# Investigation of a Foodborne Outbreak

This form is used to report foodborne disease outbreak investigations to Public Health. It is also used to report *Salmonella* Enteritidis and *E. coli* O157:H7 outbreak investigations involving any mode of transmission. A foodborne outbreak is defined as the occurrence of two or more cases of a similar illness resulting from the ingestion of a common food.

## Part 1: Basic Information

### 1. Report Type

- **A.** Please check if this a final report
- **B.** Please check if data does not support a FOODBORNE outbreak

### 2. Number of Cases

- Lab-confirmed cases ___3___ (A)
  - Including ___0___ secondary cases
- Probable cases ___5___ (B)
  - Including ___0___ secondary cases
- Estimated total ill _____(If greater than sum A + B)___

### 3. Dates

- Please enter as many dates as possible
- Date first case became ill __5__/__1__/__2006__
  - Month   Day   Year
- Date last case became ill __/__/__ /__2006__
  - Month   Day   Year
- Date first known exposure __4__/__30__/__2006__
  - Month   Day   Year
- Date last known exposure __/__/__/__ /__2006__
  - Month   Day   Year

### 4. Location of Exposure

- Reporting state _________________________
- If multiple states involved:
  - ☐ Exposure occurred in multiple states
  - ☐ Exposure occurred in single state, but cases resided in multiple states
  - ____________________________
  - ____________________________
  - ____________________________
- Reporting city __Smallville__
- If multiple counties involved:
  - ☐ Exposure occurred in multiple counties
  - ☐ Exposure occurred in one county, but cases resided in multiple counties
  - ____________________________
  - ____________________________
  - ____________________________

### 5. Approximate Percentage of Cases in Each Age Group

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1 year</td>
<td>___%</td>
</tr>
<tr>
<td>1-4 yrs</td>
<td>___%</td>
</tr>
<tr>
<td>5-19 yrs</td>
<td>___%</td>
</tr>
<tr>
<td>≥50 yrs</td>
<td>___%</td>
</tr>
<tr>
<td>Unknown</td>
<td>___%</td>
</tr>
</tbody>
</table>

### 6. Sex

- Male ___30___%
- Female ___70___%

### 7. Investigation Methods

- (Check all that apply)
  - ☐ Interviews of only cases
  - ☐ Case-control study
  - ☐ Food preparation review
  - ☐ Cohort study
  - ☐ Investigation at factory or production plant
  - ☐ Food product traceback
  - ☐ Environment / food sample cultures

### 8. Implicated Food(s):

#### (Please provide known information)

<table>
<thead>
<tr>
<th>Name of Food</th>
<th>Main Ingredient(s)</th>
<th>Contaminated Ingredient(s)</th>
<th>Reason(s) Suspected</th>
<th>Method of Preparation</th>
</tr>
</thead>
<tbody>
<tr>
<td>e.g., Lasagna</td>
<td>e.g., Pasta, sauce, eggs, beef</td>
<td>e.g., Eggs</td>
<td>e.g., 4</td>
<td>e.g., M1</td>
</tr>
<tr>
<td>1) Cole Slaw</td>
<td>Slaw mix, dressing</td>
<td>dressing</td>
<td>5</td>
<td>M7</td>
</tr>
<tr>
<td>2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- ☐ Food vehicle undetermined

**Reason Suspected**

- 1 - Statistical evidence from epidemiological investigation
- 2 - Laboratory evidence (e.g., identification of agent in food)
- 3 - Compelling supportive information
- 4 - Other data (e.g., same phage type found on farm that supplied eggs)
- 5 - Specific evidence lacking but prior experience makes it likely source
9. Etiology: (Name the bacteria, virus, parasite, or toxin. If available, include the serotype and other characteristics such as phage type, virulence factors, and metabolic profile)

<table>
<thead>
<tr>
<th>Detected In Etiology</th>
<th>Serotype (e.g., phage type)</th>
<th>Other Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Shigella</td>
<td>X Confirmed</td>
<td>1</td>
</tr>
<tr>
<td>2)</td>
<td>□ Confirmed</td>
<td></td>
</tr>
<tr>
<td>3)</td>
<td>□ Confirmed</td>
<td></td>
</tr>
</tbody>
</table>

