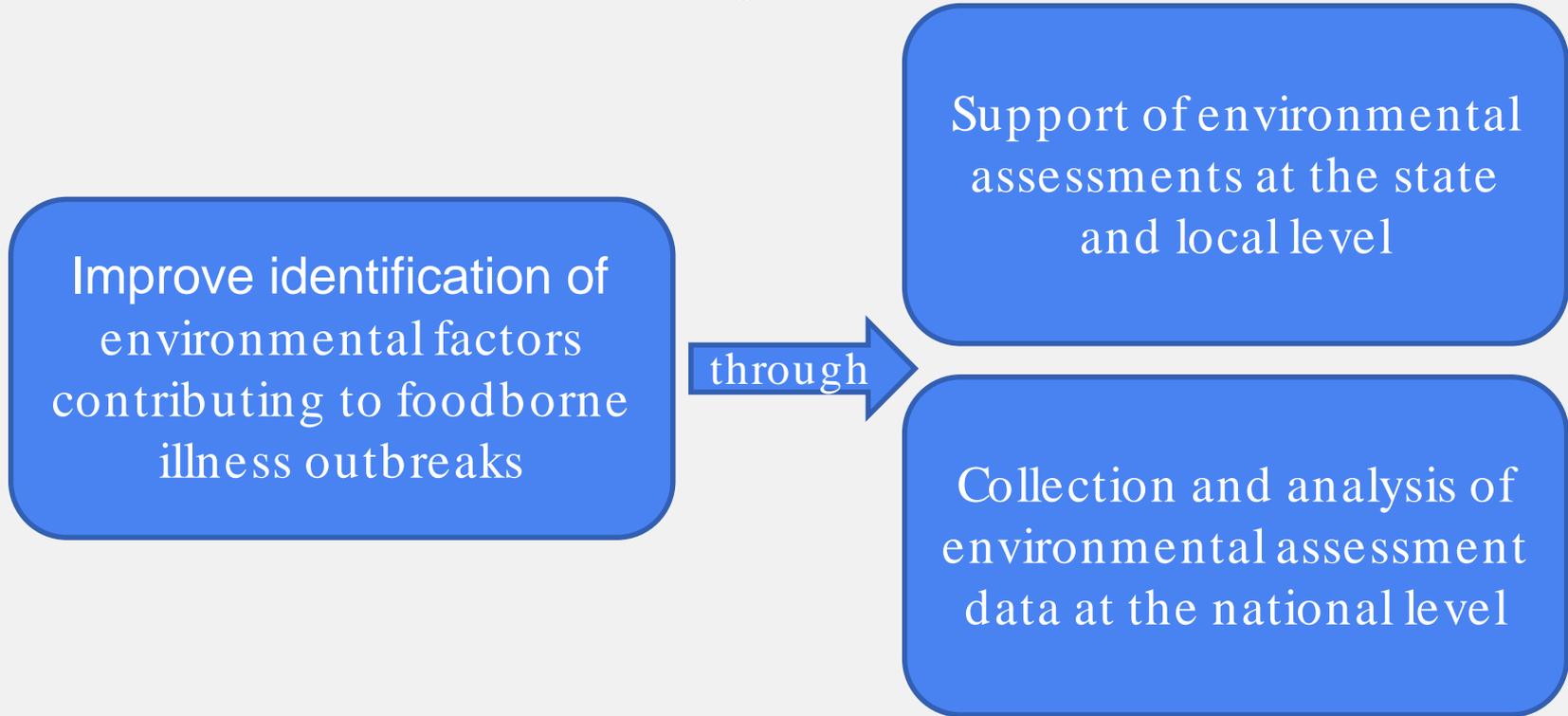


NEARS: Identifying Environmental Factors Contributing to Foodborne Illness Outbreaks

