3 4 5 N/A
Exercise outbreak response team members together to ensure each team member can perform his or her role according to agency-specific protocols and legal authorities, and understands the roles and responsibilities of other team members. (3.2.3.4)	☐	1 2 3 4 5 N/A
Ensure that all outbreak response team members regularly participate in outbreak investigation and control efforts, even if it means working with another jurisdiction because the team's home jurisdiction does not have many outbreaks. (3.2.3.4)	☐	1 2 3 4 5 N/A
If investigations are infrequent, centralize processes that require substantial experience for proficiency (e.g., regulatory tracebacks). (4.2.10.3)	☐	1 2 3 4 5 N/A

Additional ideas:

	Already in place	Priority for Implementation or Improvement in Your Agency/Jurisdiction
Outbreak Investigation		LOW HIGH
Prepare a written protocol outlining the steps in the environmental health investigation of a foodborne disease outbreak. (3.2.3.3)	☐	1 2 3 4 5 N/A
Have appropriate equipment (3.3.2.3) and supplies (3.3.2.4) ready for use by the environmental health investigator when needed.	☐	1 2 3 4 5 N/A
Send environmental investigators into the field as soon as possible to interrupt continued exposure to the source of the outbreak and practices or environmental conditions that led to the outbreak. (6.0)	☐	1 2 3 4 5 N/A
Send at least two environmental health investigators to a food establishment implicated in an outbreak. One investigator can make certain that food about to be served is safe and the second investigator can initiate the investigation. (6.1.1)	☐	1 2 3 4 5 N/A
Use epidemiologic information to initiate and guide the environmental health investigation of a foodborne disease outbreak. Once an investigation begins, sources of information include product information; written policies or procedures; direct observations and measurements; interviews with employees and managers; and laboratory testing of suspected foods, ingredients, or environmental surfaces. (5.2.4.1.6.1)	☐	1 2 3 4 5 N/A
Data collection Use standardized forms to collect environmental health information to provide comparable data for investigations that may involve multiple establishments. (3.5.2.1) (5.1.2.5)	☐	1 2 3 4 5 N/A
Develop templates for forms before an outbreak occurs. (See Environmental Health Specialists Network [EHS-Net] website at http://www.cdc.gov/nceh/ehs/EHSNet/ for examples). (5.1.2.5)	☐	1 2 3 4 5 N/A
Train staff in the use of the standardized forms to ensure proper completion. (3.5.2.1) (5.1.2.5)	☐	1 2 3 4 5 N/A
Determine how confidential information will be stored and whether and how it can be shared with others in the outbreak response team. (3.6.2.2) (3.5.2.1)	☐	1 2 3 4 5 N/A
Be familiar with and follow state and federal laws and practices that protect confidential information from disclosure. (5.1.2.6)	☐	1 2 3 4 5 N/A
Additional ideas:		

