

# NEARS: Informing Foodborne Illness Outbreak Investigation and Prevention

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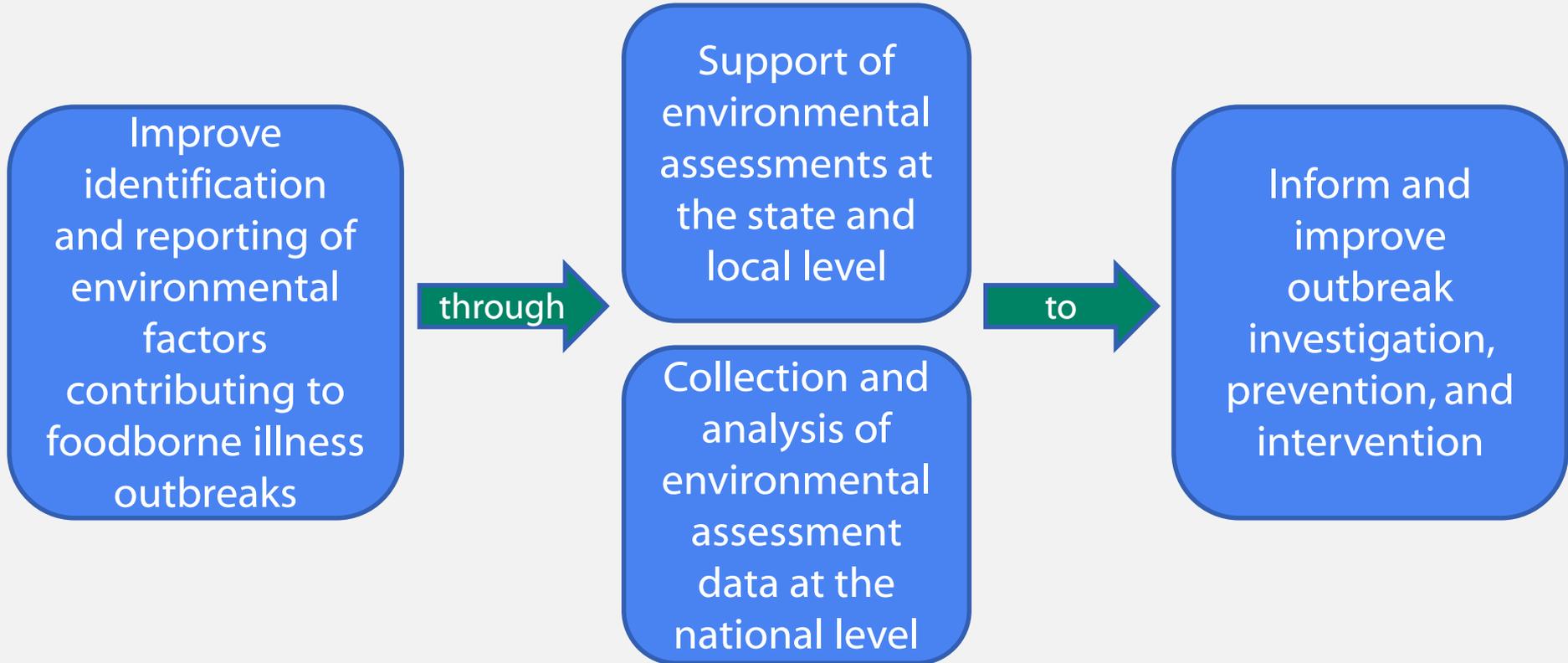
Division of Emergency and Environmental Health  
Services (DEEHS)

