Supporting Statement B

National Voluntary Environmental Assessment Information System (NVEAIS)

NEW

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B. Collection of Information Employing Statistical Methods

Statistical methods will not be used to select respondents for this data collection. All food safety programs in the United States will be invited to participate; however, participation is voluntary. Programs that participate in NVEAIS will report data on all outbreaks occurring in their jurisdictions. We expect that program participation will increase over time. However, until all eligible programs are participating, a limitation of our data will be that it applies to only those jurisdictions participating in NVEAIS. We will use this section of the supporting statement to describe data collection procedures.

B.1. Respondent Universe and Sampling Methods

State, local, tribal, and territorial food safety programs will report data into NVEAIS. There are approximately 3,000 such food safety programs in the United States.

Although the data reported through this system are collected *by* food safety programs; they are not collected *on* food safety programs or personnel. Instead, they are collected primarily on foodborne illness outbreaks. Specifically, data collected by food safety programs during their investigation of foodborne illness outbreaks will be reported into NVEAIS. These data will provide information on environmental factors associated with outbreaks.

Data on all outbreaks occurring in the jurisdictions of participating food safety programs (the NVEAIS 'catchment area') will be reported to NVEAIS. Thus, we will be utilizing a convenience sample of voluntary participating programs and not obtaining a statistical sample. In the future, should a nationally representative program evolve, we may be able to generalize our data. Currently, we will describe the population of outbreaks solely in the NVEAIS catchment area and the environmental factors associated with them, and not generalize the data as nationally representative.

B.2. Procedures for the Collection of Information

Data Collection

We will provide participating programs with the NVEAIS data collection instruments (see Attachments 4 and 5), which will describe the data that need to be reported into NVEAIS and the data they need to collect through the manager interview. Additionally, all food safety program personnel participating in NVEAIS will be required to attend a LiveMeeting (i.e., webinar) training session conducted by CDC staff. This training will cover identifying environmental factors, logging in and entering data into the web-based NVEAIS data entry system, and troubleshooting problems. CDC personnel will be walking participants through the NVEAIS data entry system. Attachment 8 contains a brief description of the training.

Note that most of the data reported into NVEAIS are data that are already collected by food safety programs during their outbreak investigations. For NVEAIS, food safety programs will simply be reporting this information into our electronic data-entry system. The manager interview (Attachment 4) is the only data that food safety programs will be collecting specifically

for NVEAIS. This manager interview will be conducted during the food safety programs' visits to establishments during their outbreak investigations.

Participating programs will report data on all outbreaks they investigate during the reporting period. After officials have completed their outbreak investigation and collected all their data in the outbreak establishment(s), they will then enter the pertinent data into NVEAIS through a web-based data entry system. CDC personnel will periodically review the data for errors and assist respondents with any needed corrections. Respondents will be encouraged to enter their data as they complete their investigations. CDC will request that all data entry for outbreaks be completed annually.

Quality Control Procedures

CDC personnel will periodically review the data from each site, and perform quality assurance procedures to check for data entry errors. They will provide reports to each program about the quality of their data. CDC personnel will use these reports to highlight weaknesses in data and recommend ways to improve the quality of the data.

Potential Biases

The act of observing workers during environmental assessments may influence their performance and behavior on work-related tasks. In other words, the workers may not respond naturally when they know they are being observed. However, for the most part, those collecting these data will be experienced and will take measures (such as remaining unobtrusive and engaging in activities that will place workers more at ease) to minimize this bias when possible.

The manager interview data may be influenced by social desirability bias - the tendency for people to report greater levels of socially desirable behavior (such as safe food preparation practices) than they actually engage in, or to report their best behavior rather than their typical or worst behavior.

Any presentation of these data will acknowledge these potential biases and include a discussion of how they impact data interpretation.

