

EHS-Net Leafy Greens Handling Study Protocol

I. Project Overview

Title

EHS-Net Leafy Greens Handling Study

Protocol Summary

Few studies have examined in detail the nature of leafy green handling policies and practices in food service establishments. The purpose of this study is to collect descriptive data on leafy green handling policies and preparation practices in food service establishments, and examine the relationship between the leafy green practices and food service establishment characteristics. Data for this study will be collected through interviews with restaurant managers and observations of leafy green storage and preparation practices in the restaurant. This is an Environmental Health Specialists Network (EHS-Net) special study. EHS-Net is a collaboration involving the Centers for Disease Control and Prevention (CDC), the U.S. Food and Drug Administration (FDA), and nine EHS-Net sites (comprised of all or some counties in California, Connecticut, Georgia, Iowa, Minnesota, New York, Oregon, Rhode Island and Tennessee); these partners have come together in an effort to better understand the environmental causes of foodborne illness.

Investigators/collaborators/funding

Investigators include EHS-Net staff at each of the nine EHS-Net sites. Funding for this study will be provided through EHS-Net.

II. Introduction

Literature Review/Justification

Epidemiological data indicate that leafy greens are a significant source of foodborne illness outbreaks. In 2004 and 2005, 51 outbreaks were associated with leafy greens. Of these outbreaks, with known etiologies, 87% were Norovirus or suspected Norovirus, 8% were *E. coli*, and 5% were *Salmonella*. Additionally, the majority (71%) of these outbreaks occurred in restaurants.

E. coli and *Salmonella* outbreaks can be caused by foods contaminated at the source or by foods contaminated during storage and preparation from other contaminated foods. Norovirus outbreaks are often caused by ill food workers preparing ready-to-eat foods without taking proper precautions to prevent contamination. Thus, it is important to prevent: contamination of food at the source; contamination of food during storage and preparation (e.g., through preventing ill food workers from handling food); and survival and amplification of pathogens on food once it has been contaminated. This prevention requires proper food storage and preparation practices. The high number of outbreaks associated with leafy greens in restaurants suggests that leafy greens are being stored and prepared improperly in restaurants. Yet relatively little data exists concerning leafy green storage and preparation policies and practices in restaurants. Thus, the purpose of this study is to gain a better understanding of how leafy greens are stored and prepared in restaurants.

Objectives

The *primary purpose* of this study is to collect descriptive data on the storage and preparation policies and practices of leafy greens prepared for raw consumption. Specifically examining:

- Leafy green types (e.g., spring mix, iceberg) - form upon receipt (e.g., pre-cut, whole, bagged); type of shipping containers; type of records maintained (e.g., temperature records, source records); and, where possible, the condition and temperature upon receipt.

- Leafy green storage (e.g., type of storage units, temperature of storage units, temperature of product, type of storage containers) in the restaurant.
- Leafy green preparation (e.g., washing, cutting, chopping and mixing practices; buffet serving line practices; temperatures during preparation; form in which greens are served; employee hand contact with leafy greens).

A *secondary purpose* of this study is to determine whether leafy green storage and preparation policies and practices are related to establishment characteristics, manager food safety knowledge, restaurant ownership (chain versus independent), presence of certified kitchen managers, and how the restaurant responds to food safety challenges.

III. Procedures/Methods

Design

This study will use a cross-sectional design to collect descriptive data on leafy green storage and preparation policies and practices in restaurants. Information will be collected through an interview with the kitchen manager and through observations of leafy green handling practices. The study will be performed by EHS-Net environmental health specialists (EHSs) who work with state and local health departments.

Data Collection

The EHS-Net specialist will assemble a list of all the restaurants in their site. From this list the EHS-Net specialists will contact randomly selected restaurants by telephone and determine their interest in participating in the study. If the restaurant is willing to participate, the EHS-Net specialist will determine if the restaurant prepares leafy greens for raw consumption and arrange a time to conduct the survey. For the interview portion of the questionnaire, the EHS-Net specialist will interview a manager with authority over the kitchen. For the observation portion of the survey, the EHS-Net specialist will observe the establishment kitchen, watching leafy green handling and preparation processes. The entire survey will take approximately two hours to complete.