□ Etiology undetermined

Detected In: (List above all that apply)
- 1 - Patient Specimen(s)
- 2 - Food Specimen(s)
- 3 - Environment specimen(s)
- 4 - Food Worker specimen(s)

10. Isolate Subtype

<table>
<thead>
<tr>
<th>State Lab ID</th>
<th>PFGE (PulseNet designation)</th>
<th>PFGE (PulseNet designation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11. Contributing Factors: (Check all that apply. See attached codes and explanations)

□ Contributing factors unknown

Contamination Factor
- □C1 □C2 □C3 □C4 □C5 □C6 □C7 □C8 □C9 □C10 □C11 □C12 □C13 □C14 □C15 (describe in Comments) □ N/A

Proliferation/Amplification Factor (bacterial outbreaks only)
- □P1 □P2 □P3 □P4 □P5 □P6 □P7 □P8 □P9 □P10 □P11 □P12 (describe in Comments) □ N/A

Survival Factor (microbial outbreaks only)
- □S1 □S2 □S3 □S4 □S5 (describe in Comments) □ N/A

□ Was food-worker implicated as the source of contamination? □ Yes x No

If yes, please check only one of following
- □ laboratory and epidemiologic evidence
- □ epidemiologic evidence (w/o lab confirmation)
- □ lab evidence (w/o epidemiologic evidence)
- □ prior experience makes this the likely source (please explain in Comments)
### Part 2: Additional Information

#### 12. Symptoms, Signs and Outcomes

<table>
<thead>
<tr>
<th>Feature</th>
<th>Cases with outcome/feature</th>
<th>Total cases for whom you have information available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthcare provider visit</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Hospitalization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Death</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vomiting</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Bloody stools</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Fever</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Abdominal cramps</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HUS or TTP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asymptomatic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
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<tr>
<td>*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 13. Incubation Period

- **(Circle appropriate units)**
  - Shortest: 13 H (Hours, Days)
  - Longest: 36 H (Hours, Days)
  - Median: 18H (Hours, Days)
  - □ Unknown

#### 14. Duration of Illness

- **(Among those who recovered)**
  - (Circle appropriate units)
  - Shortest: __________ (Hours, Days)
  - Longest: __________ (Hours, Days)
  - Median: __________ (Hours, Days)
  - x Unknown

#### 15. If Cohort Investigation Conducted:

- **Attack rate** = \( \frac{\text{Exposed and ill}}{\text{Total number exposed for whom you have illness information}} \) x 100 = _________%

*The attack rate is applied to persons in a cohort who were exposed to the implicated vehicle. The numerator is the number of persons who were exposed and became ill; the denominator is the total number of persons exposed to the implicated vehicle. If the vehicle is unknown, then the attack rate should not be calculated.*

#### 16. Location Where Food Was Prepared

- **(Check all that apply)**
  - □ Restaurant or deli
  - □ Nursing home
  - □ Day care center
  - □ Prison, jail
  - □ School
  - □ Private home
  - □ Office setting
  - □ Workplace, not cafeteria
  - □ Workplace cafeteria
  - □ Wedding reception
  - □ X Banquet Facility
  - □ Church, temple, etc.
  - □ Picnic
  - □ Camp
  - □ Caterer
  - □ Contaminated food imported into U.S.
  - □ Grocery Store
  - □ Hospital
  - □ Fair, festival, other temporary/ mobile services
  - □ Commercial product, served without further preparation
  - □ Unknown or undetermined
  - □ Other (Describe) ________________________________

#### 17. Location of Exposure or Where Food Was Eaten

- **(Check all that apply)**
  - □ Restaurant or deli
  - □ Nursing Home
  - □ Day care center
  - □ Prison, jail
  - □ School
  - □ Private home
  - □ Office Setting
  - □ Workplace, not cafeteria
  - □ Workplace cafeteria
  - □ Wedding Reception
  - □ X Banquet Facility
  - □ Church, temple, etc.
  - □ Picnic
  - □ Camp
  - □ Grocery Store
  - □ Hospital
  - □ Fair, festival, temporary/ mobile service
  - □ Unknown or undetermined
  - □ Other (Describe) ________________________________