B.3. Methods to Maximize Response Rates and Deal with Nonresponse

Program Response

We have been and will continue to engage in activities to promote and encourage food safety program participation in NVEAIS. We have presented at multiple conferences attended by those responsible for outbreak investigation (e.g., National Environmental Health Association, International Association for Food Protection, etc.). We will hold informational conference calls with programs interested in NVEAIS. During these calls, we will attempt to identify barriers to NVEAIS participation and address those barriers. We feel confident that, with time, we will be able to achieve close to 100% participation in NVEAIS.

B.4. Test of Procedures or Methods to be Undertaken

The data collection instrument to be used for the NVEAIS was previously developed by the Environmental Health Specialists Network (EHS-Net) (See Attachments 4 and 5). As food safety programs beyond the EHS-Net participants begin using the instrument, we expect that they will identify some components of the instrument that need revision. We expect these revisions to be minor. We plan to annually review respondents' revision comments and questions to determine the nature and scope of requested revisions. Annual review of data may also reveal minor needed changes. Should we identify the need for changes to the data collection instruments, we will submit a nonmaterial or non-substantive change request to OMB for approval.

Data Analysis Plan

The three main goals of this data collection are to:
1. Describe foodborne illness outbreaks and outbreak responses.
2. Describe environmental factors (environmental antecedents and contributing factors) associated with outbreaks.
3. Describe the associations between environmental antecedents and contributing factors to outbreaks.

To address the first goal of this data collection, *describe outbreaks and outbreak responses,* we will conduct descriptive analyses (frequencies, means, etc.) to describe:
- outbreaks (Table B.4.1 contains the variables included in these descriptive analyses)
- outbreak responses (Table B.4.2 contains the variables included in these descriptive analyses).

Table B.4.1. Variables included in descriptive analyses of outbreaks

Question Number	Question	Justification
I_1	Did the exposure(s) take place in a single or multiple locations, for example a single restaurant or two or more restaurants, a single school or two or more schools or a combination of establishments, etc.?	Describe whether single or multiple establishments were involved in the outbreak.
I_2	Did the exposure(s) happen in a single County/Township / Parish or multiple Counties / Townships / Parishes in your state?	Describe whether single or multiple jurisdictions were involved in the outbreak.
I_3	Did the exposure(s) occur in a single state or multiple states?	Describe whether single or multiple states were involved in the outbreak.
I_4	How many food service establishment locations within your jurisdiction were associated with this outbreak?	Describe how many food service establishments were associated with the outbreak.
I_5	Were any environmental assessments conducted at foodservice establishments in your jurisdiction as part of this outbreak	Describe whether environmental assessments were conducted.
I_5a	Briefly, describe the reason(s) why environmental assessments were conducted in your jurisdiction as a part of this outbreak?	Describe why and when environmental assessments were conducted.
I_5b	How many environmental assessments were conducted at foodservice establishments in your jurisdiction as part of this outbreak?	Describe how many environmental assessments where conducted in the reporting jurisdiction.
I_5c	Why were no environmental assessments conducted at foodservice establishments in your jurisdiction as part of this outbreak investigation	Describe why environmental assessments were not conducted.
I_6	Were any non-food service establishment locations within your jurisdiction were associated with this outbreak?	Describe whether any non-food service establishments were associated with the outbreak.
I_6a	How many non-food service establishment locations within your jurisdiction were associated with this outbreak?	Describe how many non-food service establishment locations were associated with the outbreak.
I_6b	How many environmental assessments were conducted at non-food service establishments in your jurisdiction as part of this outbreak investigation?	Describe how many environmental assessments were conducted in non food service establishments.
I_7	Was a primary agent identified in this outbreak?	Describe the agent.
I_7a	What was the identified agent?	
I_7b	Was a serotype identified in this outbreak?	Describe the serotype.
I_7c	What was the identified serotype?	
I_8	Was this outbreak reported to a state or local Communicable Disease Surveillance Program?	This information will be used to help connect the NVEAIS data to existing epidemiological and laboratory data reported to the state.
I_8a	Select the state or local surveillance system(s) where this outbreak was reported.	

