Guidelines for Environmental Field Investigations of Foodborne Illness Outbreaks

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Executive Summary

Environmental field investigations are a necessary part of the investigation of a foodborne illness outbreak. A foodborne illness outbreak is defined by the U.S. Centers for Disease Control and Prevention as a cluster of two or more infections caused by the same agent (pathogen or toxin) which upon investigation are linked to the same food. Field investigations seek to identify the source of the outbreak by evaluating suspect foods and procedural issues utilized during the time period prior to the outbreak. Environmental Health staff will best utilize their time and resources by focusing the investigation on the following areas:

- Inspection reports and complaint records
- Manager and employee interviews
- Menu and recipe review
- Flow diagrams
- Sampling
- Approved sources of food
- Food holding temperatures and the use of time as a control
- Final cooking temperatures
- Cross contamination
- Employee health
- Cleaning and sanitizing
- Records

By identifying the source of the outbreak, control measures can be implemented to prevent further spread of the illness. Proper documentation and after-action meetings can identify areas for improvement, enhance future interactions with the EPI team, and promote long-term compliance with risk factors.

Introduction

Environmental field investigations contribute to the overall investigation of a foodborne illness outbreak and are the responsibility of the Environmental Health component of the local EPI team. The following information will provide guidance in conducting an effective environmental field investigation. This document is intended for use in

conjunction with "North Carolina's Foodborne Illness Investigation Guidance and Tools" (http://www.deh.enr.state.nc.us/ehs/images/food/Foodborne_Outbreak_Investigation_Guidance.pdf).

Local Environmental Health Specialists (EHSs) are responsible for conducting field investigations associated with events regulated by G.S. §130A-144. This statute mandates an investigation and control of a communicable disease outbreak when reported. Local EHSs may contact their Regional Environmental Health Specialist (REHS) or the Food Defense Coordinator for assistance (see Appendix A for a complete list of contacts). If the source of contamination occurs prior to the point of retail food preparation (e.g. manufacturer, supplier, distributor, etc.), the North Carolina Department of Agriculture and Consumer Services (NCDA & CS) has investigative jurisdiction. The NCDA & CS may also collaborate with the US Department of Agriculture (USDA)-Food Safety and Inspection Services (FSIS) and/or the US Food and Drug Administration (FDA).

Purpose

An environmental field investigation is a comprehensive evaluation of the foodhandling practices that may have occurred at the suspected outbreak source during the hours (or days) leading up to the time of the potential exposure. The purpose of an environmental field investigation is to determine the contributing factors that may be the cause of the foodborne illness outbreak, whether it is improper food handling, ill food workers, or a contaminated ingredient. Whenever possible, the specific food item should also be identified. This information may be used to control the spread of the illness during the current outbreak. Information gathered during the investigation can also serve as an important educational tool to prevent similar outbreaks in the future.

Background

An environmental field investigation should be performed if the epidemiological investigation suggests a common source exposure such as consumption of food or water at a particular food service establishment or gathering. Information on symptoms, date of

exposure, onset of symptoms, and risk factors associated with the illness and other known data, collected by the local EPI Team or Communicable Disease Nurse may help develop an initial hypothesis. The Communicable Disease Branch (CD Branch) of the North Carolina Division of Public Health may assist the local health department with the epidemiological investigation of the outbreak and conduct further studies if necessary. The State Laboratory of Public Health (SLPH) may test clinical samples from ill individuals associated with the outbreak for detection of suspected microorganisms.

Information collected from the epidemiological investigation and the laboratory analyses, can help refine the investigation and implicate suspected food items consumed at a common event or site. A field investigation can then be initiated at the suspected site to provide further information about the outbreak. Sites implicated in an outbreak may vary and include locations such as restaurants and other retail food service establishments, volunteer fire departments, churches, private clubs, civic groups and other organizations that serve meals or conduct fund-raising food sales.

Control Measures

Preventing the further spread of the illness should be the top priority of any investigation. Several measures can be taken early in the investigation that can reduce the possibility for new illnesses, regardless of the specific vehicle for proliferation. Any or all of these non-specific control measures can be implemented when a facility has been implicated in an outbreak but a specific food has not been identified. Pathogen-specific control measures should be taken once the pathogen has been identified.

- Personal Hygiene

  Hands should be washed after visiting the restroom, before working with food, between working with raw and ready-to-eat foods, between raw species (e.g. pork, chicken, beef, seafood), and after engaging in other activities that contaminate hands. Food service employees should clean their hands and exposed portions of arms for at least 20 seconds using antibacterial soap in a handwashing sink.

- Employee Exclusion/Restriction

  Food service employees with gastrointestinal symptoms (e.g. nausea, vomiting, diarrhea, stomach cramps) should be excluded from the food service establishment until asymptomatic for at least 24 hours. Employees with gastrointestinal symptoms working within a facility that serves a highly susceptible population should be excluded from the establishment until asymptomatic for at least 48 hours. Asymptomatic employees that have been diagnosed with norovirus working within a facility that serves a highly susceptible population should be excluded until the employees have been cleared to return to work by a medical practitioner or the employees have been asymptomatic for at least 48 hours.

- Cleaning Measures

  Unless environmental samples are need for laboratory testing, surfaces within the food service establishment should be cleaned and disinfected immediately to prevent the possibility of cross contamination. Special attention should be given to food contact surfaces and high hand contact surfaces, such as door handles, handwash stations, bathroom fixtures, and wait areas.

  A chlorine bleach/water solution is effective for disinfection of a wide variety of surfaces. The following strengths should be used based upon the type of surface:

  - For stainless steel, food/mouth contact items: 1 tablespoon of bleach in 1 gallon of water (1:256 or 200 ppm)
  - For non-porous surfaces such as tile floors, counter-tops, sinks, etc.: a third (1/3) cup of bleach in 1 gallon of water (1:50 or 1000 ppm).
  - For porous surfaces such as wooden floors: one and two-thirds (1 2/3) cups of bleach in 1 gallon of water (1:10 or 5000 ppm)

  The chlorine bleach/water solution should remain on the surface for ten minutes and then rinsed with clean water.

Note: Many quaternary ammonia disinfectants may be ineffective against norovirus. Only use EPA-registered disinfectants that have been been validated to be effective against norovirus.

- No Bare Hand Contact with Ready-to-Eat Food

  To help control foodborne illnesses transmitted via the fecal-oral route, employees should not handle foods that are ready-to-eat (require no further cooking, or "kill step") with their bare hands. Instead, employees should use single-use gloves, deli tissue, or utensils, such as spatulas, tongs, or dispensing equipment.

- No Raw or Undercooked Foods

  All animal foods, including shellfish, should be cooked to an internal temperature that will kill potential pathogens present in the food (as specified within 15A NCAC 18A .2600). Internal cooking temperature records should be kept by the responsible person within the establishment. Records should be made available for review by the local environmental health program at their request. The responsible person should ensure that the thermometer used for recording temperatures is accurate.