Outbreak Investigation (cont'd) *Identify the etiologic agent (if unknown)*	Already in place	Priority for Implementation or Improvement in Your Agency/Jurisdiction LOW HIGH
Obtain clinical specimens from members of the ill group. (4.3.9.4) (4.3.9.5)	☐	1 2 3 4 5 N/A
Interview management from the implicated facility to determine if it has noticed ill employees or circumstances that could be the cause of a foodborne illness. (Table 5.1)	☐	1 2 3 4 5 N/A
Interview food workers to determine whether they have been ill and the clinical characteristics of their illness. (Table 5.1)	☐	1 2 3 4 5 N/A
Obtain stool from ill or all food workers to establish an etiology through laboratory testing. (Table 5.1)	☐	1 2 3 4 5 N/A
Collect and store samples of suspect food items and ingredients (using proper techniques) as soon as possible. Test when food has been implicated by epidemiologic or environmental health investigations. (Table 5.1) (4.3.9.4) (6.2.1.2)	☐	1 2 3 4 5 N/A
Work with appropriate regulatory authority to ensure that food samples are collected and maintained with appropriate chain of custody. (Table 5.2)	☐	1 2 3 4 5 N/A
Notify the facility from which the food samples are collected so that they have the opportunity to collect companion samples. (6.2.1.2)	☐	1 2 3 4 5 N/A
Determine whether the setting or suspect food item suggest a likely pathogen. (Table 5.1) (2.4.3.2.2)	☐	1 2 3 4 5 N/A
Additional ideas:		
Identify persons at risk		
For establishment-related outbreaks, obtain a list of reservations, credit card receipts, receipts for take-out orders, or guest lists for events to identify exposed persons and additional cases. Where possible, obtain information electronically. (Table 5.1)	☐	1 2 3 4 5 N/A
Review foodborne illness complaints to identify undiagnosed cases that could be linked to the outbreak. (4.3.9.6) (Table 5.2)	☐	1 2 3 4 5 N/A
Contact restaurants, grocery stores, or other points of final service visited by multiple cases to identify employee illnesses or foodborne illness complaints from patrons. (Table 5.2)	☐	1 2 3 4 5 N/A
Additional ideas:		

	Already in place	Priority for Implementation or Improvement in Your Agency/Jurisdiction
Outbreak Investigation (cont'd) *Identify mode of transmission, vehicle, and source of contamination*		LOW HIGH
For **event or establishment-related outbreaks**, conduct an environmental health assessment of the food preparation site as early as possible: (5.2.4.1.6.1) (Table 5.1) • Obtain a menu from the event or establishment. • Interview food workers to determine their food-preparation responsibilities and practices before the outbreak exposure, whether they have been ill, and the clinical characteristics of their illness. • Observe procedures to make implicated food and reconstruct the food flow for the implicated meal or food item. • Evaluate the food flow for the implicated meal or food item to identify a contamination event. • Identify contributing factors and environmental antecedents. • Collect samples of implicated food or ingredients using proper techniques. Work with appropriate regulatory authority to ensure maintenance of the appropriate chain of custody. Notify the facility from which the food samples are collected so that they have the opportunity to collect companion samples. • As appropriate, collect clinical specimens from people in contact with the suspected food vehicle or the environment in which it was produced or used (e.g., food workers). • Collect and review documents on source of food.	☐	1 2 3 4 5 N/A
For **event or establishment related outbreaks**, if no contamination event is identified at food preparation site, trace ingredients of implicated food back through distribution to source of production to identify contamination event. Conduct an an environmental health assessment of the likely source of contamination. (Table 5.1) (5.2.4.1.6)	☐	1 2 3 4 5 N/A
For **outbreaks identified through pathogen-specific surveillance**: (Table 5.2) • Contact restaurants, grocery stores, and other locations identified by multiple cases to verify food choices and distributors and/or source(s) for ingredients and foods of interest. • Obtain samples of suspected food items. Work with regulatory authority to ensure maintenance of the appropriate chain of custody. Notify the facility from which the food samples are collected so that they have the opportunity to collect companion samples. • Conduct an investigational traceback to determine whether a suspected food vehicle from multiple cases has a distribution or other point in common. Because these investigations can be resource intensive, the decision to conduct a traceback should be based on input from public health and regulatory agencies. (5.2.4.1.7) • Conduct an environmental health assessment of the likely source of contamination. (5.2.4.1.6)	☐	1 2 3 4 5 N/A
If a specific food item is implicated, work with appropriate regulatory agency to conduct a formal regulatory traceback/traceforward of the implicated food item or ingredient. (Table 5.2)	☐	1 2 3 4 5 N/A

Additional ideas:

	Already in place	Priority for Implementation or Improvement in Your Agency/Jurisdiction
Determine potential for ongoing transmission and need for abatement procedures.		LOW HIGH
Verify that food workers who might have been infected during the outbreak and pose a risk for transmission have been excluded or restricted from food preparation, as needed. Ensure that infected food workers are aware of food code or local rules for returning to work. (Table 5.1) (Table 5.2)	☐	1 2 3 4 5 N/A
Verify that potentially contaminated foods have been removed from distribution. (Table 5.1) (Table 5.2)	☐	1 2 3 4 5 N/A
Verify that food contact surfaces and potential environmental reservoirs have been adequately cleaned and sanitized. (Table 5.1) (Table 5.2)	☐	1 2 3 4 5 N/A
Train food workers on safe food-preparation practices. (Table 5.1) (Table 5.2)	☐	1 2 3 4 5 N/A
Modify food-production and food-preparation processes with appropriate preventive controls. (Table 5.1) (Table 5.2)	☐	1 2 3 4 5 N/A
Modify menu. (Table 5.1) (Table 5.2)	☐	1 2 3 4 5 N/A

Additional ideas:

Communication

Guide staff on how to respond to and communicate with angry food-service workers and managers. (3.6.2.5)	☐	1 2 3 4 5 N/A
Determine when and how to share outbreak information with the person or organization in charge of the facility implicated in an outbreak. (3.5.2)	☐	1 2 3 4 5 N/A
Ensure the environmental health investigator knows the other members of the outbreak response team before an outbreak occurs. (3.6.2.2)	☐	1 2 3 4 5 N/A
Establish and use routine procedures for communicating with outbreak response team members and their organizational units before an outbreak occurs. (3.6.2.2)	☐	1 2 3 4 5 N/A

	Already in place	Priority for Implementation or Improvement in Your Agency/Jurisdiction
Communication (cont'd)		LOW HIGH
Maintain close communication and coordination with members of the outbreak response team during an investigation. Update all members of the outbreak response team daily. Make sure suspicious new exposures are adequately considered by all team members and that the public information officer is routinely updated to ensure appropriate messaging to the public and media. (5.1.2.3) (5.2.5) (6.5.1)	☐	1 2 3 4 5 N/A
Additional ideas:		

Making changes

Participate in a debriefing following each outbreak investigation with all members of the outbreak response team to identify lessons learned and compare notes on ultimate findings. Identify factors that compromised the investigation and clarify changes to procedures, resources, training, and agency structure to optimize future investigations. (6.7) (3.2.3.4) (5.2.8)	☐	1 2 3 4 5 N/A
Work with outbreak response team to summarize investigation findings, conclusions, and recommendations in a written report, consistent with the size and complexity of the investigation including lessons learned and action items for follow-up and quality improvement. (3.7.2) (5.2.9) (6.8)	☐	1 2 3 4 5 N/A
Work with outbreak response team to submit summary data about the outbreak to CDC's National Outbreak Reporting System (NORS) database using CDC's form 52.13. Make every effort to complete both Part 1 and Part 2. (5.2.9)	☐	1 2 3 4 5 N/A

3. MAKE PLANS TO IMPLEMENT SELECTED CIFOR RECOMMENDATIONS.

For each CIFOR recommendation selected in the previous step (or idea formulated by the workgroup), identify who will take the lead in implementing the recommendation and the timeframe for implementation (e.g., a specific completion date or whether the change is likely to require short, mid- or long-term efforts). If certain actions must precede others, make a note of this and adjust the timeframe. In addition, consider factors that could positively or negatively influence implementation of the recommendation and ways to incorporate the recommendation into your agency's/jurisdiction's standard operating procedures.

One person should be given responsibility for monitoring progress in implementing the above CIFOR recommendations. Follow-up should occur at specified checkpoints (e.g., 3, 6, 9, and 12 months after the start of the Toolkit process) and results should be shared with the entire workgroup.

CIFOR recommendations or other ideas from previous step	Lead person	Timeframe for implementation	Notes (e.g., necessary antecedents, factors that might influence implementation, ways to incorporate the recommendation into standard operating procedures)

DATE WORKSHEET COMPLETED: _____

NEXT DATE FOR FOLLOW-UP ON PROGRESS: _____