I_9	Was this outbreak reported to a national surveillance system?	This information will be used to help connect the NVEAIS data to existing epidemiological and laboratory data reported to other national surveillance systems.
I_9a	Select the national surveillance system(s) where this outbreak was reported and record the corresponding reporting number.	
V_1	Was a specific ingredient or multi-ingredient food suspected or confirmed in this outbreak?	Describe ingredients and foods associated with the outbreak.
V_1a	If No, explain why food was the suspected vehicle in this outbreak.	
V_2	Is this food a single specific ingredient or multi-ingredient?	
V_3	What is the name of the suspected or confirmed ingredient / food vehicle?	
V_4	Select the reason that best describes how this single specific ingredient or multi ingredient food was implicated in the outbreak.	Describes the type of information used to determine the food associated with the outbreak.
VI_4	If environmental, where was the sample taken from?	Describe where environmental samples were taken.
VI_5	What was the specific food or multi-ingredient food sampled?	Describe if food sample is a single or multi ingredient food item.
VI_6	Was an agent identified in the sample?	Describe if an agent was found in sample.
VI_6a	What was the identified agent?	Describe agent found in sample.
VI_8	Was a serotype of the agent identified?	Describe if a serotype was found in sample.
VII_1	Were contributing factors identified in this outbreak?	Describe if contributing factors where identified in an outbreak investigation.

Table B.4.2. Variables included in descriptive analyses of outbreak responses

Question Number	Question	Justification
II_1	Date the establishment was identified for an environmental assessment	Describe how long it takes to respond to outbreaks with an environmental assessment.
II_2	Date of first contact with establishment management	
II_3	Number of visits to the establishment to complete this environmental assessment	Describe environmental assessment responses.
II_4	Number of contacts with the establishment other than visits, (ex. phone calls, phone interviews with staff, faxes, etc.) to complete this environmental assessment	
II_9	Was a translator **needed** to communicate with the kitchen manager during the environmental assessment?	Describe whether language and communication are issues in collecting information for environmental assessments.
II_9a	Was a translator **used** to communicate with the kitchen manager?	
II_10	Was a translator **needed** to communicate with the food workers during the environmental assessment?	
II_10a	Was a translator **used** to communicate with the food workers?	
III_1	Date the manager interview was conducted	Describe the time from identification/contact until specific environmental assessment activities are conducted.
IV_1	Date observations were made	

VI_1	Were any samples taken?	Describe how many samples and what type are taken during environmental assessments.
VI_2	How many samples were taken?	
VI_3	What type of sample was taken?	
VII_2	During the outbreak investigation, what activities were used to try to identify the contributing factors?	Describe outbreak responses.
VII_3	Please rate the quality of communication between the food regulatory program and the communicable disease control program during this outbreak investigation.	Describe outbreak responses.

To address the second goal of this data collection, *describe environmental factors associated with outbreaks,* we will conduct descriptive analyses (frequencies, means, etc.) to describe
- environmental antecedents (see Table B.4.3 for the variables included in these descriptive analyses and their environmental antecedent classifications [economics, equipment, food, people, processes])
- contributing factors (examined by category: contamination, proliferation, and survival; see Table B.4.4 for the variables included in these descriptive analyses).

The list and descriptions of all contributing factors can be found in Attachment 2.

NVEAIS collects data on a number of environmental antecedent variables. These variables were chosen for inclusion in NVEAIS because existing hypotheses, theories or data suggest that they may be related to food safety and/or foodborne illness outbreaks.

Table B.4.3. Variables included in descriptive analyses of environmental antecedents

Question Number	Question	Justification	Classification
Part II: Establishment description, categorization and menu review			
II_5	Facility type	Describe facility type.	Process
II_6	How many critical violations were noted during the last routine inspection?	Describe critical violations.	Equipment, People, Process
II_7	What is the establishment's source of potable water?	Describe water source.	Equipment
II_8	What is the establishment's sewage disposal method?	Describe sewage disposal method.	Equipment
II_11	Establishment Type	Describe establishment type.	Process
II_12	Do customers have direct access to unpackaged food such as a buffet line or salad bar in this establishment?	Describe customer access to unpackaged food.	People
II_13	Does the establishment serve raw or undercooked animal products (example, oysters or raw shell eggs) in any menu item?	Describe whether this food safety risk exists and whether customers are notified of this risk.	Food, Process
II_13a	Is a consumer advisory regarding the risk of consuming raw or undercooked animal products provided?		People