- Hold all Leftover Foods for Laboratory Analysis

  All leftover foods present that may be needed for potential laboratory testing should be segregated from all other foods in the establishment. Leftover foods should not be served or used as ingredients in other food items. If laboratory analysis is not required, leftover foods suspected of being the vehicle of foodborne illnesses should be destroyed.

- Monitoring Time/Temperature Control of Food

  Records of time/temperatures controls of potentially hazardous foods (as specified within 15A NCAC 18A .2600) should be kept by the responsible person within

the establishment. Records should be made available for review by the local environmental health program at their request.

- Maintain Communication with State Epidemiologist and/or Epi-Team
  As the outbreak investigation progresses, more information will be available regarding the suspected pathogen and vehicle of transmission. Alter the control measures as needed to reflect new and emerging information.

Conducting the Field Investigation

To determine the cause of the outbreak, it is necessary to examine all aspects of the food service operation with an emphasis on events leading up to the time of exposure to the suspected food items. An establishment's standard practices directly correlate with the establishment's control over pathogens that contribute to foodborne illness. Important measures such as the amount of food safety knowledge, the extent by which employees practice safe foodhandling methods, and the degree by which critical pathogen control steps are documented all reflect upon the establishment's ability to produce safe food. A comprehensive field investigation may provide an overall picture of the day-to-day activities that promote safe food production or contribute to an atmosphere that can lead to a foodborne illness outbreak.

In some cases, epidemiological study analyses will indicate consumption of one or more possible dishes associated with illness in the outbreak. In other cases, a pathogen may be isolated from clinical samples of ill persons or suspected based on clinical symptoms. To accurately assess the establishment's ability to control pathogens, the EHS should focus on foods and processes that could be the source of the suspected pathogen without forming biases. For instance, if the suspected pathogen is *Salmonella*, close scrutiny should be given to menu items involving chicken but other possible sources (such as eggs, raw and undercooked meat and poultry, and cross contamination) should not be ignored. The EHS should strive to gain an understanding of the many different practices that occurred during the time period prior to the outbreak that could have been the source

of the exposure. The following important features should be included within the investigation.

Sampling

In certain cases it may be necessary to obtain samples of the suspected food or environmental samples from work surfaces for analysis. If sampling is appropriate, identify the suspected food item(s) and obtain the samples immediately. Sampling guidance can be obtained in Appendix B and from the State Laboratory of Public Health (http://slph.state.nc.us/). If samples are not warranted, the EHS should ensure that that the contaminated food has been properly discarded to prevent further illness. The EHS should complete the "Product Disposition Form" as necessary (see Appendix C). If the source of the outbreak is determined to be due to the product itself (as opposed to the preparation of the product), then the samples will be collected by NCDA & CS.

Inspection Reports/Complaint records

Inspection reports and complaint records can provide valuable information regarding related illnesses and suspect foodhandling practices. The EHS should examine previous inspection reports for areas of habitual noncompliance with risk factors, with particular attention given to repeated critical violations. Deficient procedures relating to critical risk factors, such as inadequate cooling, noncompliant holding temperatures, and improper sanitizing, establishes a pattern of behavior of violations and behavior that may lead to foodborne illness outbreaks. Prioritize the investigation time by focusing upon the most recent inspection deficiencies first.

In addition to past inspection reports, the EHS should review the establishment file for past complaints. The types of complaints may offer insight into the processes or products that should be examined during the investigation. A large number of complaints may indicate frequent problems that may attributed to the outbreak.

Manager & employee interviews

Open communication with the manager and key employees will help the EHS to gain a full understanding of the events leading up to the outbreak. The EHS should seek private interviews with each person, as employees may be reluctant to speak candidly in front of the manager. If not obtained prior to the field investigation, the EHS should obtain a list of event attendees or customers that may have been exposed to the suspect food by using means such as reservation lists, computer records, and credit or debit card receipts. The EHS should also require the manager to provide a complete list of menu items and the employees responsible for preparing the foods. Part-time, temporary, and employees who had been out sick within the incubation period of the disease should also be included.

The EHS should discuss with the manager and responsible employees the procedures used to prepare the menu items, specifically the typical work practices and routines. Focus on any unusual activity or periods of stress that may have occurred during the time period. Historically, many outbreaks have occurred due to circumstances that take the responsible employees out of their normal work routines. For example, preparing for large events may require larger batch preparation, significantly more preparation area, alternate cooling methods, and expanded refrigeration capacity. Poor planning, space limitations of the establishment, and a lack of employee training may lead to errors in food preparation. Items prepared in the days leading up to the event may also lead to pathogen growth due to improper cooling or storage temperatures. Other circumstances that tend to break the normal routine and add stress to the work environment include short staffing, illnesses, and malfunctioning equipment. By searching for anomalies in the processes prior to the outbreak, the EHS may obtain information that will be helpful to the investigation.

Menu and recipe review

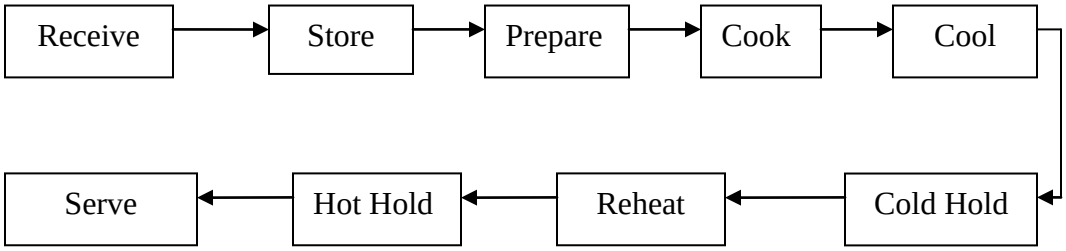
A review of the menu items offered at the event or during the time period leading up to the exposure time will help determine the possible source of the outbreak. The EHS should scrutinize those menu items that are most capable of supporting the growth of the

suspected pathogen. A review of the recipes used to prepare the suspected menu items will provide important information that can be used to recreate the flow of food used when preparing the item.

Flow diagrams

Flow diagrams are valuable tools to analyze the process used to prepare a suspected menu item. Flow diagrams dissect the operational steps, starting from the time the recipe items are received and ending with the service of food. Each operational step is connected to the next step in sequential order

For instance, a typical flow diagram of a complex menu item may appear as the following:



The EHS should develop flow diagrams for each food item suspected of causing the outbreak. Analyze the actions that constitute each step and discuss these with the responsible employee. Also take note of the physical locations of each food item and its process flow through the establishment during the preparation steps. Look for breakdowns in the food safety system that could lead to pathogen growth, cross contamination, or other sources of contamination. It may be helpful to ask the employee to recreate the process that was used. If the establishment uses standard operating procedures with each recipe, then look beyond the procedures to what may have actually happened on the day of preparation. Breakdowns in the system, such as employee oversight, occur within the most conscientious establishments.

Approved sources of food

All food products used within permitted food service establishments must originate from sources that fall within the regulatory laws and rules of North Carolina. Food items from unapproved sources may be contaminated with foreign substances, such as chemicals, insect and animal debris, and pathogenic microorganisms. Examine product containers, labels, invoices, or bills of sale to assess food products used within the suspected menu item. Retain copies of records of any items found to be from an approved source. See *Records* section for more information on using records for source identification.