Environmental Health Services Branch

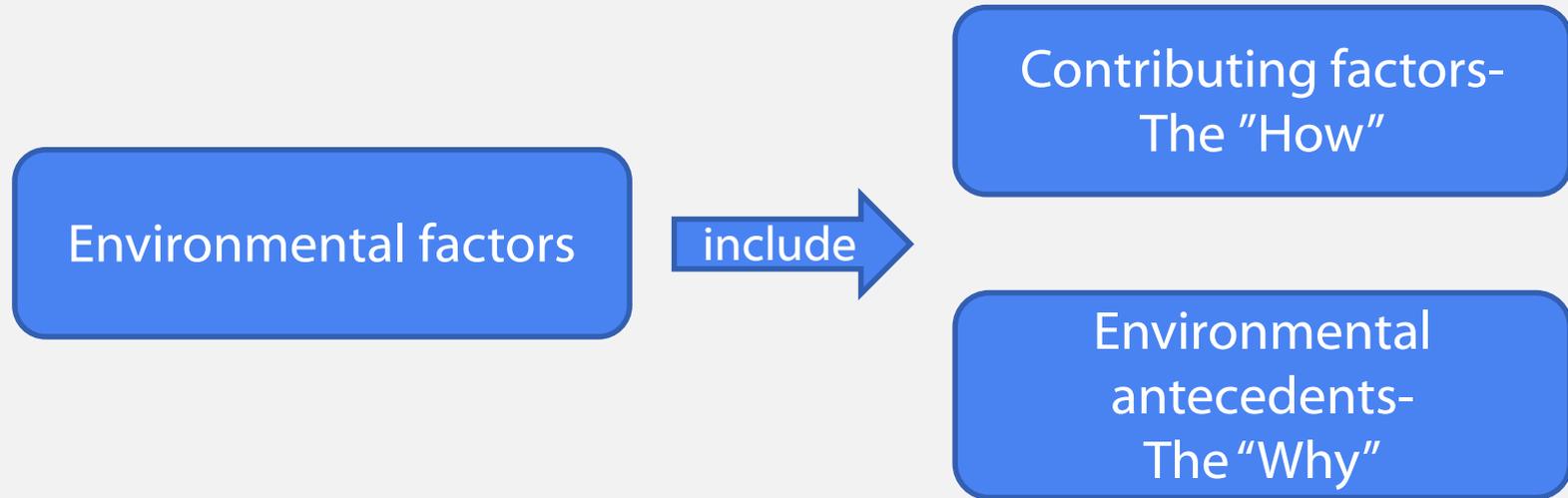
# Presentation overview

- **Division of Emergency and Environmental Health Services (DEEHS) objectives**
- **Environmental factors contributing to foodborne illness outbreaks**
- **Outbreak environmental assessments**
- **Environmental assessment training**
- **National Environmental Assessment Reporting System (NEARS)**