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II_13b	Where is the consumer advisory located? *(Check all that apply)*		People
II_14	Which one of the options below best describes the menu for this establishment?	Describe the establishment menu.	Food, Process
Part III: Manager Interview			
III_2	Is this an independent establishment or a chain establishment?	Describe establishment ownership.	People, Process
III_3	Approximately how many meals are served here daily?	Describe volume of business.	Economics, People, Process
III_4	What is the establishment's busiest day, in terms of number of meals served?		
III_5	Are any foods prepared or partially prepared at a commissary or other location?	Describe whether foods are prepared at commissaries.	Process
III_6	Other than daily specials, when was the last time food items were added to your menu(s)?	Describe whether food items have been added to the menu.	Food, People, Process
III_7	Where does the establishment purchase or acquire its food?	Describe establishment food sources.	Process
III_8	In total how long have you worked as a kitchen manager?	Describe manager experience.	People, Process
III_9	Approximately how long have you been employed as a kitchen manager in this establishment?		
III_10	How many kitchen managers, including you, are currently employed in this establishment?	Describe ratio of managers to workers (measure of worker supervision).	People
III_11	What language(s) do you and other managers in this establishment speak fluently? (Check all that apply)	Describe manager/worker communication/language barriers.	People
III_12	What languages do you and other managers speak at work? (Check all that apply		
III_13	In your opinion, how well do you communicate verbally with your food workers, very well, somewhat well or not well at all?		
III_14	Do any kitchen managers receive food safety training?	Describe manager food safety training.	People
III_14a	How many kitchen managers have had food safety training?		
III_14b	What type of food safety training do kitchen managers (you) receive?		
III_15	Does this establishment require that kitchen managers have a food safety certification?	Describe food safety certification.	People
III_16	Are any kitchen managers, including you, food safety certified?		
III_16a	How many kitchen managers in this establishment, including yourself, are food safety certified through..		
III_17	How many food workers do you have?	Describe staff size.	People, Process
III_18	What language(s) do food workers in this establishment speak fluently	Describe manager/worker communication/language barriers.	People

III_19	What languages do food workers speak at work?		
III_20	Do any food workers receive food safety training?	Describe food worker food safety training.	People
III_20a	How many food workers have had food safety training?		
III_20b	What type of food safety training do food workers receive?		
III_21	Does this establishment have a cleaning policy or schedule for the <u>kitchen floor</u>?	Describe cleaning policies.	Process
III_21a	Is this policy written?		
III_22	Does this establishment have a cleaning policy or schedule for the <u>refrigerator units, such as a walk-in or reach-in</u>?		
III_22a	Is this policy written?		
III_23	Does this establishment have a cleaning policy or schedule for the <u>cutting boards</u>?		
III_24	Does this establishment have a cleaning policy or schedule for the <u>food slicers</u>?		
III_24a	Is this policy written?		
III_25	Does this establishment have a cleaning policy or schedule for the <u>food preparation tables</u>?		
III_25a	Is this policy written?		
III_26	Does this establishment have a policy concerning disposable glove use?	Describe glove use policies.	Process
III_27	Does the glove policy require that food workers wear gloves:		
III_27a	…at all times while working in the kitchen?		
III_27b	…when handling ready-to-eat foods?		
III_27c	…when handling raw meat or poultry?		
III_27d	…when they have cuts or other skin injuries?		
III_28	Does this establishment have a policy to take the temperature of any incoming food products?	Describe temperature taking and recording policies/practices.	Process
III_28a	Are temperatures of incoming products recorded?		People
III_29	Excluding incoming products, does this establishment have a policy to take food temperatures?		Process
III_29a	Are these food temperatures recorded?		People

