

Guidance for Conducting Foodborne Outbreak Environmental Assessments

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ENVIRONMENTAL ASSESSMENT

Foodborne Outbreak Investigation Components

- **Epidemiological**

- Determine the who, what, when, where of an outbreak

- **Laboratory**

- Identify or confirm the agent causing the outbreak

- **Environmental**

- Assess how and why the agent got into the environment and spread
- Recommend steps to stop outbreaks and prevent future ones

Environmental Assessments as Part of Foodborne Outbreak Investigations

- **Environmental Assessment**

- Describes how the environment contributes to the introduction and/or transmission of agents that cause illness

- **Objectives of an environmental assessment**

- Identify contributing factors
- Identify environmental antecedents
- Generate recommendations for informed interventions

Environmental Assessments as Part of Foodborne Outbreak Investigations

Contributing Factors

Factors that caused the outbreak

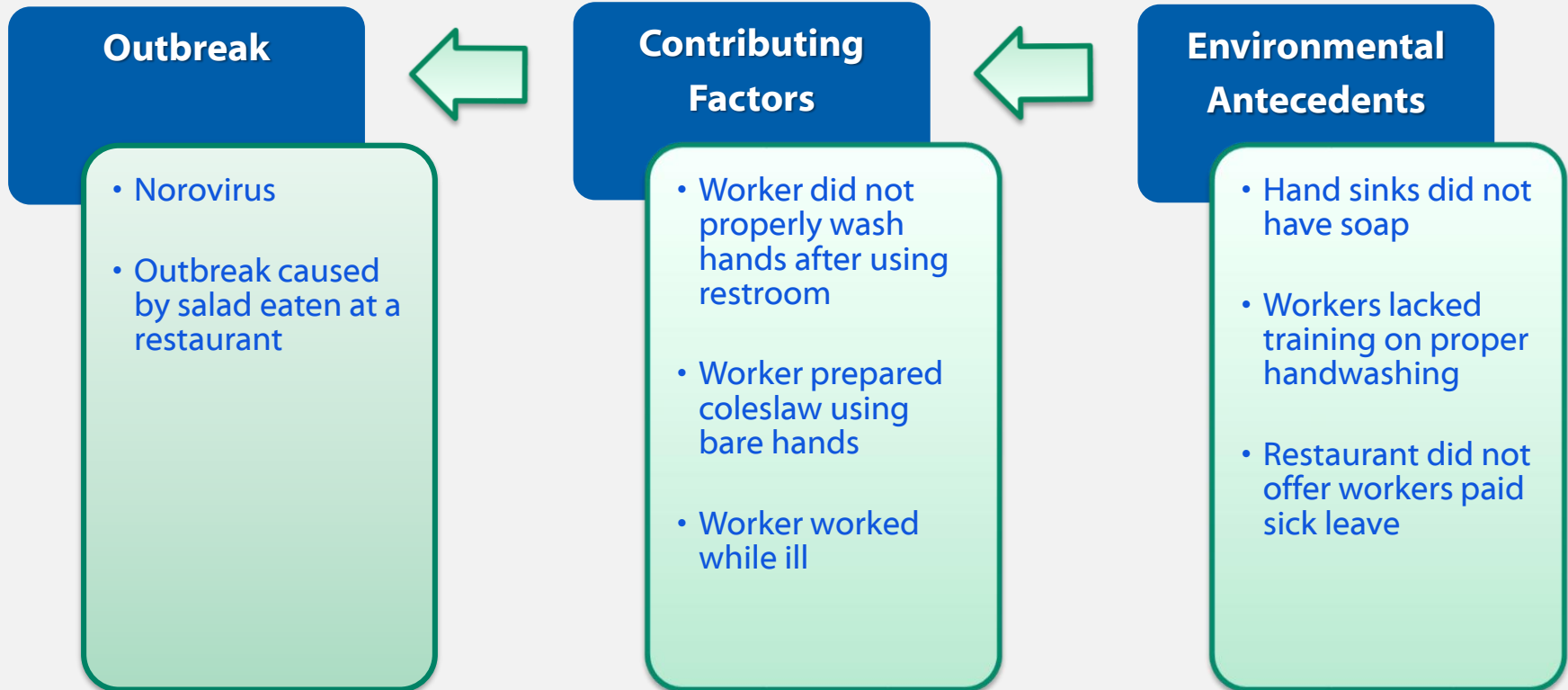
How the outbreak occurred

Environmental Antecedents

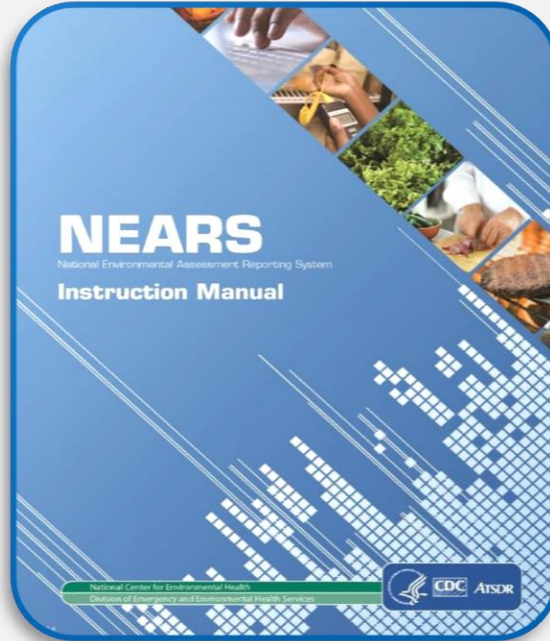
Factors that led to the contributing factors

Why the outbreak occurred

Environmental Assessments as Part of Foodborne Outbreak Investigations



National Environmental Assessment Reporting System (NEARS)



Collects outbreak data on contributing factors and their environmental antecedents.

NEARS Data Reporting Instrument

Part I: Outbreak Description



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

Part II: 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 III: 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 IV: 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?

NEARS Data Reporting Instrument

Part V: 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 VI: Sampling



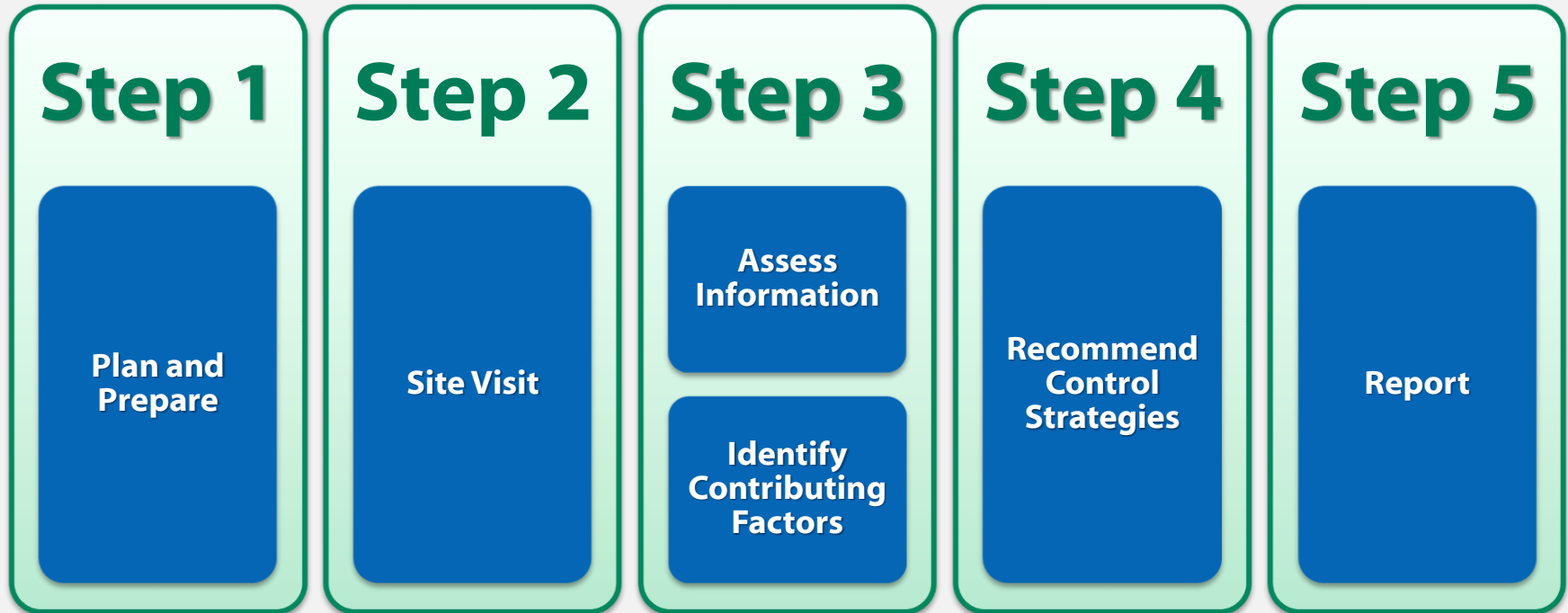
- Were any samples taken?
- If environmental, where was the sample taken from?