The data collection will be anonymous. Although specialists will keep a list of establishments in which they have collected data, no identifying information on restaurants will be stored with the data. Thus, it will not be possible to link the study data with specific restaurants. Additionally, any information used to schedule restaurant visits, such as call logs, will be destroyed once data collection is complete.

Data Entry and Management

Data will be entered into a web-based information system designed specifically for this project. User accounts will be issued to the EHS-Net specialist in each site. Account privileges identify the data each specific user is authorized to access and the functions they are authorized to perform. Each EHS-Net specialist is responsible for the administration of the system for his or her own site, and this includes user administration, correction and deletion of records. All data records are owned by the site entering the data. Each site has authority over its records and must grant permission to other sites or agencies who would like to use the data.

Study Population

The study population will include all restaurants within the EHS-Net sites, that meet the EHS-Net definition of a restaurant, and prepare at least one of a specified type of leafy green for raw consumption.

The EHS-Net sites include all or some counties in each of the following nine states: California, Connecticut, Georgia, Iowa, Minnesota, New York, Oregon, Rhode Island and Tennessee. EHS Net has defined a restaurant as an establishment that prepares and serves food to customers; excluding institutions, food carts mobile food units, temporary food stands, restaurants in supermarkets and establishments that only cater

events. The restaurant must prepare, for raw consumption, one of the following types of leafy greens: iceberg lettuce, romaine lettuce, leaf lettuce, butter lettuce, baby leaf lettuce (i.e., immature lettuce or leafy greens), arugula, escarole, endive, spring mix, spinach, and cabbage. For the purposes of this study, leafy greens do not include herbs (e.g., cilantro, dill, parsley, sage, rosemary, thyme).

Each site will select a convenience sample from which to randomly select a minimum of fifty restaurants for the study. This will yield a total study population of at least 450 restaurants. Each site will include only one restaurant from each regional or national chain in its study population.

Study Timeline

The following table provides the estimated timeline for project activities.

Activity	Time Schedule
Conduct pilot	2 weeks after HS Administrator concurs with IRB exemption
Conduct study	1-4 months after exemption concurrence
Analyze data collected	5-8 months after exemption concurrence

Human Subjects

This study meets the two criteria for IRB exemption. First, the data collection is anonymous. Although EHS-Net specialists will keep a list of establishments in which they have collected data, no identifying information on the restaurants will be stored with the data. Thus, it will not be possible to link the study data with specific restaurants. Additionally, any information used to schedule restaurant visits, such as call logs, will be destroyed once data collection is complete. Second, the data collection will not put people at risk for loss of employment, reputation, or financial standing. No information will be collected during the study on individuals, only on restaurant policies and procedures. Additionally, as the data are anonymous, it will not be possible to link data to individual restaurants.

Informed Consent

A waiver of documentation of informed consent is requested in accordance with 45 CFR 46.117(c)(2). The proposed research meets the first criteria for the waiver, as it presents no more than minimal risk of harm to participants as the probability and magnitude of harm or discomfort anticipated in answering these questions are not greater in and of themselves than those ordinarily encountered in daily life. Additionally, as participants in this study will not be providing personally identifiable information, activities for which written consent is not normally required outside the research context, the study also meets the second criteria for waiver.

Before conducting the study, we will obtain verbal informed consent from the restaurant manager. The EHS-Net specialist will read the manager a short introduction describing the purpose of the study and how the data will be used ([See Appendix](#)). The interviewer will then ask the manager if he or she agrees to participate in the study. If the manager agrees, the interview will proceed; if the manager does not agree, the interview will cease.

Study Instrument

The data collection instrument was developed by EHS-Net specialists. The instrument consists of two sections: a manager interview section and an observation section ([See Appendix](#)). During the interview, the specialist will ask the restaurant manager, or the person who has authority over the kitchen, about the restaurant and its leafy green handling and preparation policies and practices. In the observation section, the specialist will observe and record data on the kitchen environment and the leafy green storage and preparation activities.