III_30	Does this establishment have a policy or procedure that requires food workers to tell a manager when they are ill?	Describe ill worker policies.	People
III_30a	Is this policy in writing?		
III_30b	Does this policy require ill workers to tell managers what their symptoms are?		
III_30c	Does this policy specify certain symptoms that ill workers are required to tell managers about?		
III_30c1	What are those symptoms? (Check all that apply)		
III_30d	Does this policy apply to kitchen managers as well as food workers?		
III_31	When food workers say they are ill, do you typically ask if they are experiencing certain symptoms?		
III_31a	What are those symptoms? (Check all that apply)		
III_32	Does this establishment have a policy or procedure to restrict or exclude ill workers from working?		
III_32a	Is this policy in writing?		
III_32b	Does this policy specify the specific symptoms that would prompt excluding or restricting ill workers from working?		
III_32b1	What are those symptoms? (Check all that apply)		
III_32c	Does this policy apply to kitchen managers as well as food workers?		
III_33	Do any kitchen managers (you) ever get paid when they miss work because they are ill?	Describe paid sick leave policies.	People
III_33a	How many kitchen managers get paid when they miss work because they are ill?		
III_34	Do any food workers ever get paid when work is missed because they are ill?		
III_34a	How many food workers get paid when they miss work because they are ill?		

Part IV: Establishment Observation			
IV_2	Are hand sinks available in the employee restroom(s)?	Describe availability of handwashing sinks, supplies and equipment.	Equipment
IV_2a	How many hand sinks are in the employee restrooms?		
IV_2b	Is warm water (minimum 100°F) available at all employee restroom hand sinks?		
IV_2c	Is soap available at (or near) all employee restroom hand sinks?		
IV_2d	Are paper or cloth drying towels available at (or near) all employee restroom hand sinks?		
IV_3	Is a hand sink available in the work area(s)?		
IV_3a	How many hand sinks are located in the work area(s)?		
IV_3b	Is warm water (minimum 100°F) available at all employee restroom hand sinks?		
IV_3c	Is soap available at (or near) all employee restroom hand sinks?		
IV_3d	Are paper or cloth drying towels available at (or near) all employee restroom hand sinks?		
IV_4	Are there cold storage units in the establishment?	Describe cold storage units and their temperatures.	Equipment
IV_4a	How many cold storage units are in the establishment?		
IV_4b	Which types of units did you observe?		
IV_5	Are all cold storage areas maintained at a temperature of 41°F or below?		
IV_5a	How many cold storage units are above 41°F?		
IV_6	Are any food workers using gloves while handling food?	Describe glove practices.	Equipment
IV_7	Is there a supply of disposable gloves available in the establishment?	Describe glove availability.	Economics, Equipment
IV_8	Are any food workers handling RTE foods with bare hands?	Describe bare hand contact practices.	People
IV_9	Are there records to indicate that the temperatures of incoming ingredients are being taken and recorded?	Describe temperature taking and recording practices.	People
IV_10	Are there records to indicate that the temperatures of foods, excluding incoming ingredients, are being taken and recorded?		
IV_11	Is there any evidence of direct cross contamination of raw animal products with ready to eat foods?	Describe practices that could lead to cross contamination.	People, Process
IV_12	Is there cooling of hot foods in this establishment?	Describe food cooling practices.	Process
IV_12a	What cooling method(s) are used?		