In some cases, products originating from an approved source can still be unapproved for use if they have been identified as being part of a Class 1 food product recall. Products identified in a Class 1 recall may have the potential to be contaminated with a harmful pathogen or cause illnesses. The use of recalled products can lead to a foodborne illness outbreak. Such products should be removed from the inventory and either segregated for supplier pick-up or properly discarded. A complete list of food product recalls can be found at http://www.fda.gov/Safety/Recalls/ and http://www.fsis.usda.gov/recalls/.

Food holding temperatures and the use of time as a control

Time and temperature abuse while holding potentially hazardous foods is one of the leading causes of bacterial-related foodborne illness outbreaks. The EHS should speak with the employee(s) responsible for the preparation of the suspected food items regarding the steps used in the process. Use open-ended questions and inspection procedures to determine the following:

- receiving temperatures of raw potentially hazardous ingredients
- the availability of receiving temperature records
- the time period between receiving the raw potentially hazardous ingredients and placement within refrigerated storage
- compliance with cold holding temperature requirement (45°F or below)
- the availability of refrigerated storage temperature records
- the operation status of the refrigeration unit
- refrigerated food storage temperatures at the time of the investigation

- the time period that potentially hazardous ingredients remained in the temperature danger zone during the preparation process (beyond four hours)
- the cooling methods used
- compliance with two-stage cooling parameters (135°F to 70°F within the first two hours, then 70°F to 45°F within a total of six hours)
- the availability of cooling temperature records
- compliance with reheating parameters (165°F within two hours)
- the availability of reheating temperature records
- compliance with hot holding temperature requirement (135°F or above)
- the availability of hot holding temperature records

Final cooking temperatures

Raw meats, poultry and seafood inherently contain pathogenic bacteria that must be killed during the cooking process. If the suspected food item was prepared using raw meat, poultry, or seafood, the EHS should consult with the manager and responsible employee(s) regarding the steps used in the process. Use open-ended questions and inspection procedures to obtain the following:

- the knowledge level of the manager and responsible employee(s) regarding final cooking temperature requirements
- method of final cooking temperature assessment
- the type of thermometer used on the suspected food item (e.g. needle probe for thin product)
- the calibration of the thermometer(s)
- compliance with final cooking temperature requirements
- the availability of final cooking temperature records

In addition to the menu review, ask the owner/operator if raw or undercooked dishes are offered. Sometimes, an establishment will offer specialty items that may not be reflected on the menu.

Cross Contamination

Flow diagrams and employee interviews may also provide insight into preparation practices that lead to cross contamination. For instance, identifying the area where the suspected menu item was prepared and the utensils used during the preparation will provide key information that can be used to gauge the potential for cross contamination with raw products, cleaning chemicals, or other harmful substances. Standard procedures used to prevent cross contamination, such as the use of color-coded cutting boards and sanitizing between tasks, can provide insight into the establishment's amount of operational control. Assess the responsible employee's knowledge of such procedures and the events that occurred during the period leading to the outbreak using open ended questions to obtain the information.

Employee Health

Determine the policies (if any) that are in place regarding employee health status in the workplace. The level of knowledge and practical application of policies that address ill employees will directly impact the potential for employee health-related outbreaks. Establishments that practice a proactive approach that focuses upon open disclosure of illnesses and voluntary exclusion/restriction are better able to prevent employee health-related outbreaks. Proper handwashing and refraining from bare hand contact with ready-to-eat foods are also vitally important.

If the suspected pathogen is from a human source via the fecal-oral route (e.g. viral), such as norovirus or Hepatitis A, it is important to question the manager and employees about the health of the employees during the time prior to the outbreak. Employees with active diarrhea, vomiting, or sore throat with fever have the potential to contaminate food and environmental surfaces with bacteria and viral particles. Pay close attention to the employees present during the investigation and note signs of possible illness, such as jaundice, flushed appearance, and multiple trips to the restroom. Observe hygiene practices of the employees, such as handwashing, general appearance, and the handling of ready-to-eat foods with bare hands.

If an employee is found to be ill, it is necessary to act immediately to prevent further spread of the illness. Determine whether the employee should be restricted from handling food or excluded from the establishment altogether. If restricted or excluded, the employee should not return to work until cleared by a physician or the EHS. The Regional EHS and/or the Food Defense Coordinator may assist in making decisions regarding restriction and exclusion based upon the suspected pathogen and guidance found within 2-201 of the USFDA Food Code.

If the interior of the establishment exhibits visible signs of contamination with vomitus or other bodily fluids, or an incident is known to have occurred, it must be cleaned and disinfected immediately. Disinfection should be conducted according to the guidance given within the "Control measures" section of this document.

If an ill employee has prepared food products, the food must not be served. If samples are not needed for analysis, then ask for the food to be discarded. Complete the voluntary disposal form (Appendix B) if appropriate. If the establishment owner or manager refuses to discard the food, it may be appropriate to consider embargo. Consult with the Regional EHS and/or Food Defense Coordinator for guidance.

Cleaning and sanitizing

How well and how often an establishment cleans and sanitizes work surfaces, equipment, and utensils will reveal a great deal about the potential for cross contamination. The use of improper chemicals on food contact surfaces can lead to chemical contamination of food products. The improper use of approved chemical cleaners and sanitizers may result in food contact surfaces that are not truly being protected from harmful pathogens. Ask the manager and employees about their cleaning and sanitizing schedule. Assess whether the responsible employee is appropriately cleaning and sanitizing between tasks, between raw and ready-to-eat items, etc. Examine the products used to clean and sanitize to ensure that they are approved for use on food contact surfaces. Verify the strength of sanitizing solutions and ensure that employees are knowledgeable on the proper strength and mixing ratio. Examine cleaning records and/or schedules if available.

Records (including HACCP charts/logs)

Records can consist of such documentation as time/temperature logs, pH logs, the retention of invoice or manufacturer data, and lot identification. Records can provide critical insight into the day-to-day activities of the establishment, including practices that lead to "out of control" hazards. Establishments are most likely to maintain charts for such functions as cooking, cooling, reheating, and refrigeration temperatures. Records may also indicate that the operator has exercised the steps necessary to control the pathogen, and thus has demonstrated a "good faith effort" to produce a safe product.

Since record-keeping is not currently required for retail food establishments in North Carolina, a comprehensive supply of records may not be available. However, most establishments will have receipts, invoices, or other buyer documentation. Product invoices reveal the source of sale, manufacturer, lot and product codes, and other information that may be useful in determining the cause of the outbreak. For instance, manufacturer and product codes may indicate that the product has been recalled by the manufacturer or processor due to the potential risk of contamination by a known pathogen or from confirmed illnesses.

If an establishment serves shellfish, records must be retained for 90 days. Shellfish tags reveal whether the product originated from an approved source. Shellfish from unapproved waters may lead to outbreaks from Vibrio Vulnificus, Hepatitis A, and other pathogens that the shellfish obtained from exposure to a contaminated environment.