Part VII: Contributing Factors



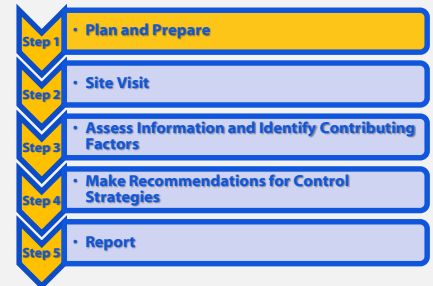
- Were any contributing factors identified in this outbreak?
- During the outbreak investigation, what activities were used to try to identify the contributing factors?

Conducting Environmental Assessments as Part of Foodborne Outbreak Investigations



Step 1: Plan and Prepare

- **Communicate and coordinate roles of others involved in the foodborne illness outbreak investigation**
 - Epidemiology, laboratory and environmental health staff
- **Work with environmental health specialists/rapid response teams to align observational data being collected with NEARS observational data**



Step 2: Site Visit

- **Conduct Interviews**

- Use NEARS Manager Interview (NEARS - Part III)

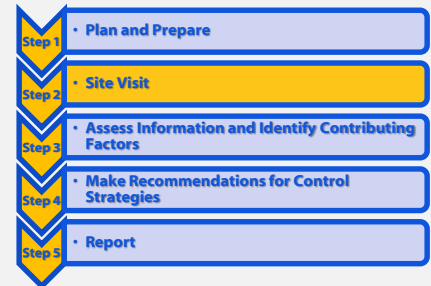
- **Perform Walkthroughs and Observations**

- Est. Description, Categorization, and Menu Review (NEARS - Part II)
- Est. Observation (NEARS - Part IV)

- **Collect Samples**

- Sampling (NEARS - Part VI)

- **Review Establishment Records**



Step 3: Assess Information and Identify Contributing Factors

■ Assess Information

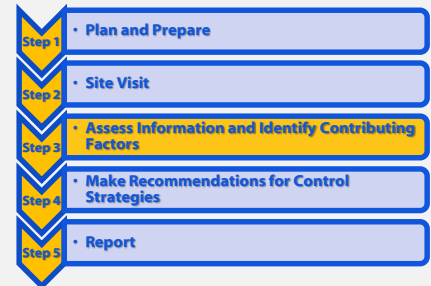
- General Characterization of the Outbreak Response (NEARS - Part I)
- Suspected/Confirmed Food (NEARS - Part V)

■ Identify Contributing Factors

- Contributing Factors (NEARS - Part VII)
 - Contamination
 - Proliferation/Amplification
 - Survival