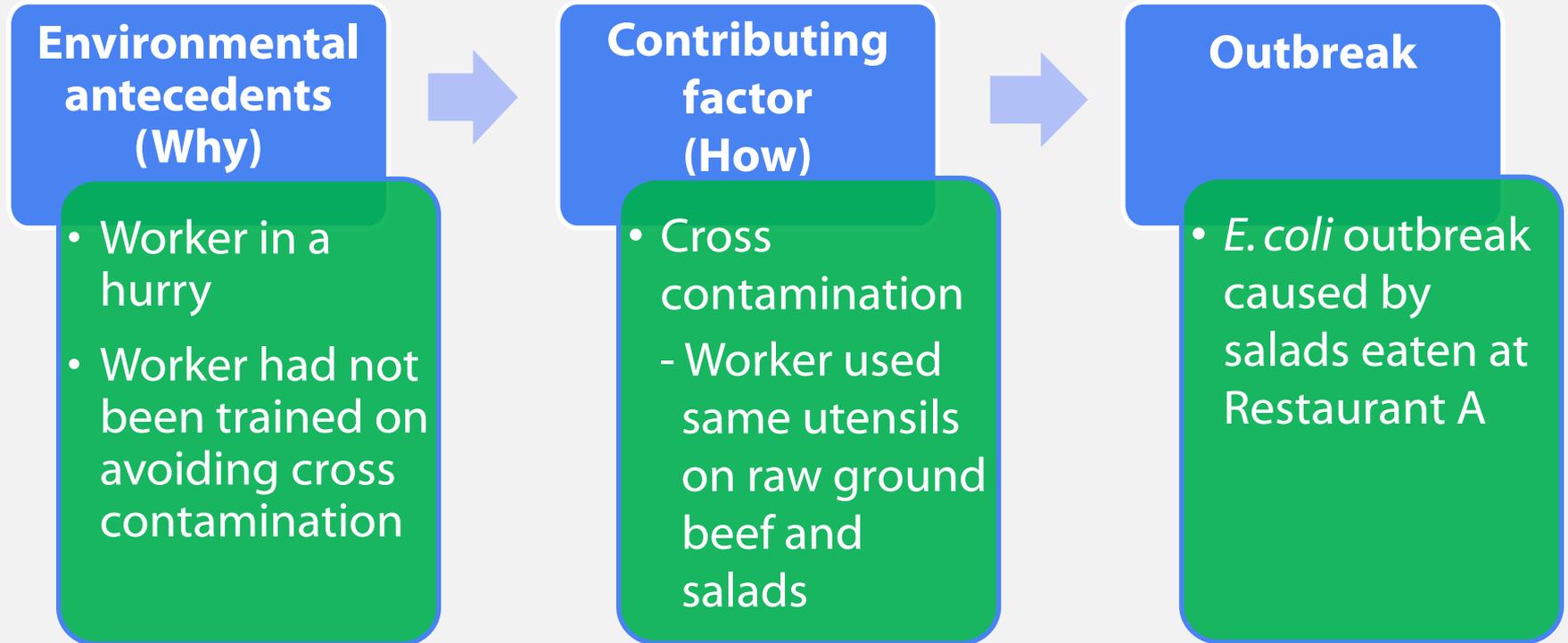
# DEEHS Objectives



# Environmental factors contributing to outbreaks



# Environmental factors contributing to outbreaks



# Environmental factors contributing to outbreaks

## Contributing factors

### Contamination

- Cross-contamination 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

# Outbreak environmental assessments

Environmental health component of foodborne illness outbreak investigations

Goal is to thoroughly describe the environment in which the outbreak occurred, and identify outbreak environmental factors

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

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

Are guided by known information about the outbreak

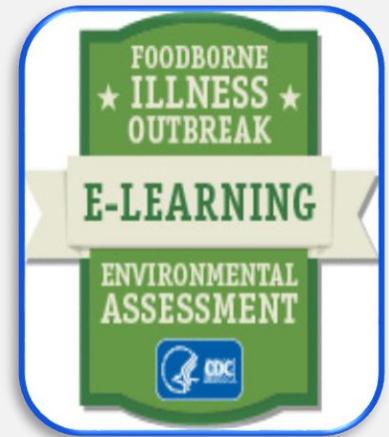
Generate recommendations for intervention

# **SUPPORT OF ENVIRONMENTAL ASSESSMENTS AT THE STATE AND LOCAL LEVEL**

Training

# Environmental assessment training

- Designed to improve environmental health programs' competency in conducting environmental assessments during outbreaks
- 5,100 people from over 1,200 federal, state, local government agencies have registered for the training
- Free, web-based, interactive
- Participants show a 25 percentage point increase in pre to post test scores



# Environmental assessment training

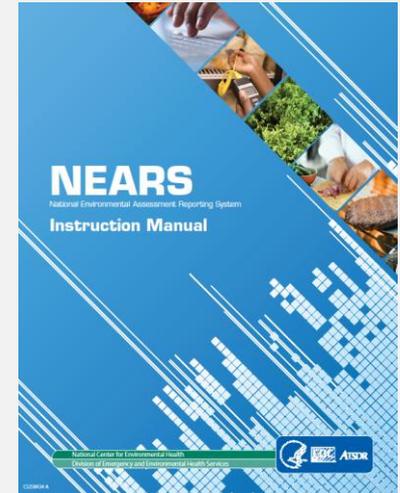
- **Lesson 1: Your Assignment**
- **Lesson 2: Overview of Foodborne Illness Outbreak Environmental Assessments**
- **Lesson 3: Effective Interviewing Skills**
- **Lesson 4: Observation and Records Review**
- **Lesson 5: Environmental Sampling**
- **Lesson 6: Critical Thinking Skills**
- **Lesson 7: Organizing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

# **COLLECTION AND ANALYSIS OF ENVIRONMENTAL ASSESSMENT DATA AT THE NATIONAL LEVEL**

National Environmental Assessment Reporting System (NEARS)

# National Environmental Assessment Reporting System (NEARS)

- Launched in 2014
- State and local programs report data to NEARS from their outbreak environmental assessments
  - Contributing factors
  - Outbreak establishment policies and practices
  - Investigation characteristics
- 27 jurisdictions registered to participate in NEARS



# NEARS: Informing foodborne outbreak prevention and intervention

**What characteristics of outbreak restaurants are linked with norovirus outbreak size?**

## **Method**

- 12 jurisdictions reported data into NEARS from 2009-2015
- Merged with data on number of ill people associated with those outbreaks



## **Data**

- 179 single-setting, restaurant-related outbreaks

# NEARS: Informing foodborne outbreak prevention and intervention



Restaurant was part of a chain



Restaurant served fewer meals daily



Restaurant required kitchen manager certification



Smaller number of outbreak cases  
(fewer ill people)

# NEARS: Informing foodborne outbreak prevention and intervention

NEARS findings provide novel information about outbreak prevention and intervention.

NEARS findings suggest that environmental factors, such as kitchen manager certification, can reduce the impact of norovirus.

