National Environmental Assessment Reporting System (NEARS)

Identifying Environmental Factors Contributing to Foodborne Illness Outbreaks
CDC’s National Center for Environmental Health Objectives

- Improve identification of environmental factors contributing to foodborne illness outbreaks
- Support of environmental assessments at the state and local level
- Collection and analysis of environmental assessment data at the national level
Environmental Factors Contributing to Outbreaks

Environmental Factors include:

- Contributing Factors - The "How"
- Environmental Antecedents - The "Why"
# Environmental Factors Contributing to Outbreaks

<table>
<thead>
<tr>
<th>Contributing Factors</th>
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<tbody>
<tr>
<td><strong>Contamination</strong></td>
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<tr>
<td>- Cross-contamination of ingredients</td>
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<tr>
<td>- Contact by an infectious/ill worker</td>
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<tr>
<td><strong>Proliferation</strong></td>
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<tr>
<td>- Improper cold holding due to malfunctioning equipment</td>
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<tr>
<td>- Improper cold holding due to improper procedure</td>
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<tr>
<td><strong>Survival</strong></td>
</tr>
<tr>
<td>- Insufficient time/temperature during reheating</td>
</tr>
<tr>
<td>- Insufficient time/temperature during freezing</td>
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## Environmental Antecedents

- People
- Processes
- Equipment
- Economics
- Food
Environmental Factors Contributing to Outbreaks

Environmental Antecedents
• Worker in a hurry
• Worker had not been trained on avoiding cross contamination

Contributing Factor
• Cross contamination
  - Worker used same utensils on raw ground beef and salads

Outbreak
• *E. coli* outbreak caused by salads eaten at Restaurant A
Outbreak Environmental Assessments

Describe how the environment contributes to the introduction and transmission of illness agents

Are conducted by environmental health program staff

Involve a thorough review of the processes and practices used with suspected food items

Are guided by known information about the outbreak (e.g., agent)

May include food flows, staff interviews, observations of food preparation, sampling

Generate recommendations for intervention
The Need to Improve Reporting of Environmental Assessment Data

- Environmental assessment data are key to:
  - Understand how and why outbreaks occur
  - Develop appropriate guidelines, policies and practices
  - Prevent future outbreaks

- Engage food safety officials responsible for conducting environmental assessments

- Limited environmental assessment data reported at a national level
Environmental Assessment Training

Thinking back about 5 days ago, what tasks did you perform?

Question Category
1. Tasks Performed by this FW
2. Establishment Policies
3. Food Safety Training
4. Personal Health
5. Personal Handwashing/Hygiene
6. Personal Use of Gloves

Average question effectiveness
5 / 125 points

Score
100%

TIME REMAINING
9:20

END INTERVIEW

Left Beef Stew
Take temperature
Get depth of stew
Get additional info

58°F
Support of Environmental Assessments at the State and Local level

Development and launch of environmental assessment training

- Designed to improve environmental health programs’ competency in conducting environmental assessments during outbreaks
- Over 5,000 people from federal, state, local government agencies have registered for the training
- Free, web-based, interactive, self-paced
- CEUs are available
- Participants are showing a 25 percentage point increase in pre to post test scores
Environmental Assessment Training

Module 1: Foundation Skills
  ▪ Lesson 1: Your Assignment
  ▪ Lesson 2: Overview of Foodborne Illness Outbreak Environmental Assessments
  ▪ Lesson 3: Effective Interviewing Skills
  ▪ Lesson 4: Observation and Records Review
  ▪ Lesson 5: Environmental Sampling
  ▪ Lesson 6: Critical Thinking Skills
  ▪ Lesson 7: Organizing Assessment Information
  ▪ Lesson 8: Control Strategies and Conducting Actions
Environmental Assessment Training