#### 18. Trace back

- □ Please check if trace back conducted

Source to which trace back led:

<table>
<thead>
<tr>
<th>Source</th>
<th>Location of Source</th>
<th>Country</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>(e.g., Chicken farm, Tomato processing plant)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Part 3: School Questions

1. **Did the outbreak involve a single or multiple schools?**
   - [ ] Single
   - [ ] Multiple (If yes, number of schools ___)

2. **School characteristics** (for all involved students in all involved schools)
   
   a. **Total approximate enrollment**
      - (number of students)
      - [ ] Unknown or Undetermined

   b. Grade level(s) (Please check all grades affected)
      - [ ] Preschool
      - [ ] Grade School (grades K-12)
         - Please check all grades affected: □ K □ 1st □ 2nd □ 3rd □ 4th □ 5th □ 6th □ 7th □ 8th □ 9th □ 10th □ 11th □12th
      - [ ] College/University/Technical School
      - [ ] Unknown or Undetermined

   c. Primary funding of involved school(s)
      - [ ] Public
      - [ ] Private
      - [ ] Unknown or Undetermined

3. **Describe the preparation of the implicated item:**
   - [ ] Heat and serve (item mostly prepared or cooked off-site, reheated on-site)
     - [ ] Served a-la-carte
     - [ ] Serve only (preheated or served cold)
     - [ ] Cooked on site using primary ingredients
     - [ ] Provided by a food service management company
     - [ ] Provided by a fast food vendor
     - [ ] Provided by a pre-plate company
     - [ ] Part of a club/ fundraising event
     - [ ] Made in the classroom
     - [ ] Brought by a student/teacher/parent
     - [ ] Other __________________________
     - [ ] Unknown or Undetermined

4. **How many times has the state, county or local health department inspected this school cafeteria or kitchen in the 12 months before the outbreak?**
   - [ ] Once
   - [ ] Twice
   - [ ] More than two times
   - [ ] Not inspected
   - [ ] Unknown or Undetermined

5. **Does the school have a HACCP plan in place for the school feeding program?**
   - [ ] Yes
   - [ ] No
   - [ ] Unknown or Undetermined

*If there are multiple schools involved, please answer according to the most
### Part 4: Ground Beef

1. What percentage of ill persons (for whom information is available) ate ground beef raw or undercooked? _____%

2. Was ground beef case ready? (Ground beef that comes from a manufacturer packaged for sale and not altered or repackaged by the retailer)
   - □ Yes
   - □ No
   - □ Unknown or Undetermined

3. Was the beef ground or reground by the retailer?
   - □ Yes
   - □ No
   - □ Unknown or Undetermined

   If yes, was anything added to the beef during grinding (e.g., shop trim or any product to alter the fat content)____________________________________________________________________________

### Part 5: Mode of Transmission

(Enterohemorrhagic *E. coli* or *Salmonella* Enteritidis only)

1. **Mode of Transmission** (for greater than 50% of cases)
   - Select one:
     - x Food
     - □ Person to person
     - □ Swimming or recreational water
     - □ Drinking water
     - □ Contact with animals or their environment
     - □ Unknown or Undetermined

### Part 6: Additional Egg Questions

1. **Were Eggs**: (Check all that apply)
   - □ in-shell, un-pasteurized?
   - □ in-shell, pasteurized?
   - □ liquid or dry egg product?
   - □ stored with inadequate refrigeration during or after sale?
   - □ consumed raw?
   - □ consumed undercooked?
   - □ pooled?