IV_13	Were any foods observed in hot holding?	Describe food holding practices.	People, Process
IV_13a	Were the temperatures of any foods in hot holding measured?		
IV_13b	Were the temperatures of all foods measured in hot holding at 130°F or above?		
IV_14	Were any foods observed in cold holding?		
IV_14a	Were the temperatures of any foods in cold holding measured?		
IV_14b	Were the temperatures of all foods measured in cold holding at 41°F or below?		
IV_15	Were any foods observed during cooking?	Describe cooking practices.	People, Process
IV_15a	Were the temperatures of any foods being cooked measured?		
IV_15b	Were the temperatures of all foods measured during cooking at the recommended temperatures?		
IV_16	Are wiping cloths used in the establishment?	Describe wiping cloth practices.	Equipment, Process
IV_16a	Are all wiping cloths stored in a sanitizer solution between uses?		
IV_17	Are there mechanical washing machines for dishes, utensils, or other equipment?	Describe dishwashing practices.	Equipment, Process
IV_17a	Does the wash cycle reach the temperatures recommended for that washing machine?		
IV_17b	Does the sanitizing cycle reach the temperatures recommended for sanitization?		
IV_17c	Is chemical sanitizing used?		
IV_17d	Did the chemical sanitizing cycle have the required levels of chemical sanitizer recommended for the machine?		
IV_18	Are there any hand washed dishes, utensils or other equipment?		
IV_18a	Are hand washed dishes, utensils or other equipment washed and sanitized (either with heat or chemical)?		
IV_18b	Is the sanitizing method (heat or chemical) properly implemented?		
IV_19	Did you observe signs and instructions posted in the establishment?	Describe signs.	People, Process
IV_19a	Did any signs or posted instructions use pictures or symbols to communicate a message?		
IV_19b	What languages did you observe on signs or instructions posted for food workers?		

Part V: Suspected/Confirmed Food			
V_5	Which of the following best describes the food preparation process used for this specific ingredient or multi-ingredient food prior to consumption?	Describe and classify the food prep processes that the establishment used to prepare the suspected/confirmed vehicle.	Process
V_6	During the likely time the ingredient / food was prepared, were any events noted that appeared to be different from the ordinary operating circumstances or procedures as described by managers and / or workers?	Out-of-the ordinary events can lead to potential food safety risks. These data will identify and describe these events.	Process
V_6a	If yes, how would they be best characterized		
V_7	Name of the single specific ingredient	Describe and classify food ingredients linked with the outbreak.	Food
V_8	Is the ingredient an animal product?		
V_8a	Select the type of animal product		
V_8b	If Poultry, select the type		
V_8c	If Seafood, select the type		
V_8d	For beef, poultry, pork, lamb, and seafood products select the best description of the product upon arrival at the foodservice establishment		
V_8e	For dairy, select the best description of the product upon arrival at the foodservice establishment		
V_8f	For eggs, select the best description of the product upon arrival at the foodservice establishment		
V_9	Is this ingredient a plant or plant product?		
V_9a	If yes, select the type of plant product		
V_9b	If Produce, select type *(Select only one*		
V_9c	Provide the best description of the plant product upon arrival of the product to the foodservice establishment		
V_10	Was the ingredient described in question 8 or 9?		
V_10a	Please describe the ingredient class/category?		
V_11	Is any information present (product manifests, records, tags, etc.) that this ingredient is an imported food item?	Describe the origin of the food.	Food

Table B.4.4. Variables included in descriptive analyses of contributing factors

Number	Question	Justification
VII_1	Were any contributing factors identified in this outbreak?	Describe whether contributing factors where identified.
VII_4	Were any Contamination Factors identified in this foodborne outbreak?	Describe whether contamination factors were identified.
VII_4a	How many Contamination Factors were identified in this foodborne outbreak?	Describe how many contamination factors were identified.
VII_5	Were any Proliferation/Amplification Factors identified in this foodborne outbreak?	Describe whether proliferation factors were identified.
VII_5a	How many Proliferation/Amplification Factors were identified in this foodborne illness outbreak?	Describe how many proliferation factors were identified.
VII_6	Were any Survival Factors identified in this foodborne outbreak?	Describe whether survival factors were identified.
VII_6a	How many Survival Factors were identified in this foodborne outbreak?	Describe how many survival factors were identified.
VII_7	Which Contributing Factor was identified?	Describe the specific contributing factors identified in the outbreak.
VII_8	In your judgment, was this the primary contributing factor for this outbreak?	Describe whether the contributing factors were primary contributing factors.
VII_8a	Briefly explain why this is a contributing factor in this outbreak.	Describe how contributing factors are identified.
VII_9	When did this factor most likely occur?	Describe when the contributing factors occurred.