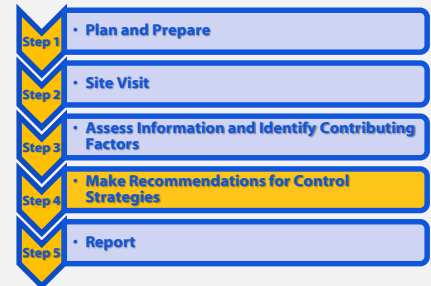
■ Identify Environmental Antecedents

- People
- Process
- Equipment
- Economics
- Food



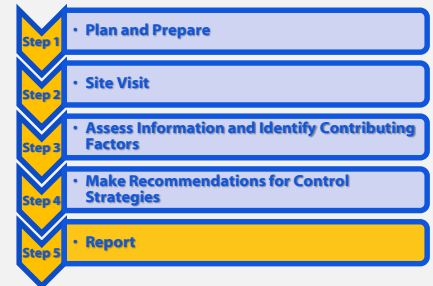
Step 4: Make Recommendation for Control Strategies

- **Immediate control strategies**
 - Stop the current outbreak
 - Prevent further spread of the agent
- **Long-term control strategies**
 - Reduce the likelihood of future outbreaks

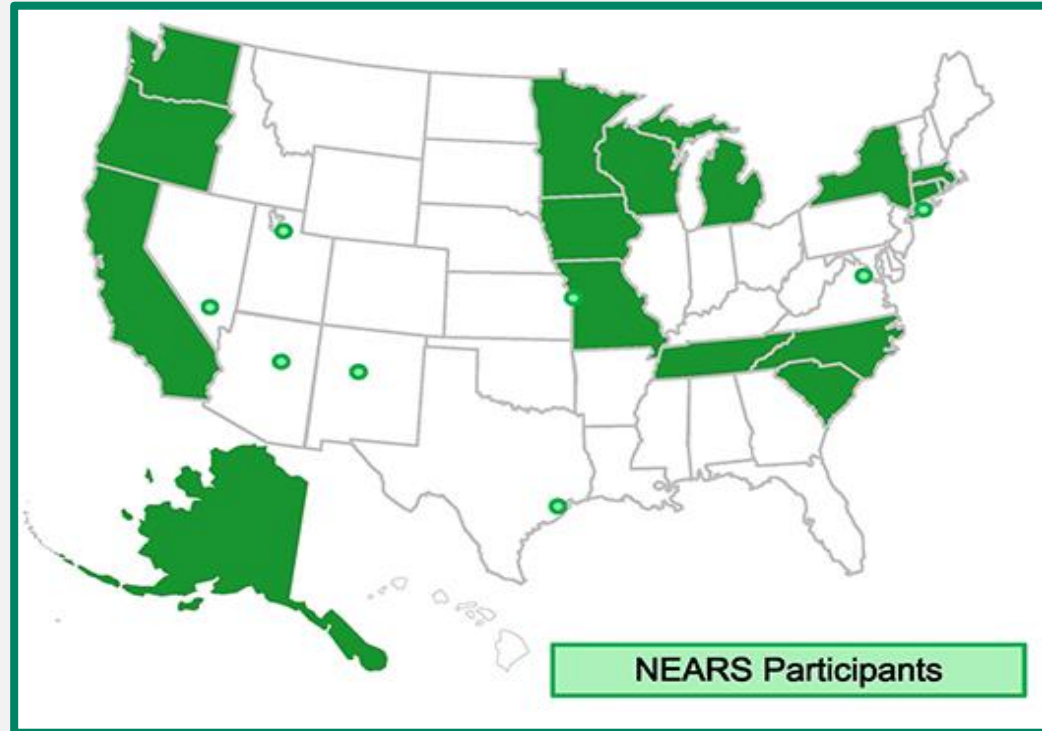


Step 5: Report

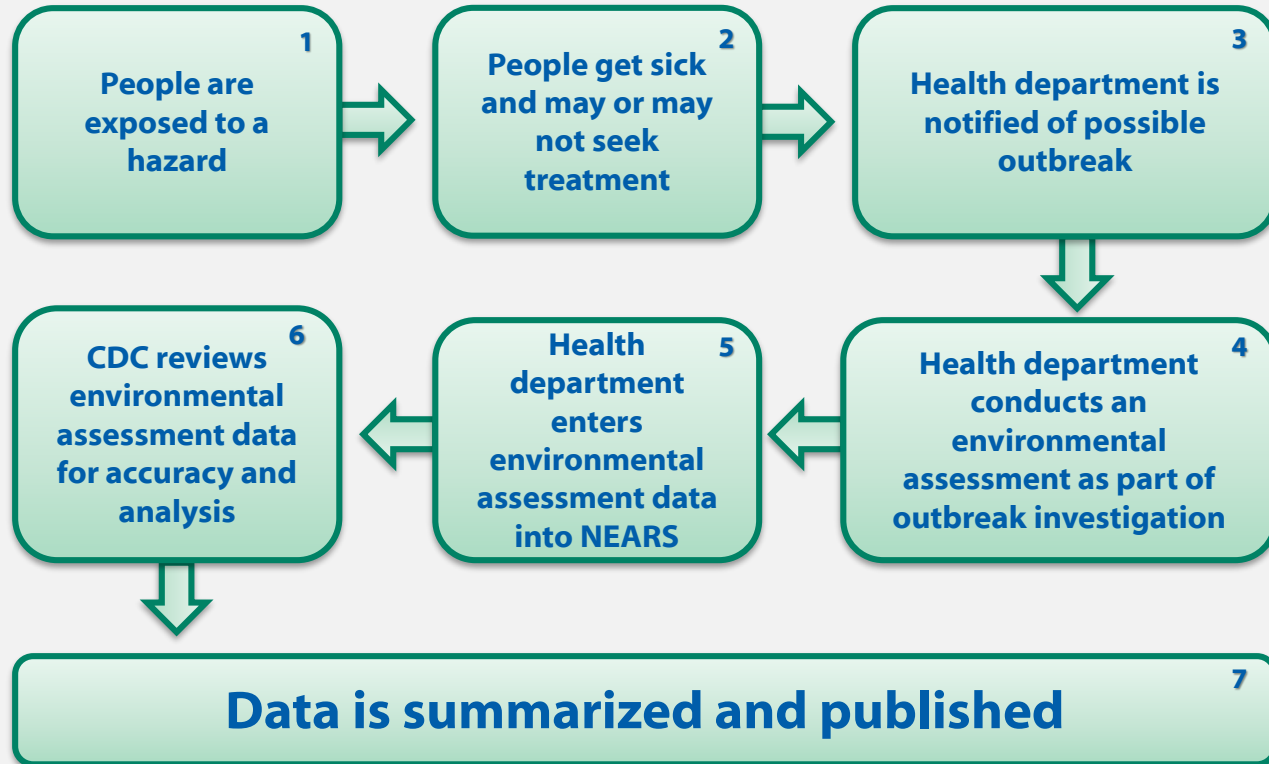
- **Summarize findings of the environmental assessment**
 - Record review of the establishment
 - Interviews with the manager and food workers
 - Observation of food preparation and food preparation and storage areas
 - Food flows for implicated foods/ingredients
 - Environmental and food sampling
 - Other reviews as needed to understand how and why food became contaminated
- **Report findings to NEARS**



Programs Reporting Environmental Assessment Data to NEARS



How Outbreak Data are Reported to NEARS and Summarized by CDC



CDC's National Environmental Assessment Reporting System (NEARS)

2015 Summary Report

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.

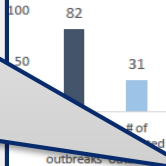
88%
outbreaks
reported to
NORS

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

2 Visits

Outbreak Characteristics

Foodborne Illness Outbreaks**



* N varies because of missing data in NEARS

Outbreak Response

The average number of days between the date the outbreak establishment was identified for an environmental assessment and the date of the following activities with the outbreak establishment:

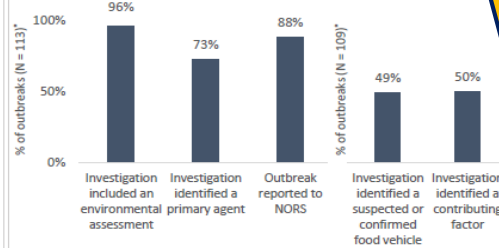
1st contact = 1 day (min = 0, max = 15)