For any product, a product traceback may be necessary if the source of contamination is revealed to have occurred prior to its preparation in the facility. However, a traceback is only warranted if the contamination is proven not to have occurred at the establishment. Traceback investigations fall under the regulatory jurisdiction of NCDA & CS, USDA, and/or FDA.

Media Communication

Timely and accurate information released to the public via press releases and media outlets can be advantageous to the investigation. Dispelling misinformation can also be the difference bankruptcy and economic survival for the business owner at the center of the outbreak. The Division of Public Health/NCDHHS has prepared a useful guidance document on communication during an outbreak investigation (Appendix D).

Concluding the Investigation

Control Measures

Once the source of the outbreak has been identified, the EHS must ensure that pathogen-specific control measures have been implemented to prevent further spread of the illness. All contaminated areas should be thoroughly cleaned and disinfected. Contaminated food not needed for sampling should be properly discarded or embargoed to prevent future service. Consult with the REHS or Food Defense Coordinator for guidance. Ensure that the manager and responsible employees thoroughly understand the reasons the outbreak may have occurred and that they have initiated preventive measures. The use of risk control plans or other written procedures is an excellent method by which to achieve compliance, accountability and long-term behavioral change.

Documentation

It is prudent to document the field investigation in as much detail as possible on a standardized report form. Appendix D is an example of a report form that may be used. The "Foodborne Illness Outbreak & Field Investigation Report Form" provides sections for the documentation of both the outbreak and field investigation. The first page of the report form is dedicated to general information regarding the outbreak, including demographic information on the establishment and/or event, symptoms, and onset times. The second page of the report form is dedicated to the field investigation. Sections for the listing of suspect food items, preparation dates and times, processes used, and food samples collected are included. Ample room for diagramming the flow of food for each suspected menu item is also available. EHSs should forward a final copy to their REHS and the CD Branch.

After-Action Meeting

An after-action meeting is used to bring together the principles players in the investigation (Environmental Health staff, the EPI Team, the Board of Health, and restaurant staff) for a last review of the procedures, conclusions, control measures, and documentation. The Environmental Health staff can provide valuable input into the practicality of procedures used during the investigation and offer opportunities for improvements. Discussion of the investigation provides a learning opportunity for less experienced staff and can identify future educational needs for food service establishments.

A review of the field investigation with the EPI team can lead to improvements in team procedures that better utilize time and resources for future investigations. Also consider sharing the experience with the local Board of Health. Educating the Board on the efforts invested into the prevention and control of foodborne illnesses elevates the value of foodborne illness investigations and may result in future support in funding and resources.

Finally, meet with the manager and responsible employee(s) of the food service establishment to ensure that proper procedures are being followed. Address any concerns they may have with the implementation of the risk control plan or other procedures initiated earlier. Adjust the plan or procedures as necessary.

Resources

- 2008 NC Division of Public Health Communicable Disease Manual (http://www.epi.state.nc.us/epi/gcdc/manual/toc.html)
- Council to Improve Foodborne Illness Response (CIFOR). *Guidelines for Foodborne Disease Outbreak Response*. 2008
- N.C. State Laboratory of Public Health (http://slph.state.nc.us/)
- N.C. Department of Agriculture & Consumer Services (http://www.ncagr.com/index.htm)
- U.S. Department of Agriculture (http://www.usda.gov/)
- U.S. Food and Drug Administration (http://www.fda.gov/)
- U.S. Centers for Disease Control and Prevention (http://www.cdc.gov/)

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Appendix A

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Appendix B

Sampling Protocol for Foodborne Outbreak Field Investigations

The environmental health specialist (EHS) is an important part of the Epi Team at the local health department. There are times when the EHS will be expected to collect clinical samples from food service workers. For information on this process, please refer to the NC Communicable Disease Control Manual. The manual can be found at http://www.epi.state.nc.us/epi/gcdc/manual/toc.html. The EHS may also help with the development of the questionnaire, obtaining food histories, etc. For further information, consult the Epi Team website which may be accessed at www.epi.state.us/epi/gcdc.html.

If the outbreak is connected with a church supper, reunion, homecoming, etc, then getting food samples and determining who prepared what dish, how it was prepared and how it was stored prior to service may be difficult but well worth the effort. If food from the event is not available for sampling, then food from the same lot may be sampled. If there is no food to be sampled, determining who prepared the food and what steps they took in preparation is an important method of learning where there was a breakdown that could have caused the problem. This information can then be used to educate the manager and food service workers.

Preparing for Sampling

The NC State Laboratory of Public Health (SLPH) will not process food samples unless there are at least two people ill. It is important to remember that your Regional Environmental Health Specialist in the Food Protection Branch can be of great help to you. It is recommended to make them aware of the outbreak as soon as possible.

Before proceeding with the investigation, the EHS must call the SLPH at (919) 733-7367 and alert them to the possibility of incoming food samples. The SLPH can be a great resource for the EHS. Sterile sample containers, mailing packages, etc., are available through the SLPH. If the pathogen is known through clinical samples, the SLPH may be able to offer guidance for collection of specific food items with a higher probability of containing the pathogen than others. The SLPH may not process the samples you submit, but they will be able to assist you in finding out where to send them. More information on the resources available and services provided by SLPH can be found at:
http://slph.ncpublichealth.com/doc/administration/SCOPE_07.pdf

You will also need access to refrigeration for storage of the samples if it is necessary. Therefore, EHSs must create and maintain a list of weekend/after hours contacts to gain access to parts of the building where refrigeration is available.

Epi Kits

An Epi Kit is a collection of all the supplies you will need to do a field investigation. It should be stored in a place that is readily accessible to all personnel who may need to use it. This includes access to the kit on the weekends and in the evening. A checklist should be used prior to using the epi kit to ensure the necessary items are included. It is also a

good idea to do this after the investigation is over to see what needs to be replaced. The following Epi Kit materials list can be used as a checklist. The minimal Epi Kit will contain the following items:

• A large cooler
• Ice packs
• Sterile containers (e.g., WhirlPak bags)
• Sterile sampling utensils
• Non-cotton swabs (resin in the cotton swab, it may affect the growth of microbes) or swab test kits.
• At least 15 sterile bags.
• At least 15 sterile spoons.
• Six sterile specimen collection containers or devices (e.g. WhirlPak bags).
• Non-sterile self-sealing plastic bags (e.g. unused Zip-Lock® bags)
• Properly calibrated temperature-measuring devices.
• Sterilizing equipment.
• One of each item listed under supporting equipment.

Supporting Equipment
• DHHS form #1814 (Copies can be printed off the SLPH Website.)
• Ballpoint pen with waterproof ink
• Fine point waterproof permanent marker such as a Sharpie
• Roll of adhesive or masking tape
• Labels and waterproof tags with eyelet and wire ties
• Tamper-evident seals*
• Matches
• Buffered distilled water or 0.1% peptone water (5 ml in screw capped tubes)
• Test tube rack
• Investigational forms

*Tamper-evident seals and labels can be obtained from laboratory supply companies or by searching for “tamper-evident seals (or labels)” online.