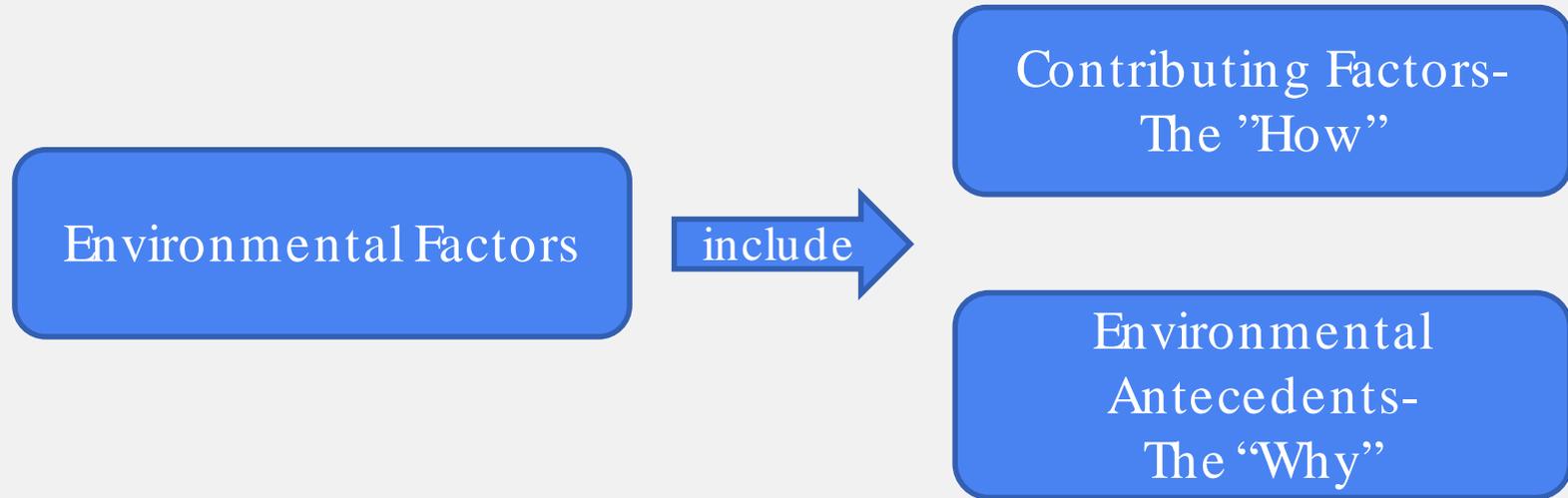
Erik W. Coleman, MPH

**Division of Environmental Health Science and Practice
Water, Food, and Environmental Health Services Branch**

CDC's National Center for Environmental Health Objectives



Environmental Factors Contributing to Foodborne Outbreaks



Environmental Factors Contributing to Outbreaks

Contributing Factors

Contamination

- Crosscontamination of ingredients
- Contact by an infectious/ill worker

Proliferation

- Improper cold holding due to malfunctioning equipment
- Improper cold holding due to improper procedure