Establishment observation = 2 days (min = 0, max = 29)

Manager interview = 14 days (min = 0, max = 121)

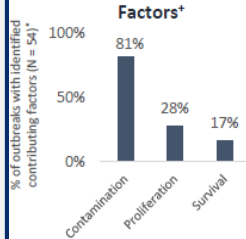
The average number of visits to the outbreak establishment needed to complete an environmental assessment = 2 visits (min = 1, max = 6)

Outbreak Investigation Characteristics



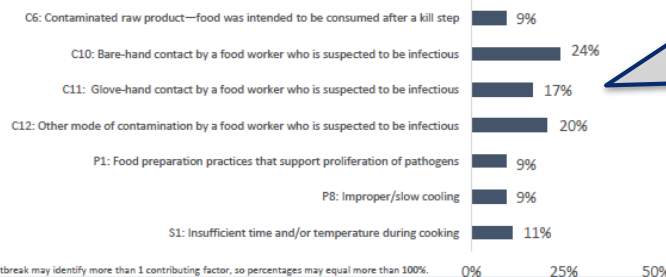
* N varies because of missing data in NEARS

Outbreak Contributing Factors*



* Each outbreak may identify more than 1 contributing factor, so percentages may equal more than 100%.

Most Common Outbreak Contributing Factors*



* Each outbreak may identify more than 1 contributing factor, so percentages may equal more than 100%.