Module 2: Skill Building

- Lesson 1: Guided walkthrough of an environmental assessment for a fictitious *C. perfringens* outbreak linked to a private school cafeteria
- Lesson 2: Virtual environmental assessment of a fictitious *Salmonella Enteriditis* and *Salmonella Pomona* outbreak linked to a local catering establishment
- Lesson 3: Guided walkthrough of an environmental assessment for a fictitious *E. coli O157:H7* outbreak linked to a grower and distributor of organic herbs
- Lesson 4: Virtual environmental assessment of a fictitious *Listeria* outbreak in a cheese plant

Module 3: Food Defense

- Lesson 1: Overview of food defense concepts
- Lesson 2: Overview of food defense planning

Anticipated Launch Date: January 2018
Environmental Assessment Training

http://ow.ly/HnnxJ
Collection and Analysis of Environmental Assessment Data at the National Level

Development and launch of National Environmental Assessment Reporting System (NEARS)

- Companion surveillance system to the National Outbreak Reporting System (NORS)
- Repository for state and local programs to report data collected from their environmental assessments
- 27 state and local agencies are currently registered to begin reporting data into NEARS
Collection and Analysis of Environmental Assessment Data at the National Level

Programs report data into NEARS on:

**Part 1: Outbreak Description**
- Did the exposure(s) take place in a single or multiple locations?
- Was this outbreak reported to a national surveillance system?

**Part 2: Establishment Description**
- What is the establishment’s source of potable water?
- Do customers have direct access to unpackaged food such as a buffet line or salad bar?

**Part 3: Manager Interview**
- Is this an independent or chain establishment?
- Does this establishment have a policy or procedure that requires food workers to tell a manager when they are ill?

**Part 4: Establishment Observation**
- Are hand sinks available in the employee restroom(s)?
- Were the temperatures of all foods measured in cold holding at 41°F or below?
Programs report data into NEARS on:

**Part 5:** Suspected/Confirmed food
- Was a specific ingredient or multi-ingredient food suspected or confirmed in this outbreak?
- Is the ingredient an animal product, and if so, what kind?

**Part 6:** Sampling
- Were any samples taken?
- If environmental, where was the sample taken from?

**Part 7:** Contributing Factors
- Were any contributing factors identified in this outbreak?
- During the outbreak investigation, what activities were used to try to identify the contributing factors?
Short-term Benefits of NEARS Participation

- Annual report from CDC summarizing your NEARS data
  *Complements FDA Standard 5 Requirements*
- Collaboration/communication with other states/localities participating in NEARS
- Potential scientific publication opportunities
- Ability to document and track foodborne outbreak response data
CDC's National Environmental Assessment Reporting System (NEARS)

In 2015, a total of 114 outbreaks were reported to NEARS. This summary provides information on characteristics of those outbreaks and the establishments where the outbreaks occurred.

The data included in this summary were collected by NEARS participants in California; Connecticut; Davis County, Utah; Fairfax County, Virginia; Harris County, Texas; Minnesota; New York City; New York State; Rhode Island, Tennessee; and Wisconsin.

2015 Summary Report

**Average # of Visits to Complete an Environmental Assessment**

- 2 Visits

**Contributing Factors**

- C10
- C11
- C12

**88% outbreaks reported to NORS**
Data to improve foodborne outbreak response

What investigation characteristics lead to identification of environmental factors?
Do worker interviews make contributing factor identification more likely?

Data to improve retail food safety

What environmental antecedents are linked with specific contributing factors?
Is lack of ill worker policies linked with workers working while ill?
Summary

Support of environmental assessments at the state and local level

Collection and analysis of environmental assessment data at the national level

Improved identification of environmental factors contributing to foodborne illness outbreaks

Improved prevention and intervention

Improved food safety; fewer outbreaks
Begin Reporting Environmental Assessment
Data to NEARS

- Commit to conducting environmental assessments

- Complete NEARS Registration Form(s)
  - State Notice and Acknowledgment of Local Participation
  - Notice of Participation Form
    - https://www.cdc.gov/nceh/ehs/nears/registration.htm

- Complete CDC’s free online environmental assessment training