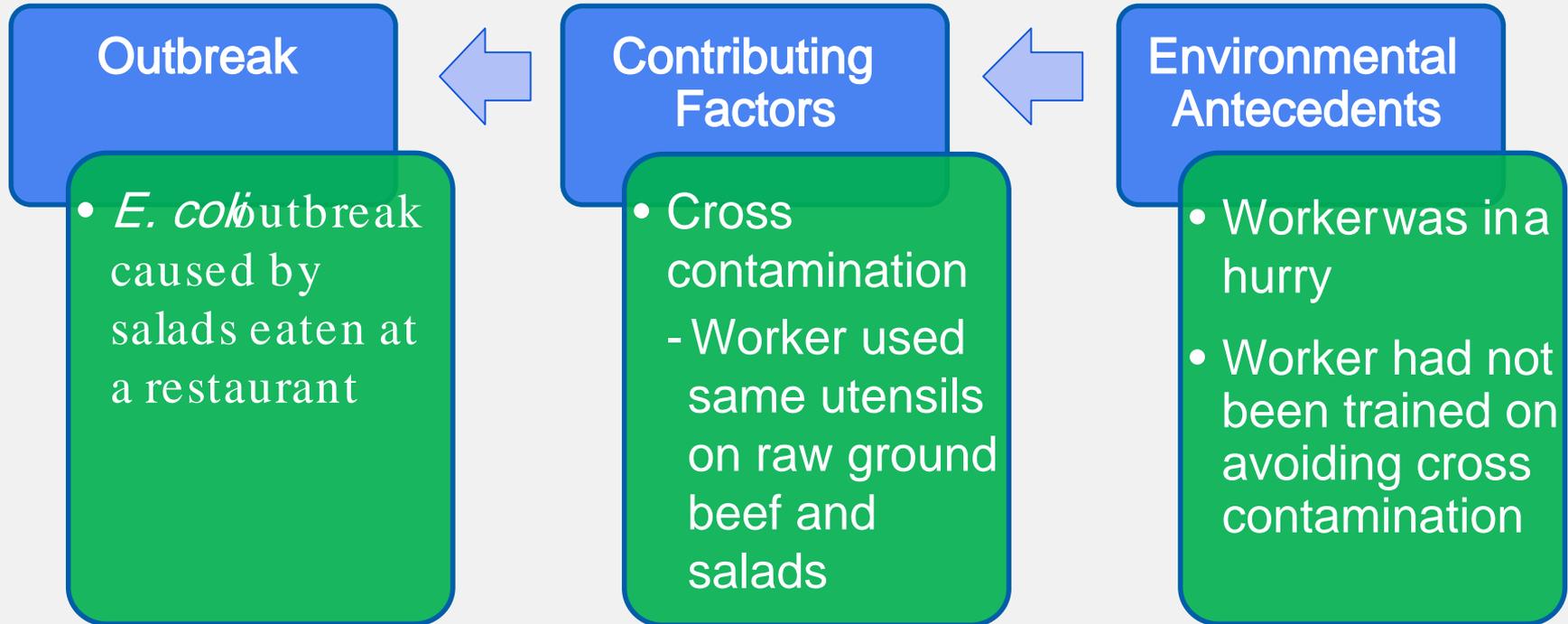
Survival

- Insufficient time/temp during reheating
- Insufficient time/temp during freezing

Environmental Antecedents

- People
- Processes
- Equipment
- Economics
- Food

Environmental Factors Contributing to Outbreaks



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 Series (EATS)



Release:
April 2014

Current:
June 2018

**Over
6,800
Users**

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 6,800 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* Enteritidis 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

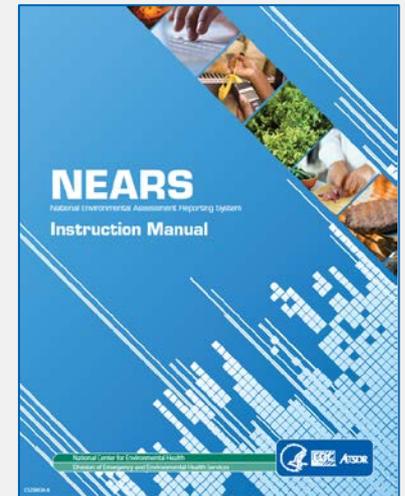
Food Defense Module

- **Module 3: Food Defense**
 - Lesson 1: Overview of food defense concepts cafeteria
 - Lesson 2: Overview of food defense planning