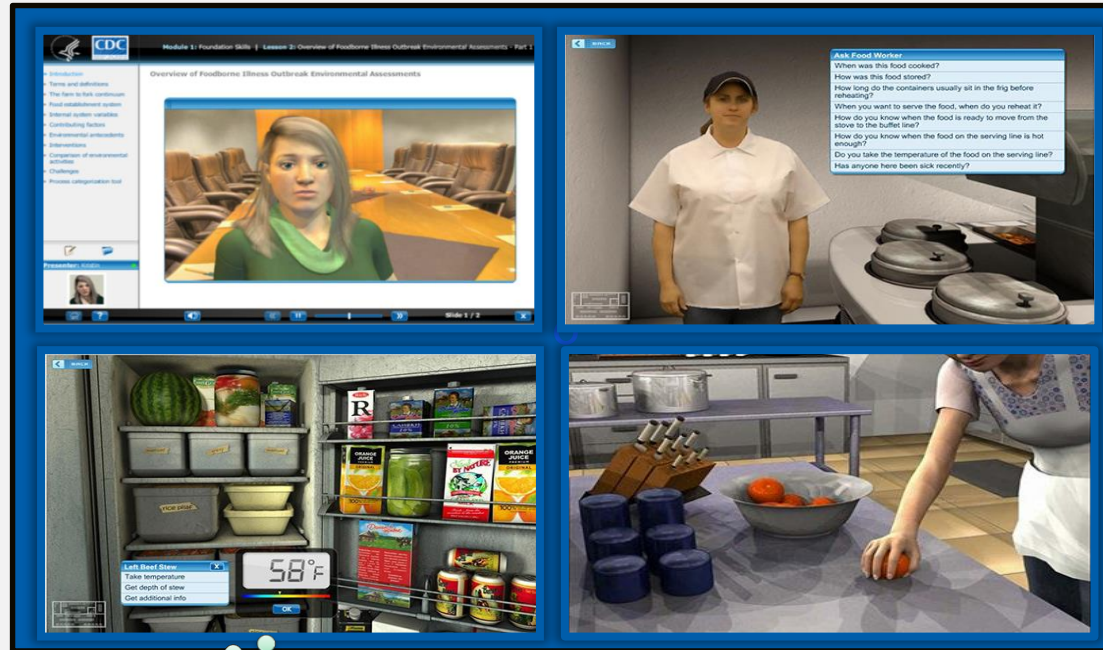
**Contributing
Factors**

C10
C11
C12



ENVIRONMENTAL ASSESSMENT TRAINING

Environmental Assessment Training

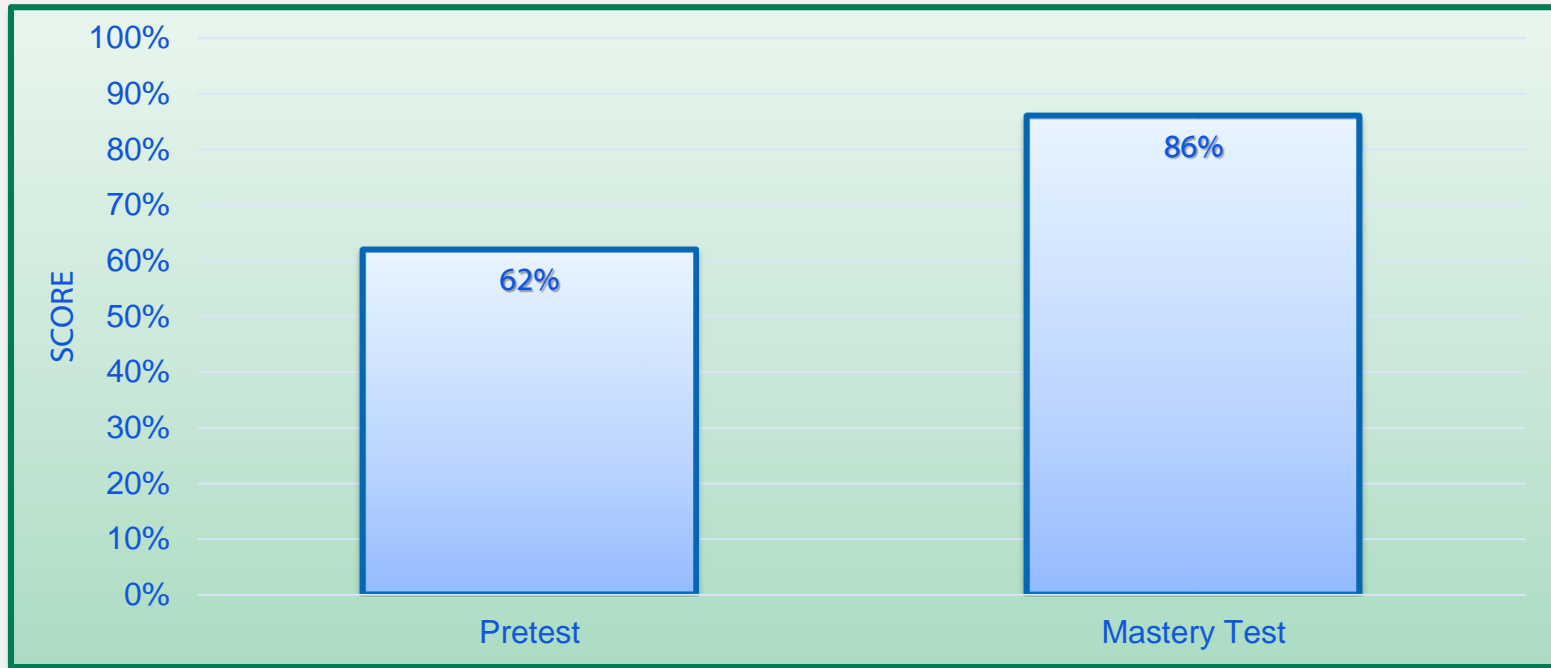


Release:
April 2014

Current:
June 2017

Over
5,500
Users

User Profile: Difference in Pretest and Mastery Test Scores for All Users



CDC Needs Your Help!

Consider using our Environmental Assessment Training and reporting environmental assessment data to NEARS

Things to think about...

- Do you think knowing how and why outbreaks appear to occur would be helpful?
- Would more training on how to conduct foodborne illness outbreak environmental assessments be helpful?
- Would a characterization of your program involvement in investigating foodborne outbreaks be helpful?
- Would more details than we now have about outbreak food vehicles be helpful?

Thank You!



For more information, contact NCEH
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov
Follow us on Twitter @CDCEnvironment

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