To address the third goal of this data collection, *describe the associations between environmental antecedents and contributing factors,* we will conduct tests for association and logistic regression models.

Analysis will involve bivariate tests for association between individual environmental antecedent (explanatory) variables and the contributing factor (outcome) variables. Odds ratios will be calculated to assess the strength and direction of the bivariate relationships. For those bivariate associations found to be statistically significant at p<.30, the environmental antecedent variables will be used as candidate "predictors" to examine their multivariate relationships with the contributing factor variables. Multivariable logistic regression will be used to model for the effects that these environmental antecedent variables have in explaining the variations observed in the contributing factor variables. This type of analysis allows us to determine which

environmental antecedents contribute to the presence of the contributing factor, and the relative degree of impact that each environmental antecedent has in the presence of that contributing factor. A separate model will be developed for each contributing factor analyzed.

Table B.4.5 describes the study questions designed to address this third goal of this data collection and the data collection variables designed to answer those questions. Note that we will likely create composite environmental antecedent variables based on the individual variables listed in the table.

Table B.4.5. Study questions and the data collection variables designed to answer those questions

Study Question	Environmental Antecedent Variables	Contributing Factors
How are specific environmental antecedents related to **contamination** contributing factors?	II_5, II_6, II_7, II_8, II_11, II_12, II_13, II_14, III_2, III_3, III_4, III_5, III_7, III_8, III_9, III_10, III_11, III_12, III_13, III_14 (a, b), III_15, III_16 (a), III_17, III_18, III_19, III_20 (a, b), III_21 (a), III_22 (a), III_23 (a), III_24 (a), III_25 (a), III_26 (a), III_27 (a,b,c,d), III_30 (a,b,c,d), III_31 (a), III_32 (a, b, c), III_33 (a), III_34 (a), IV_2 (a, b, c, d), IV_3 (a, b, c, d), IV_6, IV_7, IV_8, IV_11, IV_16 (a), IV_17 (a, b, c, d), IV_18 (a, b), IV_19 (a,b), IV_20, V_1 (a), V_2, V_3, V_4, V_5, V_6 (a), V_7 , V_8 (a,b,c,d,e,f), V_9 (a,b,c), V_10 (a), V_11	C1-C15
How are specific environmental antecedents related to **proliferation** contributing factors?	II_5, II_6, II_11, II_13, II_14, III_2, III_3, III_4, III_5, III_6, III_8, III_9, III_10, III_11, III_12, III_13, III_14 (a, b), III_15, III_16 (a), III_17, III_18, III_19, III_20 (a, b), III_28 (a), III_29 (a), IV_4 (a, b), IV_5 (a, b), IV_12 (a), IV_13 (a), IV_14 (a)	P1-P12
How are specific environmental antecedents related to **survival** contributing factors?	II_5, II_6, II_13, II_14, III_2, III_3, III_4, III_5, III_6, III_8, III_9, III_10, III_11, III_12, III_13, III_14 (a, b), III_15, III_16 (a), III_17, III_18, III_19, III_20 (a, b), III_29 (a), IV_15 (a)	S1-S5