Collection and Analysis of Environmental Assessment Data at the National Level

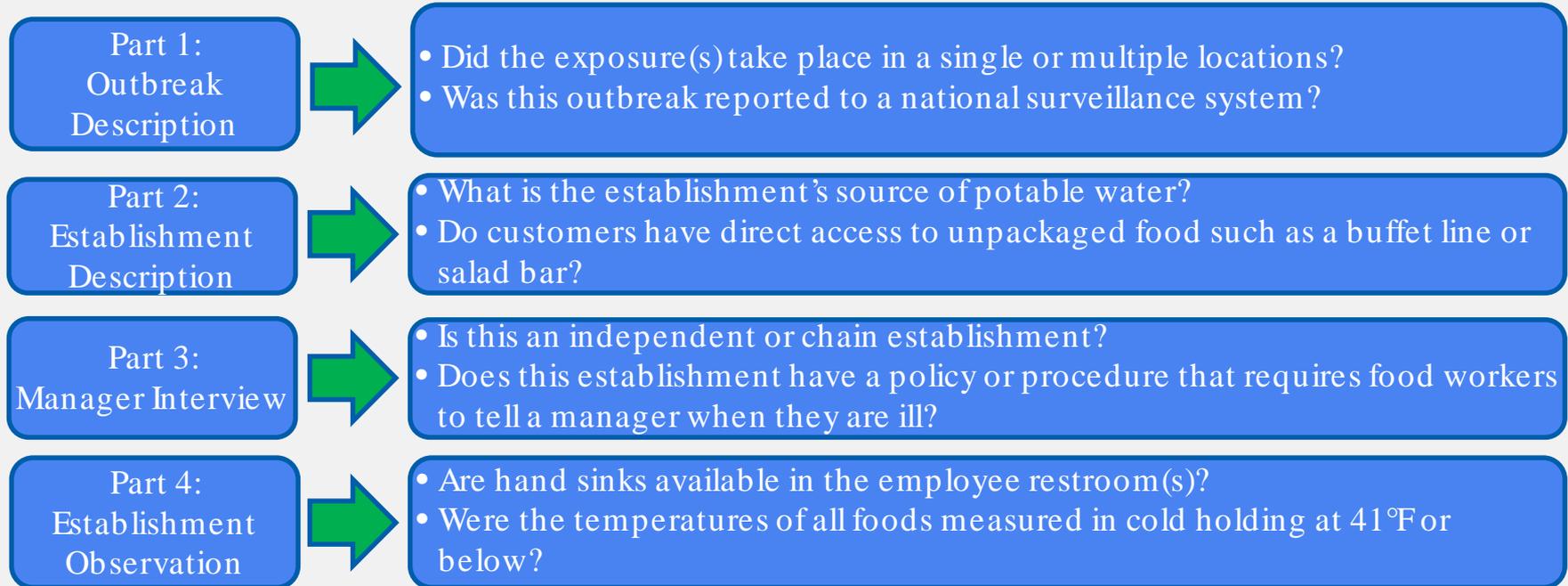
Development and launch of the National Environmental Assessment Reporting System (NEARS)

- Companion surveillance system to the National Outbreak Reporting System (NORS)
- Repository for state and local programs to report data collected from their environmental assessments
- 29 state and local agencies are currently registered to begin reporting data into NEARS



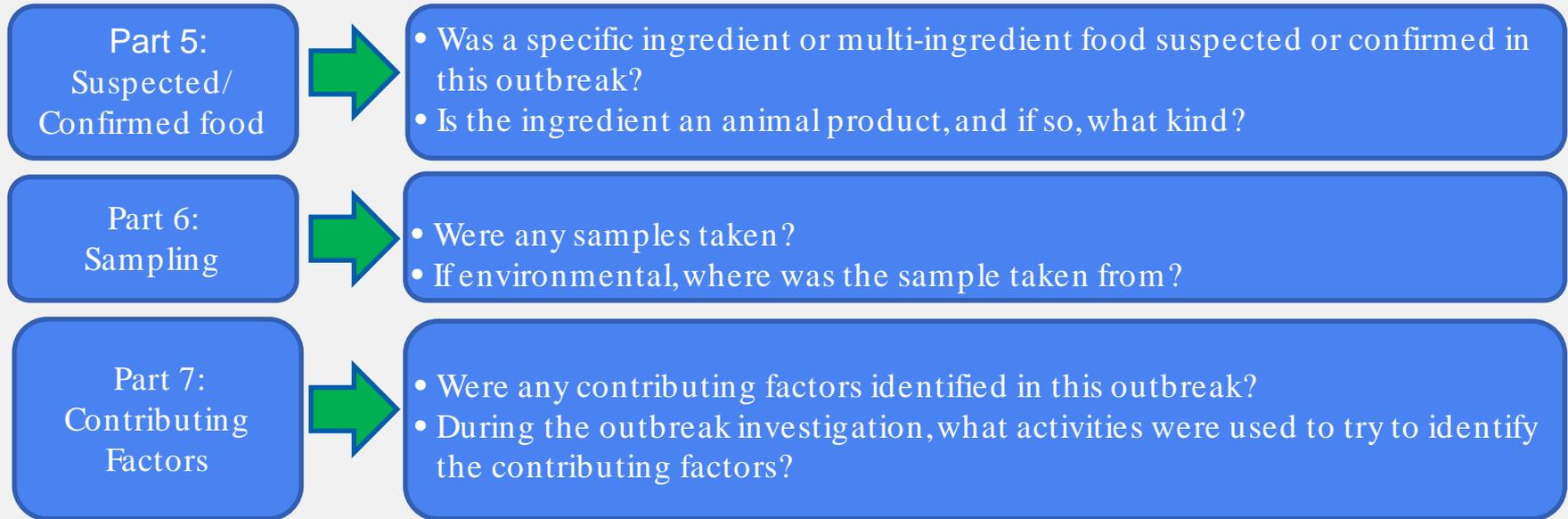
Collection and Analysis of Environmental Assessment Data at the National Level