# NEARS: Informing foodborne outbreak investigation

**What characteristics of outbreaks are linked with identification of contributing factors?**

## **Method**

11 jurisdictions reported data into NEARS from 2009-2013



## **Data**

297 single-setting outbreaks

# NEARS: Informing foodborne outbreak investigation



An agent was identified



Environmental assessment occurred soon after outbreak identification



Multiple establishment visits were made to complete the environmental assessment



Outbreak establishment prepared all meals on location



Outbreak establishment served more meals a day



Contributing factor identified

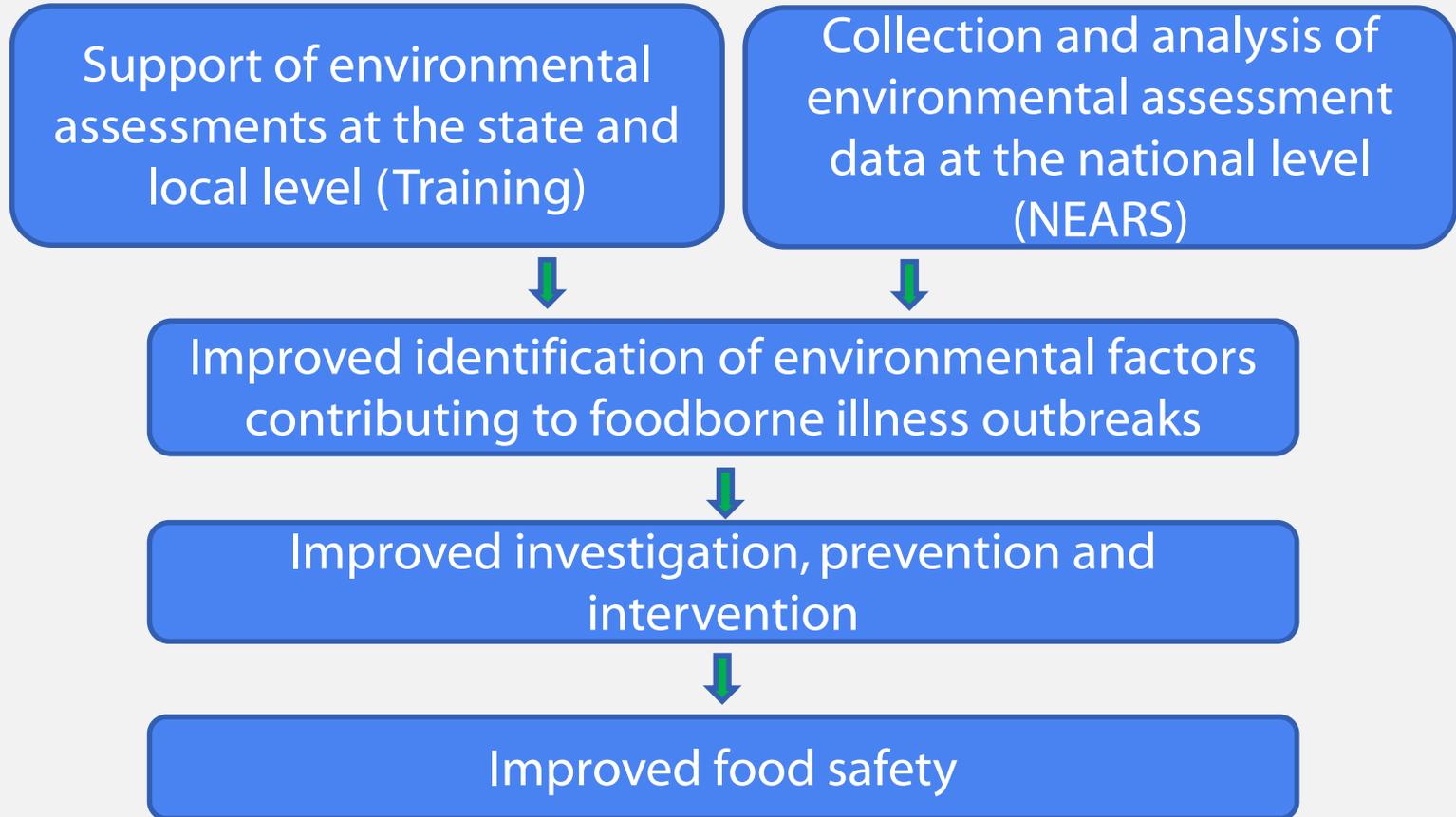
# NEARS: Informing foodborne outbreak investigation

These NEARS findings provide novel information about ways to improve contributing factor identification.

Agent identification, and timely and complete outbreak assessments are important to contributing factor identification.

Establishment characteristics influence contributing factor identification.

# Summary



# Thank you

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