Table B.4.6 is a table shell that illustrates how we might analyze and present the data examining the bivariate relationships between specific environmental antecedents and the contributing factor of bare-hand contact with ready-to-eat food by a food worker who is suspected to be infectious (contributing factor C10).
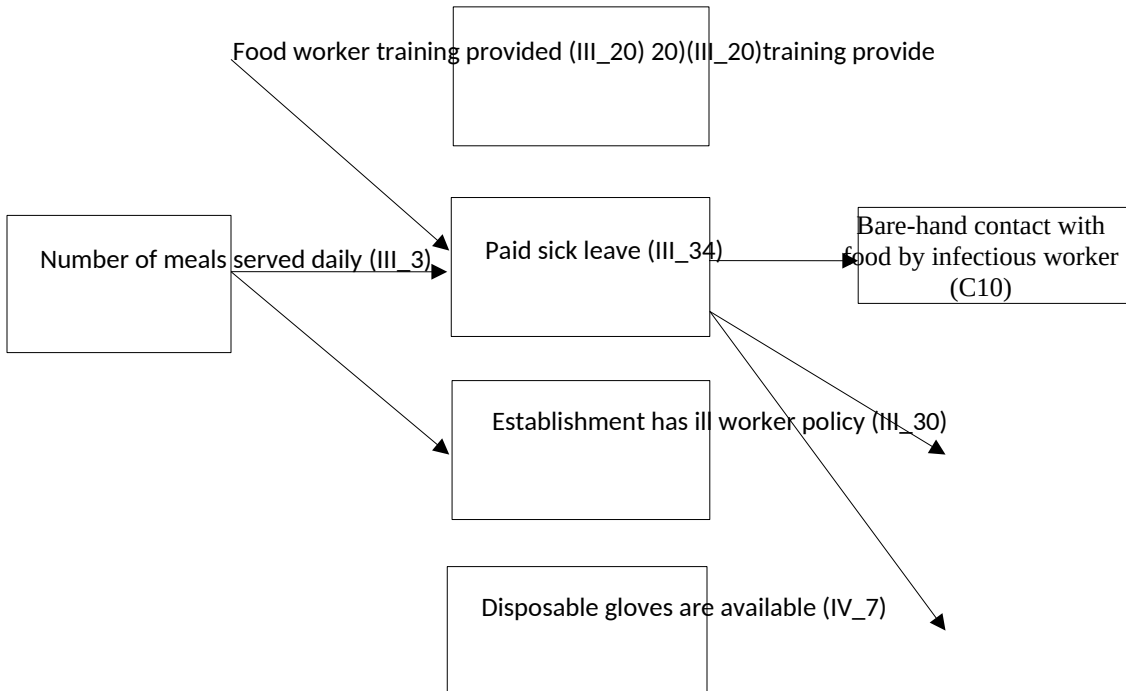
Table B.4.6. Example Table Shell: Environmental antecedent variables associated with the outcome variable of whether the contributing factor of bare-hand contact with ready-to-eat food by an infectious food worker was identified, bivariate analyses

Environmental antecedent variables	Bare hand contact with food by infectious food worker (C10) identified as a contributing factor	
	OR (95% CI)	P
Number of meals served daily (III_3)		
<300	x.xx (ref)	.xxx
≥300	x.xx	
Food worker training provided (III_20)		
No	x.xx (ref)	.xxx
Yes	x.xx	
Paid sick leave provided (III_34)		
No	x.xx (ref)	.xxx
Yes	x.xx	
Establishment has ill worker policy (III_30)		
No	x.xx (ref)	.xxx
Yes	x.xx	
Disposable gloves are available in establishment (IV_7)		
No	x.xx (ref)	.xxx
Yes	x.xx	
Hand sink is available in work area (IV_3)		
No	x.xx (ref)	.xxx
Yes	x.xx	

OR=Odds Ratio, P=probability level

Below is an example figure demonstrating results from a multivariate analysis of the associations between environmental antecedents and the contributing factor of bare-hand contact with ready-to-eat food by an infectious food worker. This type of analysis allows us to determine the relationships among environmental antecedents and between environmental antecedents and contributing factors. It allows us to determine the direct and indirect effects of each environmental antecedent on the contributing factor. A separate model would be developed for each contributing factor analyzed.

Table B.4.7. Example Table Shell- Environmental antecedent variables associated with the outcome variable of whether the contributing factor of bare-hand contact with ready-to-eat food by an infectious worker was identified, multivariate analyses

Food worker training provided (III_20) 20)(III_20)training provide

Number of meals served daily (III_3)

Paid sick leave (III_34)

Bare-hand contact with food by infectious worker (C10)

Establishment has ill worker policy (III_30)

Disposable gloves are available (IV_7)

B.5. Individuals Consulted on Statistical Aspects and Individuals Collecting and/or Analyzing Data

The following persons were primarily responsible for designing the instrument and will be primarily responsible for analyzing data. We cannot identify data collectors until we receive OMB approval and can invite food safety programs to participate in the program.

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