In addition to the items specified above, the following supplies may also be necessary to include in the Epi Kit.

Miscellaneous
• Sterile tubes

Sterilizing & Disinfecting Agents
• Ethyl alcohol 95% solution
• Propane torch
• Sodium or calcium hypochlorite

Refrigerants
• Ice

• Blue ice packs
• Rubber or plastic bags which can be filled with water and frozen
• Heavy-duty plastic bags for ice

Media
• Tubes of transport media
• Pre-enrichment or enrichment broth as appropriate

Substitute Sample Containers
There are times when the EHS is not prepared to take food samples (e.g. out of the office or the Epi Kit may be inaccessible or the supplies depleted). The following is a list of articles that may be used instead of the items typically found in the Epi kit. It is important to call the SLPH to confirm that the sampling technique is adequate.

1. The SLPH has on its website copies of the collection form you can print out and is available at: http://slph.ncpublichealth.com/Forms/DHHS-1814.pdf . You will need DHHS form #1814 (use one form for each sample collected).

2. For sample containers, sterile urine collection cups from a local hospital lab or from the health department make excellent substitutes. In the event these are not available, use an unopened box of plastic storage bags such as Ziploc® gallon baggies.

3. The use of the ladle or spoon in the product for sampling can be substituted for using a sterile collection tool. A sanitized spoon or knife, sanitized in accordance with 15A NCAC 18A .2600, the *Rules Governing the Sanitation of Food Service Establishments*, is also acceptable.

4. On each sample collected label the primary container and outside bag with the product's name to match the form used when sampling.

5. For shipping, if ice packs are not available, pack collected samples in an insulated cooler/ box with bags of ice surrounding the zip locked bags.

Sample Collection
Proper food sample collection and handling techniques are very important to ensure accurate laboratory results. The following general guidelines should be kept in mind when sampling food:

1) Collect representative samples of all foods prior to sampling because non-uniform distribution of microorganisms can occur in any food item.
2) Use proper aseptic technique during sample collection.
3) Clearly label the primary container and seal it with tamper-evident tape.
4) Deliver or ship all samples to the SLPH as quickly as possible. Unless the food being sampled is already frozen, **do not freeze** food samples because certain foodborne bacteria (such as gram-negative bacteria and *Clostridium perfringens)*

die off rapidly during frozen storage. All samples that are not frozen should be stored and shipped at 40ºF. If possible, rapidly lower the temperature of the sample to 40ºF before storing it prior to shipment. The procedure for proper collection and handling of a food sample depends on the physical state and packaging of the food item being sampled. The specific labeling and sampling procedures are described in the following sections.

Specimen Identification

Each sample should be clearly labeled. If sampling food, different batches should be individually identified. Required information for the label is as follows:

- Type of food,
- date and time sampled,
- name of sampler,
- name of county in which the investigation is being conducted, and
- sample source and location taken.

The source of environmental samples should be identified on the label. This should be specific, e.g. swab from prep surface A in main kitchen. Use a separate DHHS form #1814 for each food item. Multiple samples of the same food item may be listed on a single form. When this form is completed, it should be placed in a waterproof bag and placed in the secondary container with the sample. When submitting multiple samples, at least one form should be completed with all requested information. When including forms with samples, make sure the forms are enclosed in separate plastic bags to protect them.

Solid Food or Mixture of Two or More Food Items

This category includes all solid foods, such as turkeys or roasts. In addition, it includes mixtures of two or more food items such as casseroles (e.g. lasagna), meat in gravy, etc.

1) Cut or separate portions of food with a sterile knife or other sterile implement. For a solid uniform food (e.g. roast), whenever possible collect at least four samples of 0.875 ounces (for a total of 3.5 ounces) each from the center and other representative locations throughout the food item.
2) For food mixtures, collect at least four samples of 0.875 oz (25 grams) for a total of 3.5 oz (100 grams) each from the center and other representative locations throughout the food item.
3) Transfer the sample to a sterile primary container.
4) Label the primary container, taking care to identify food from different batches.
5) Seal the primary container with tamper-evident tape.
6) Place the primary container in a secondary self-closing plastic bag such as an unused Ziploc® bag.
7) Pack the secondary container in an insulated container (e.g. a cooler) with cold packs or other refrigerant around the sample containers. Do not freeze the sample or use dry ice in the cooler.
8) Take or ship all samples to the SLPH as quickly as possible.

Liquid Food or Beverages
This category includes all beverages and liquid food such as gravy, soup, sauce, etc.

Stir or thoroughly shake the item to be sampled and collect the sample in one of the following ways:

1) Pour or ladle, with sterile utensil, at least 3.3 oz (100 ml) of the liquid into a sterile primary container; **OR**
   Put a long sterile tube into the liquid and then cover the top with a gloved finger, transferring a 3.3 oz (100 ml) sample to a sterile primary container.
2) Label the primary container.
3) Seal the primary container with tamper-evident tape.
4) Place the primary container in a secondary self-closing plastic bag such as an unused Ziploc® bag.
5) Pack in an insulated container with cold packs or refrigerant around the sample container. Do not freeze or use dry ice.
6) Take or ship all samples to the SLPH as quickly as possible.

Raw/Cooked Meat or Poultry
There are several methods of collecting these samples depending on the type of sample being taken. Use **ONE** of the following methods:

1) Using a sterile utensil or sterile gloved hand, put at least 3.5 ounces (100 grams) of the chicken, poultry part or large cut of meat into a large sterile primary container; **OR**
   For large cuts of meat, a sterile sponge should be wiped over a large area of the meat. Then put the sponge into a primary sterile container; **OR**
   Using a sterile utensil(s), cut four 0.875 oz (25 gram) portions of meat or skin from different areas of the carcass or cut of meat and put it into a sterile container.
2) Label the primary container.
3) Seal the primary container with tamper-evident tape.
4) Place the primary container in a secondary self-closing plastic bag such as an unused Ziploc® bag.
5) Pack in an insulated container with cold packs or refrigerant around the sample container. Do not freeze or use dry ice.
6) Take or ship all samples to the laboratory as quickly as possible.

Frozen Foods
Use one of the following methods:

1) Place unopened packaged frozen food items in a sterile plastic bag (primary container). Call the SLPH for instructions if the sample is greater than one pound; **OR**
   Use sterile utensils to chip unwrapped frozen material and transfer at least 0.875 oz (25 grams) of chips taken from each of four different locations for a total of 3.5 oz (100 grams) of the frozen food item or from each food item (e.g., all foods in a frozen dinner) into a sterile primary container.
2) Label the primary container.

3) Seal the primary container with tamper-evident tape.
4) Place the primary container in a secondary self-closing plastic bag such as an unused Ziploc® bag.
5) Pack in an insulated container with cold packs or refrigerant around the sample container and ship or store on dry ice to maintain frozen state.
6) Take or ship all samples to the SLPH as quickly as possible.