2. If eggs traced back to farm, was *Salmonella* Enteritidis found on the farm?
   - □ Yes
   - □ No
   - □ Unknown or Undetermined

Comment:_____________________________________________________________________________________________
Contamination Factors:\(^1\)
C1 - Toxic substance part of tissue (e.g., ciguatera)
C2 - Poisonous substance intentionally added (e.g., cyanide or phenolphthalein added to cause illness)
C3 - Poisonous or physical substance accidentally/incidentally added (e.g., sanitizer or cleaning compound)
C4 - Addition of excessive quantities of ingredients that are toxic under these situations (e.g., niacin poisoning in bread)
C5 - Toxic container or pipelines (e.g., galvanized containers with acid food, copper pipe with carbonated beverages)
C6 - Raw product/ingredient contaminated by pathogens from animal or environment (e.g., *Salmonella enteriditis* in egg, *Norwalk* in shellfish, *E. coli* in sprouts)
C7 - Ingestion of contaminated raw products (e.g., raw shellfish, produce, eggs)
C8 - Obtaining foods from polluted sources (e.g., shellfish)
C9 - Cross-contamination from raw ingredient of animal origin (e.g., raw poultry on the cutting board)
C10 - Bare-handed contact by handler/worker/preparer (e.g., with ready-to-eat food)
C11 - Glove-handed contact by handler/worker/preparer (e.g., with ready-to-eat food)
C12 - Handling by an infected person or carrier of pathogen (e.g., *Staphylococcus*, *Salmonella*, *Norwalk* agent)
C13 - Inadequate cleaning of processing/preparation equipment/utensils leads to contamination of vehicle (e.g., cutting boards)
C14 - Storage in contaminated environment leads to contamination of vehicle (e.g., store room, refrigerator)
C15 - Other source of contamination (please describe in Comments)

Proliferation/Amplification Factors:\(^1\)
P1 - Allowing foods to remain at room or warm outdoor temperature for several hours (e.g., during preparation or holding for service)
P2 - Slow cooling (e.g., deep containers or large roasts)
P3 - Inadequate cold-holding temperatures (e.g., refrigerator inadequate/not working, iced holding inadequate)
P4 - Preparing foods a half day or more before serving (e.g., banquet preparation a day in advance)
P5 - Prolonged cold storage for several weeks (e.g., permits slow growth of psychrophilic pathogens)
P6 - Insufficient time and/or temperature during hot holding (e.g., malfunctioning equipment, too large a mass of food)
P7 - Insufficient acidification (e.g., home canned foods)
P8 - Insufficiently low water activity (e.g., smoked/salted fish)
P9 - Inadequate thawing of frozen products (e.g., room thawing)
P10 - Anaerobic packaging/Modified atmosphere (e.g., vacuum-packed fish, salad in gas-flushed bag)
P11 - Inadequate fermentation (e.g., processed meat, cheese)
P12 - Other situations that promote or allow microbial growth or toxic production (please describe in Comments)

Survival Factors:\(^1\)
S1 - Insufficient time and/or temperature during initial cooking/heat processing (e.g., roasted meats/poultry, canned foods, pasteurization)
S2 - Insufficient time and/or temperature during reheating (e.g., sauces, roasts)
S3 - Inadequate acidification (e.g., mayonnaise, tomatoes canned)
S4 - Insufficient thawing, followed by insufficient cooking (e.g., frozen turkey)
S5 - Other process failures that permit the agent to survive (please describe in Comments)

Method of Preparation:\(^2\)
M1 - Foods eaten raw or lightly cooked (e.g., hard shell clams, sunny side up eggs)
M2 - Solid masses of potentially hazardous foods (e.g., casseroles, lasagna, stuffing)
M3 - Multiple foods (e.g., smorgasbord, buffet)
M4 - Cook/serve foods (e.g., steak, fish fillet)
M5 - Natural toxicant (e.g., poisonous mushrooms, paralytic shellfish poisoning)
M6 - Roasted meat/poultry (e.g., roast beef, roast turkey)
M7 - Salads prepared with one or more cooked ingredients (e.g., macaroni, potato, tuna)
M8 - Liquid or semi-solid mixtures of potentially hazardous foods (e.g., gravy, chili, sauce)
M9 - Chemical contamination (e.g., heavy metal, pesticide)
M10 - Baked goods (e.g., pies, éclairs)
M11 - Commercially processed foods (e.g., canned fruits and vegetables, ice cream)
M12 - Sandwiches (e.g., hot dog, hamburger, Monte Cristo)
M13 - Beverages (e.g., carbonated and non-carbonated, milk)
M14 - Salads with raw ingredients (e.g., green salad, fruit salad)
M15 - Other, does not fit into above categories (please describe in Comments)
M16 - Unknown, vehicle was not identified