Data Handling and Analysis

Analysis Plan

The analysis of the data will proceed in several stages. The first stage of analysis will involve data cleaning, editing, and recoding. The data will be checked for accuracy and examined for inconsistencies. A frequency response will be done for each variable to examine item non-response and extraneous responses. Variables with high item non-response or of poor quality will be discarded. The second stage will involve a descriptive analysis of the data set by running univariate frequencies and cross-tabulations for selected variables by demographic variables (e.g. Independent vs. Chain restaurants). Tests for association will be done using chi-square and t-tests. Analysis may also involve regression modeling of the data to examine any multivariate relationships and to control for confounding.

Analysis Software

SAS system for windows version 8 will be used to analyze data.

Bias in data collection, measurement and analysis

Given the nature of the study, the data are subject to interviewer bias and recall bias on the part of the interviewee.

Study Limitations

Data will be collected in those sites participating in EHS-Net (comprised of all or some counties in California, Connecticut, Georgia, Iowa, Minnesota, New York, Oregon, Rhode Island and Tennessee). Therefore, findings may not be generalizable to the U.S. population as a whole. As mentioned above the data may be subject to interviewer and recall bias. This will be reported with the analysis of the data.

Dissemination, Notification, and Reporting of Results

Results of the analysis of the data will be published and presented in appropriate journals and meetings. Each site may disseminate reports to the foodservice establishments in which evaluations were done if they so choose.

EHS-Net Leafy Greens Study Data Collection Instrument

Time evaluation began: _____:_____ am pm

QUESTIONS TO BE ANSWERED BY DATA COLLECTOR

1. Establishment type:
 - Prep Serve
 - Cook Serve
 - Complex
2. How are sinks used for leafy green preparation plumbed?
 - Directly
 - Indirectly
3. Do the state/local codes require indirect plumbing?
 - Yes
 - No

MANAGER INTERVIEW**Manager Informed Consent**

Let me give you a little background on why I'm here and what we are going to be doing. I'm working with _____ (health department) on a research project designed to help us understand how raw leafy greens are stored and prepared in restaurants. Your restaurant was picked at random to be in this project. Participation in this study is voluntary. You can choose to stop at any time. If you don't want to be part of the study or if you change your mind later, nothing will happen to you. Whether you are part of the study or not will not affect your restaurant's score on any health inspection.

Having said that, I need to let you know that if at any time during my visit I see something that is an imminent health hazard, such as no power, no water or sewage on the floor, I will need to stop the study and report the problem to your local health department.

I'm going to ask you some questions about this restaurant's policies and practices. If any of the questions make you uncomfortable you can choose not to answer them. The information I collect today will be combined with information from other restaurants in various states. Your name and your restaurant's name will not be linked in any way to the information we collect, nor will they be included in any reports.

The information you provide will be valuable in helping us understand the difficult issues restaurants face, so we ask you to be as open and honest as possible.

After our interview, which will take about 30 minutes, I'd like to observe raw leafy greens in storage and being prepared- washed or cut, for example. The observation should take about an hour.

Do you have any questions?

If you have any questions at a later time, you can contact: (Local Contact Name). (If have card) My information is on this card.

Do you agree to let me interview you?

- Yes (Continue with the interview)
- No (Thank you for your time)

EHS-Net Leafy Greens Study: MANAGER INTERVIEW

For this study we are interested in leafy greens that are prepared for raw consumption, not those used in soups or those that will be cooked before consumption. We recognize that no regulatory requirements about leafy green practices exist, but we would like to gather some information about your policies and practices.

*GENERAL LEAFY GREEN INFORMATION***1. What types of leafy greens are prepared in this establishment for raw consumption? (Check all that apply)**

- | | |
|--|---|
| <input type="checkbox"/> Iceberg Lettuce | <input type="checkbox"/> Endive |
| <input type="checkbox"/> Romaine Lettuce | <input type="checkbox"/> Spring mix |
| <input type="checkbox"/> Leaf Lettuce | <input type="checkbox"/> Spinach |
| <input type="checkbox"/> Butter Lettuce | <input type="checkbox"/> Cabbage |
| <input type="checkbox"/> Baby Leaf Lettuce (immature leaf lettuce or greens) | <input type="checkbox"/> Other, describe: _____ |
| <input type="checkbox"/> Escarole | <input type="radio"/> Refused |