Reduced Oxygen Packaging

One organism of concern when dealing with foods in reduced oxygen packaging (ROP) is *Clostridium botulinum*. This is the bacteria that cause botulism. As this is a rare occurrence in the United States, it takes only one case to be considered an outbreak. Testing for *C. botulinum* must be conducted at the Centers for Disease Control laboratories. This must be set up through the SLPH. The second organism of concern is *Listeria monocytogenes*. The SLPH does not test food samples for *Listeria monocytogenes*. For foods that have been packaged prior to preparation for service in ROP use the following method:

1) Obtain a sample of 3.5 oz (100 grams) of the suspected food from the same ROP.
2) If possible, submit an unopened package that was processed in the same lot as the suspect food.
3) Label the primary containers.
4) Seal the primary containers with tamper-evident tape.
5) Place the primary containers in secondary self-closing plastic bags such as an unused Ziploc® bag.
6) If testing for C. botulinum, package to transport to the CDC Lab as instructed by the SLPH.
7) Pack in an insulated container with cold packs or refrigerant around the sample container. Do not freeze or use dry ice.
8) Take or ship all samples to the SLPH as quickly as possible. If the sample is being tested for C. botulinum, ship to the CDC lab as instructed by the SLPH.

Environmental or Equipment Surface Samples

NOTE: Remember to contact the SLPH or your Regional Environmental Health Specialist before taking any environmental samples.

1) If available, use a commercial swab collection/transport system. Consult with SLPH for appropriate transport media if a commercial swab collection kit is unavailable. (A sterile non-cotton swab moistened with sterile 0.1% peptone water or buffered distilled water may be used.)
2) Swab the food contact surfaces of the equipment or environmental surfaces. Put swab in a sterile container with enrichment broth.
3) Label the primary container (container with swab) with the following:
   - date and time sampled
   - equipment or sample source and location sampled,
   - name of sampler, and

- name of county in which the investigation is being conducted.

4) Seal the primary container with tamper-evident tape
5) Complete a DHHS Form #1814 and place with the primary container in a secondary self-closing plastic bag such as an unused Ziploc® bag.
6) Pack in an insulated container with cold packs or refrigerant around the sample container. Do not freeze or use dry ice.
7) Take or ship all samples to the SLPH as quickly as possible.

Appendix C: PRODUCT DISPOSITION FORM (DENR T6002)

1. Establishment Information.

Establishment Name: ID Number:	Address:	
Responsible Person:		Date:
Title:	Facility Type (if any):	

2. Description of Product(s).

Type of Product(s):	Quantity:	Status: □ Fresh □ Frozen □ Cooked □Raw
		Were photographs taken? □ Yes □ No

3. Description of Product(s) Conditions Requiring Action.

Product(s) was / were suspected of being: (check) □ **Adulterated** □ **Misbranded** as noted by the following conditions:

4. Disposition of Product(s) (check box by action taken).

□ **VOLUNTARY DISPOSAL** I do hereby agree to dispose of the product(s) specifically described in Section 2 of this form. I will dispose of the product(s) in the following manner:

Signature of Responsible Person:	Title:	
Disposal Observed By:	Title:	Date:

□ **NOTICE OF EMBARGO** You will take notice that the items specifically described in Section 2 of this form have been embargoed because the undersigned has probable cause to believe that they have been (check) □ **Adulterated** □ **Misbranded** as evidenced by the specific conditions noted in Section 3 of this form. This action is authorized by N.C.G.S. 130A-21. A petition will be filed in district or superior court requesting an order of condemnation in accordance with N.C.G.S. 106-125. The court will review and act on the request in accordance with that law.

A tag is affixed to the product(s) embargoed. All persons are warned not to remove or dispose of the product(s) until permission for removal is given by the N.C. Department of Environment and Natural Resources, The N.C. Department of Agriculture and Consumer Services, or by the court in accordance with N.C.G.S. 106-125. It shall be unlawful for any person to remove or dispose of the embargoed product(s) without that permission.

Embargo Tag(s) Number(s):

Signature of Official:	Title:	Date:

Appendix D

Message Development for Environmental Field Investigations

Step 1: Verify situation.

Before you do anything else, you must determine the magnitude of the event as quickly as possible. It is important to know what type of event it is, and its scope and severity in order to begin formulating communication about its impact.

Verifying a situation is a collaborative function. It is not one that you, as an individual, do alone. No one person has the knowledge, perspective, nor ability to do this alone; it requires a lot of input from a variety of sources.

Sometimes public health people must act - and communicate - in response to a possible problem without obtaining all the checks and verifications possible. Still, it is best to try to verify from as many places as possible. Other times, you may have to make the decision to act, and yet still communicate when what you have to say is tentative.

Key Checkpoints Verifying the Situation:	
✓	**1. Get the facts.**
✓	**2. Was information obtained from additional sources to put event in perspective?**
✓	**3. Was the information's origin ascertained?**
✓	**4. Was the information source's credibility ascertained?**
✓	**5. Is the information consistent with other sources?**
✓	**6. Is the characterization of the event plausible?**

✓	**7. If necessary, was the information clarified through a SME?**

Step 2: Conduct notifications.

At this point, those individuals who were identified during pre-event planning to be on the front lines are now called to duty. Your role is to be sure that those within and outside of your organization that need to know about the event are briefed and that you have secured easy access channels to communicate with those you need to reach.

Within your organization, there are those individuals that others will contact, and those that you need to contact personally. You always need to be in contact with your superiors and the key decision makers of your organization that have been designated as part of any crisis team.

The emergency risk communication/crisis plan should designate the function for making various contacts. For example: the Federal Government Communication function is the group responsible for contacts outside the agency; the manager/group leader of this function is the person who is responsible for ensuring this happens, but may delegate to another appropriate person(s).

When responding to a foodborne illness outbreak it is also essential to establish contact and share information with the establishment's owner/operator. When the environmental field investigators determine the contributing factors that caused the outbreak, both the responding agencies and the business involved will be able to use that information to control the spread of the illness during the outbreak. The better the relationship is between the responders and the owners/operators, the more successful the efforts to inform the public will be.

Key Checkpoints Conduct notifications:	
✓	1. Have notifications/contacts been made to the appropriate persons in your organization?
✓	2. Has your core team been briefed?
✓	3. Has your senior management group been notified?
✓	4. Has your communication team been briefed?

✓	5. Have the elected officials at all levels been notified?
✓	6. Have the appropriate local and county agencies been notified?
✓	7. Have the appropriate state agencies been notified?
✓	8. Have the appropriate federal agencies been notified?
✓	9. Have other groups (e.g., board members, clients, residents) been notified?

Step 3: Assess level of crisis.

Every emergency, disaster, or crisis evolves in phases and the communication must evolve along with it. The degree and intensity of the crisis and longevity will affect required resources and manpower. It is important to know the level of crisis intensity you are dealing with: the intensity of public reaction and media response.

As a result of completing this assessment, you should be able to answer the following questions:

1. Should the initial communication team hours of operation be 10, 12, 20, or 24 hours a day?
2. Should initial communication team days of operation be 5, 6, or 7 days a week?
3. Will communication staff be required to travel?
4. Will jurisdiction over the information to be released be shared?
5. When do state/federal agencies (e.g., CDC, FBI, SBI, FEMA) come in and what information will they release?