Programs report data into NEARS on:



Collection and Analysis of Environmental Assessment Data at the National Level

Programs report data into NEARS on:



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)

2015 Summary Report

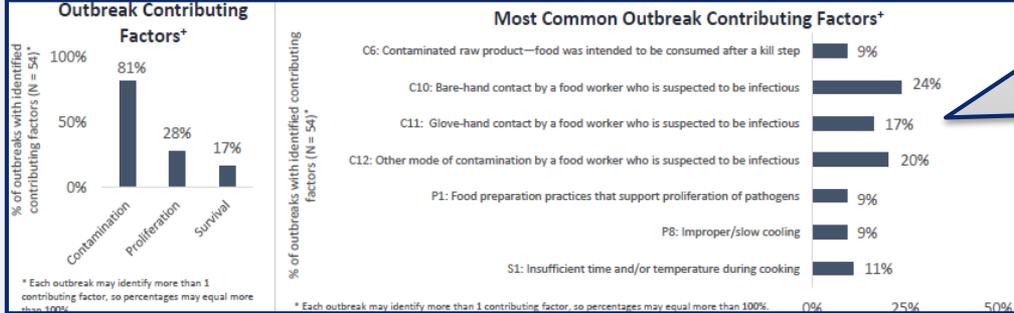
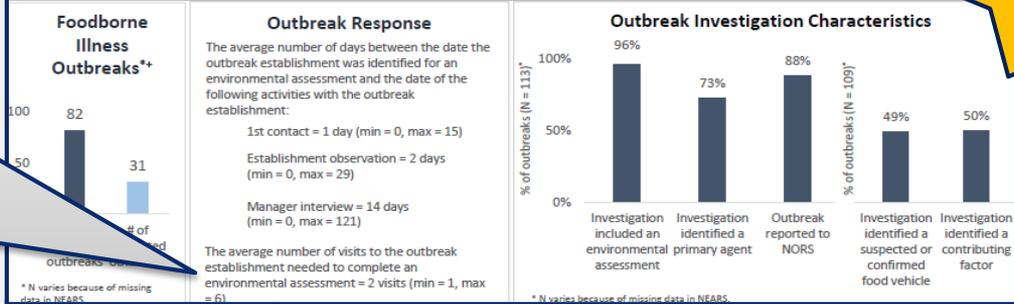
In 2015, a total of 114 outbreaks were reported to NEARS. This summary provides information on characteristics of those outbreaks and the establishments where the outbreaks occurred.

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



Contributing Factors

C10
C11
C12

Long-term Benefits of NEARS Participation

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**
 - https://www.cdc.gov/nceh/ehs/elearn/ea_fio/index.htm

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.