2. How are raw leafy greens used on the menu in your establishment? (Check all that apply)

- Garnish
 Salads
 Self-service salad (Buffet)
 Sandwiches/Wraps
 Other, describe: _____

*ESTABLISHMENT DEMOGRAPHICS/ CLASSIFICATIONS***3. Is this an independent establishment or a chain establishment?**

- Independent
 Chain
 Refused

4. Which one of the following best describes your restaurant's menu—American, Asian, Mexican, Italian, or other?

- | | |
|---|--|
| <input type="radio"/> American (non-ethnic) | <input type="radio"/> Italian |
| <input type="radio"/> Asian | <input type="radio"/> Other (Please describe): _____ |
| <input type="radio"/> Mexican | <input type="radio"/> Refused |

5. Approximately how many meals are served here daily?

- | | |
|---|--|
| <input type="radio"/> 1 – 50 meals per day | <input type="radio"/> 501 – 1000 meals per day |
| <input type="radio"/> 51 – 100 meals per day | <input type="radio"/> More than 1000 meals per day |
| <input type="radio"/> 101 – 500 meals per day | <input type="radio"/> Refused |

6a. Approximately how long have you been employed as a manager in this establishment?

- | | |
|--|---|
| <input type="radio"/> Less than 6 months | <input type="radio"/> 6 years- less than 8 years |
| <input type="radio"/> 6 months-less than a year | <input type="radio"/> 8 years- less than 10 years |
| <input type="radio"/> 1 year- less than 2 years | <input type="radio"/> 10 or more years |
| <input type="radio"/> 2 years-less than 4 years | <input type="radio"/> Refused |
| <input type="radio"/> 4 years- less than 6 years | |

6b. Approximately how long have you been employed as a manager in the food service industry?

- | | |
|--|---|
| <input type="radio"/> Less than 6 months | <input type="radio"/> 6 years- less than 8 years |
| <input type="radio"/> 6 months-less than a year | <input type="radio"/> 8 years- less than 10 years |
| <input type="radio"/> 1 year- less than 2 years | <input type="radio"/> 10 or more years |
| <input type="radio"/> 2 years-less than 4 years | <input type="radio"/> Refused |
| <input type="radio"/> 4 years- less than 6 years | |

EHS-Net Leafy Greens Study: MANAGER INTERVIEW

EHS-Net Leafy Greens Study: MANAGER INTERVIEW

7. **How many kitchen managers, including you, are currently employed in this establishment? By kitchen manager I mean persons who have overall responsibility for all or a large portion of an establishment and specifically control over the kitchen area.**
- Number of kitchen managers: _____
 - Refused
8. **How many food workers are currently employed in this establishment? By food workers I mean employees who work in the kitchen, not wait-staff or others who have no food handling responsibilities or who have very limited food contact such as adding garnish or condiments to the plate before it is served.**
- Number of food workers: _____
 - None
 - Refused
9. **How many food workers and managers, including yourself, prepare raw leafy greens?**
- Number of food workers: _____
- Unsure
- Refused

FOOD SAFETY TRAINING & CERTIFICATION

10. **Do kitchen manager(s) receive any instruction or training about how to handle leafy greens? This instruction could be on the job, or through a course or class. (Note: if they received training on produce and it specifically covers leafy greens, then the answer is Yes. You may need to probe)**
- Yes
- No *If No skip to #11*
- Refused *If Refuse skip to #11*
- a. **If yes, What type of leafy green handling instruction have you received? (Check all that apply)**
- A Class/Course (University or Culinary school)
- On the job training (Informal training)
- Food Safety Certification classes
- Computer-based training/Online training
- Videos
- Posted instructions or materials
- Other _____
- Unsure
- Refused
11. **How many managers in this establishment are food safety certified through registries, such as ServSafe, National Registry of Food Safety Professionals, Environmental Health Testing or Thomson Prometric?**
- Number of managers: _____
- Unsure
- Refused
12. **Are any food workers given instruction/training on how to handle leafy greens? This instruction could be on the job, or through a course or class. (Note: if they received training on produce and it specifically covers leafy greens, then the answer is Yes. You may need to probe)**
- Yes *If yes, how many _____*
- No *If No skip to #13*
- Refused *If Refused skip to #13*