The intensity and longevity of an emergency, disaster, or crisis will affect the requirements for public information and media relations resources, staff, and hours of operation. The table below shows a recommended communication response according to the level of crisis.

Crisis Levels	
Crisis Level	**Crisis Description**
A	Need to **disseminate information rapidly** to the

Highly intense in the initial phase	public and media is critical. **Life and limb will be at risk** if the public is not notified about the risk and public health recommendations.
B **Intense**	Need to **directly provide public health recommendations** to the public and media to save life or limb is not immediate. The public and media, however, believe their health and safety are or could soon be at risk. There is a high and **growing demand for more information**.
C **Moderately intense**	Media frenzy develops. Interest is generated because of the **event novelty versus** a legitimate and widespread or immediate **public health concern**. Interest could die suddenly if a "real" crisis occurred.
D **Minimally intense**	Builds **slowly and may continue for weeks**, depending on the outcome of further investigation. Requires monitoring and reassessments.

Key Checkpoints **Assess level of crisis:**	
✓	1. Has a **crisis level** (A,B,C,D) been identified that corresponds to the event characteristics?
✓	2. Have the **hours of operation** for the communication team been established?
✓	3. Has **jurisdiction over information** been established?
✓	4. Will **federal agencies** release information or will states?

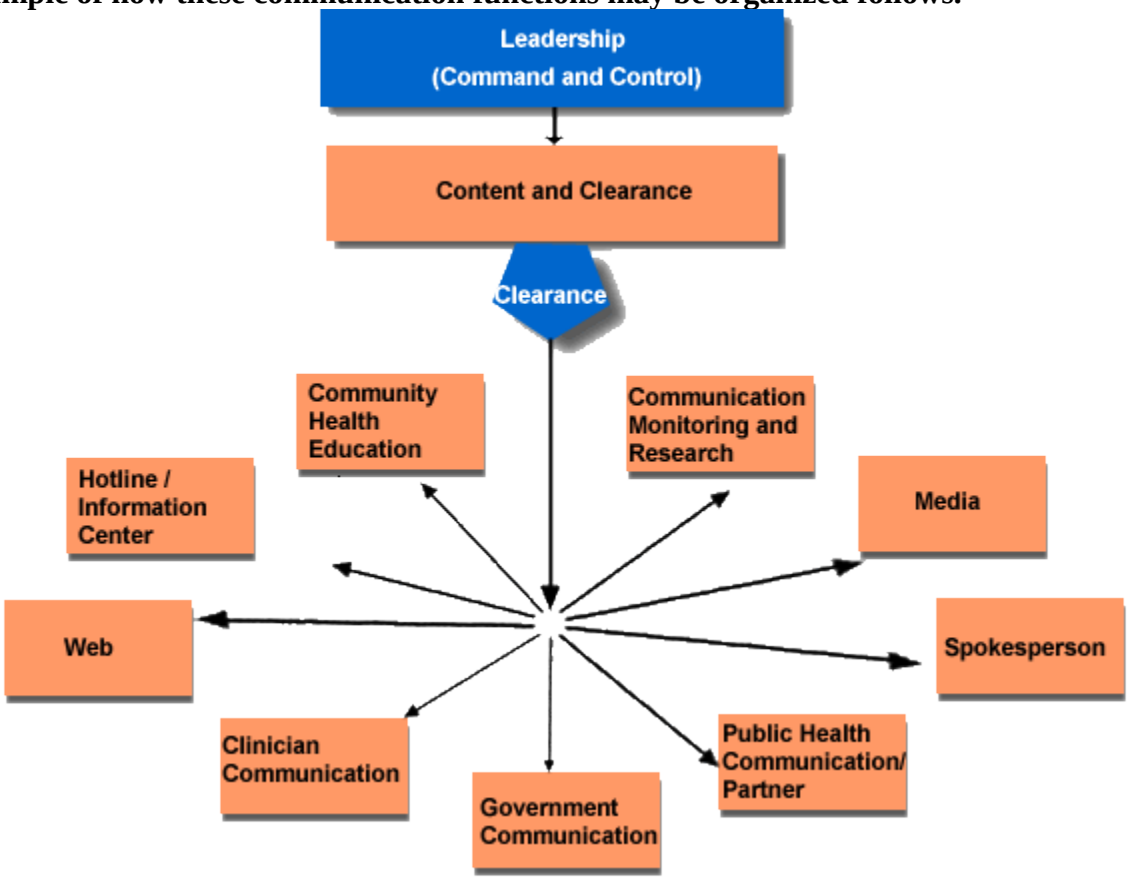
Step 4: Organize and give assignments.

During the event, the core team needs to contain the highest-level individuals from the areas of science, administration, and communication. Together, they will determine the daily requirements.

The functions needed on the communication team include:

- Director (or communication leadership team)
- Content and materials development
- Clearance
- Media relations
- Web management
- Public health communication
- Hotline/information center
- Federal government communication
- Health education
- Clinician communication
- Communications monitoring and research.

An example of how these communication functions may be organized follows.



Step 5: Prepare information and obtain approvals.

The public's perception of government is heightened during a crisis and emergency risk event. You want to calm fears and enhance social unity by recognizing the possible audiences and what their concerns are, how the audience will judge the message and messenger, and in order to craft the best message possible.
Your audience will use three criteria to judge your communication:

- The speed of communication
- The accuracy of information
- How well the message conveys empathy and caring.

Speed of communication: The first message and its timing sets the stage for comparison of all future messages about the event.
Accuracy: The public listens not just for facts, but also for recommendations on what they should be doing next in response to the facts. Get the facts right, repeat them frequently, and speak in one voice.
Empathy and Caring: Both the message and the messenger must show empathy and caring. Audiences are looking at how the message is framed and delivered in addition to its speed and accuracy. The chart below (based on the research of Dr. Vincent T. Covello) defines this critical aspect in more concrete terms.

Your message must...	You can show this by. . .
show empathy and caring	• Acknowledging fear, pain, suffering, and uncertainty first
display competence and expertise	• Explaining organization's role and mission • Demonstrating previous experience • Using third-party recommendations
be honest and open	• Giving people enough information to make decisions that are appropriate to them • Being realistic • Being participatory and inclusive • Reducing jargon
show commitment and dedication	• Being clear about your objectives • Sharing in sacrifices and discomforts • Being present • Being there with everyone until it is resolved

Finished?
How do you know when you have completed this step? If you can answer "yes" to the key checkpoints below, in all likelihood, this step has been completed.

Key Checkpoints Prepare information and obtain approvals:	
✓	1. Have you planned for a **timely** release?
✓	2. Has the **accuracy** of all information been checked?
✓	3. Does the message show **compassion**?
✓	4. Were the specific **audience concerns** addressed?
✓	5. Does the message meet the criteria of good **message development**? (see Message Development Checklist)
✓	6. Have you **anticipated media questions** and developed answers?
✓	7. Has the message been **cleared for release**?

Step 6: Release information to the public.

The more channels you use to disseminate the information, the more likely it is to reach the public. For this reason you should plan to get your information out to all audiences, all venues, at the same time. In a coordinated fashion.