EHS-Net Leafy Greens Study: MANAGER INTERVIEW

a. If yes, **What type of leafy green handling instruction is given?** (Check all that apply)

- A Class/Course (University or Culinary school)
- On the job training (Informal Training)
- Food Safety Certification classes
- Computer-based training/Online training
- Videos
- Posted instructions or materials
- Other (describe) _____
- Refused

EMPLOYEE HEALTH POLICIES

13. Does this establishment have a policy or procedure that requires employees to tell a manager when they are ill?

- Yes
- No *If No skip to #14*
- Refused *If Refused skip to #14*

a. **Is this policy in writing?**

- Yes
- No
- Unsure
- Refused

14. Does this establishment have a policy or procedure to send employees home or to assign non-food contact activities to employees who come to work ill?

- Yes
- No *If No, skip to #15*
- Refused *If Refused, skip to #15*

a. **Is this policy in writing?**

- Yes
- No
- Unsure
- Refused

15. What symptoms do managers ask about or do employees tell managers about when they say they are sick?

(Check all that apply)

- | | |
|--|---|
| <input type="checkbox"/> Vomiting | <input type="checkbox"/> Skin infection |
| <input type="checkbox"/> Diarrhea | <input type="checkbox"/> "Cold" |
| <input type="checkbox"/> Fever | <input type="checkbox"/> Achy (aches and pains) |
| <input type="checkbox"/> Cough | <input type="checkbox"/> Cold sweat |
| <input type="checkbox"/> Sneezing | <input type="checkbox"/> Malaise- generalized feeling of discomfort, illness, or lack of well-being |
| <input type="checkbox"/> Runny Nose | <input type="checkbox"/> Nausea/upset stomach |
| <input type="checkbox"/> Sore Throat | <input type="checkbox"/> Other (Please describe) _____ |
| <input type="checkbox"/> "Flu" symptoms | <input type="checkbox"/> No specific symptoms are asked about |
| <input type="checkbox"/> "Yellow" eyes or skin | <input type="checkbox"/> Employees do not provide symptoms when they are sick |
| <input type="checkbox"/> Boils/cuts | |

EHS-Net Leafy Greens Study: MANAGER INTERVIEW**16. What is the establishment's policy or procedure about what to tell employees when they call in sick?**

- Tell them to stay home
- Tell them to stay home depending on their symptoms
- Tell them to stay home, depending on their trustworthiness
- Tell them to stay home, and tell them to find someone to work in their place
- Tell them to stay home if staffing is adequate; tell them to come in if short staffed
- Tell them to stay home if staffing is adequate: tell them to come in if short staffed but limit their activities to non-food contact.
- Tell them to come to work anyway
- No policy
- Other (*Please describe*) _____
- Refused

17. What is the establishment's policy or procedure about employees who arrive ill or become ill at work?

- Send employee home
- Send employee home depending on their symptoms
- Send employee home, depending on their trustworthiness
- Send employee home, and tell them to find someone to work in their place
- Send employee home if staffing is adequate; tell them to stay if short staffed
- Send employee home if staffing is adequate: tell them to stay if short staffed but limit his/her food contact responsibilities
- No policy
- Other (*Please describe*) _____
- Refused

HANDWASHING AND GLOVE USAGE POLICIES**18. Does this establishment have a policy or procedure concerning hand washing?**

- Yes
- No *If No, skip to #19*
- Refused *If Refused, skip to #19*

a. Is this policy written?

- Yes
- No
- Unsure
- Refused

b. Does this policy require washing hands BEFORE handling leafy greens?

- Yes
- No
- Unsure
- Refused

19. Does this establishment have a policy or procedure concerning glove usage?

- Yes
- No *If No, skip to #20*
- Refused *If Refused, skip to #20*

a. Is this policy written?