You should:

- Brief media,
- Publish information on your Web site,
- Give information to hotline team,
- Send information to employees,
- Send information to or brief partners, and
- Send information to legislators/special interest groups, even opponents.

It is wise to brief alternative sources so that when the media seeks them out for different viewpoints or perspectives, they will have the benefit of your information and perspective, too.

In this step you will:

- Release information to the public as quickly as possible.
- Give the same information to all media at the same time.
- Release information via an 800 phone number or the Web site, to your partners, to legislators/special interest groups, and to other agencies and organizations.

The outcome of this step is the decision on how often to brief the media, who will speak for you, what methods of dissemination you will use, and how you will do it.

Information Release Tips: Regarding The Media	
1.	Put media information out via blast fax, newswire, and telephone. Let them know if you plan to do a briefing.
2.	Direct mediaarriving to your site to wait for briefings in the area you have arranged as your media center.
3.	Set up a media command post or a place where media can consolidate information (such as a JIC) to deliver to their viewers and listeners.
4.	Have areas for television media to do their "stand ups." If at your site, it will usually be where the building displays your organization's logo.
5.	Let the media know when updates will be given, and keep your word. If an update is promised in 45 minutes, give one, even if there is nothing new to say. Simply state that due to the rush of the emergency, new verifiable information has been unattainable. Let them know another update will follow in (hours/minutes).
6.	If the emergency or accident just happened, media are camped out at your door, and extra time is needed, start by saying, "An incident has just occurred and I don't have all the facts at this time. Please give me (minutes/hours) to collect whatever information I can."
7.	Don't be afraid to read from a prepared script to avoid getting off-message or ad-libbing. Distribute a copy of the official statement as well as a fact sheet on the situation and the organization.

Information Release Tips: Regarding Your Staff	
1.	Have staff assigned to answer calls from media ready to go before you release the information.
2.	Make certain all employees are informed so everyone speaks the same language. Keep them constantly updated. Even if you've told people not to speak to the media, everyone knows someone who knows someone. You want the word on the street to be same word inside the organization. Keep communication consistent by sharing information with everyone on staff.
3.	If the event is really big and has national media involved as well, you may want to segment staff to handle calls from broadcast or print media.
4.	Respond quickly to all press calls even if just to say you will get back to them as soon as additional information is available.
5.	Back brief those who come in to relieve the team as the shift changes on all communication efforts. Repeat as often as needed.

Finished?
How do you know when you have completed this step? If you can answer "yes" to the key checkpoints below, in all likelihood, this step has been completed.

Key Checkpoints Release information to public:	
✓	1. Have you **released information** as quickly as possible?
✓	2. Was the same information given to **all media at the same time**?
✓	3. Was the information **released to other groups** as planned? (e.g., partners, legislators, special interest groups)
✓	4. Was the information **released through other channels** as planned? (e.g., Web, 800 number, mailings, meetings)

Step 7: Monitor, Maintain, and Make Adjustments

After 48 hours into the crisis, the public and media will begin to focus harder on the question of why this event happened.

At the same time, coverage of the disaster starts to become more mixed – good news versus bad news. Hero stories start to emerge while “what ifs” and negative images from the event day start to compete for the public’s imagination. This will also be fueled by what the medias' focus.

The media will begin more in-depth analysis of what happened and why. Media competition may intensify to keep the story going with new angles, and a few bad apples may emerge and try to defy the ground rules your crisis team has in place.

At this stage, it is important to stick to your plan, adjust your procedures as you need to, and get information out as you have it. Pay attention to local media. Once the dust starts to settle, you will be left with local media. If you ignore your local media they will be less receptive in the future.

Use the following questions to refresh your communication process continually. If you answer "yes" to any of the following, you may need to make adjustments or take additional action.

Key Checkpoints Monitor, maintain, and make adjustments:	
✓	1. Are investigators saying anything about the event potentially getting worse?
✓	2. Are event changes resulting in more intense public/media interest?
✓	3. Have rumors or points of conflict been identified? How should the organization respond to these issues?
✓	4. Is it an appropriate time for some of the issues being addressed by your organization to be handled by other government entities?
✓	5. Are the teams operating with more intensity? Are there ways to improve efficiency? Do we need to make reassignments?
✓	6. Are additional resources needed?
✓	7. Should the organization continue holding daily/weekly SME briefings?
✓	8. Should detailed persons be extended and others tapped, or returned to normal duties?
✓	9. Are supplemental funds needed to meet public/media demand for information?
✓	10. Is your organization learning anything from the public inquiry and media that could be useful to investigators and policy managers?

Appendix E: **Foodborne Illness Outbreak & Field Investigation Report Form**

Foodborne Illness Outbreak Investigation Report

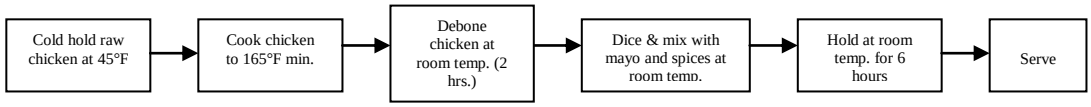
<table>
<tr><td colspan="2">Name of Establishment:</td><td>Date:</td></tr>
<tr><td colspan="2">Address:</td><td>Report By:</td></tr>
<tr><td colspan="2">Telephone:</td><td>Contact:</td></tr>
<tr><td>Date of Event:</td><td>Location:</td><td>Number of Attendees:</td></tr>
<tr><td rowspan="2">Symptoms:
☐ Nausea
☐ Vomiting
☐ Cramps
☐ Jaundice
☐ Diarrhea
☐ Bloody Diarrhea
☐ Fever
☐ Headache
☐ Other _____</td><td>Onset:</td><td>Duration:</td></tr>
<tr><td colspan="2">Additional Information:</td></tr>
<tr><td colspan="3">Documentation:</td></tr>
</table>

Environmental Field Investigation Report

Investigation By:			**Date:**
Food Samples Collected: ☐ Yes ☐ No	**Food Item(s)**	**Time Collected**	**Quantity**

Suspected Food Item(s)	**Preparation Date**	**Preparation Time**	**Processes Used:** Cook (C); Hot Hold (HH); Cool (CL); cold hold (CH); Reheat (R)

Complete a flow diagram for the process used for each suspected food item. Include all preparation steps, temperature, and time for each step (if appropriate). Include all records (e.g. temperature logs, cooling logs).
Example: Suspected Food-Chicken Salad



Suspected Food:
Records Collected:
☐ Yes
☐ No

Suspected Food:
Records Collected:
☐ Yes
☐ No

Suspected Food:
Records Collected:
☐ Yes
☐ No

Suspected Food:
Records Collected:
☐ Yes
☐ No

Suspected Food:
Records Collected:
☐ Yes
☐ No

Additional Factors:

☐ Employee health ☐ Bare hand contact ☐ Poor employee hygiene	☐ Cross contamination ☐ Contaminated equipment ☐ Unapproved source	☐ Specialized food processes ☐ Chemical contamination ☐ Other _____