- Yes
- No
- Unsure
- Refused

b. Does this glove usage policy or procedure require that employees wear gloves while handling RTE raw leafy greens?

- Yes
- No
- Unsure
- Refused

EHS-Net Leafy Greens Study: MANAGER INTERVIEW**LEAFY GREEN AWARENESS**

Again, we know that no regulatory requirements about leafy green practices exist, but we would like to gather some information about your perceptions.

20. Where do you think possible food safety problems associated with leafy greens *most likely* occur? Please select **only one from this list.** (*Show list*)

- At the farm
- At the processing plant
- During transportation
- In the food service establishment
- When customers take food from establishments home with them
- Refused

21. If contamination of leafy greens were to occur in your establishment, how or where would it most likely occur?

- Refused

22. Does your establishment have any policies or procedures specifically targeting leafy greens? For example, you may have policy that says you need to store or wash greens in a specific place or at a certain temperature.

- Yes
- No *If No, skip to #23*
- Refused *If Refused, skip to #23*

a. Are these policies written?

- Yes
- No
- Unsure
- Refuse

RECEIVING

23. From which source(s) do you receive your leafy greens? (*Check all that apply*).

- General Distributor
- Produce Distributor
- Grocery Store
- Wholesale store
- Local Seasonal sources / farm stands
- Other (*describe*) _____
- Refused

24. Are leafy greens delivered to your establishment by the source or distributor, or do you pick them up? (*Check all that apply*)

- Leafy greens are delivered by source/distributor
- Leafy greens picked up by establishment
- Unsure
- Refused

EHS-Net Leafy Greens Study: MANAGER INTERVIEW**a. Are leafy greens delivered in a refrigerated truck?**

- Yes
 No
 Unsure
 Refused

25. Does your establishment/parent company have any special requirements (buyer specs) of your supplier for leafy greens used in the establishment?

- Yes
 No *If No, skip to #26*
 Unsure *If Unsure, skip to #26*
 Refused *If Refuse skip to #26*

a. What are your safety requirements or process checks? (Check all that apply)

- Do not know
 Do not know, but someone in the corporation ('up the chain') knows
 Using a source that we know is trustworthy
 Using a source that is an "Approved" Supplier
 Using a Source with a certified Process - a "GAP", "ISO" (International Standards Organization), or "HACCP certified"
 Using a Local Source or Organic farm
 Analysis for specified microbe count, or other standard, by any documentation for the Lot
 Product temperature upon receipt/storage
 Labeling and/or packaging specification
 Check for any other Requirement or Specification, *Describe* _____
 Good agricultural practices
 High quality product upon receipt (reject rotting product)
 Refused

26. How often are leafy greens delivered to your establishment?

- Less than once/week
 1 time/week
 2 times/week
 3 times/week
 4 times/week
 Daily
 Refused

27. Approximately how many pounds of leafy greens are delivered with each delivery?

- 1 - 10 lbs
 11 - 20 lbs
 21 - 50 lbs
 51-100 lbs
 100+ lbs
 Unsure
 Refused

28. Do you keep purchase records or source records, such as receipts, for your leafy greens here in the establishment?

- Yes
 No *If No, Skip to #29*
 Unsure *If Unsure, Skip to #29*
 Refused *If Refuse, Skip to #29*

a. What type of records do you keep? (Check all that apply)

- Purchase receipts
 Delivery receipts
 Invoices
 Lot numbers
 Labels
 Origin information (farm names)
 Other (*describe*) _____
 Unsure
 Refused

EHS-Net Leafy Greens Study: MANAGER INTERVIEW**b. How long do you keep these records?** *(Check all that apply)*

- | | |
|--|---|
| <input type="checkbox"/> Less than a month | <input type="checkbox"/> >1 year to 2 years |
| <input type="checkbox"/> 1 month | <input type="checkbox"/> > 2 years |
| <input type="checkbox"/> 2 - 6 months | <input type="radio"/> Unsure |
| <input type="checkbox"/> 7 - 12 months | <input type="radio"/> Refused |

29. Has your establishment ever rejected a shipment of leafy greens?

- Yes
 No *If No, Skip to #30*
 Unsure *If Unsure, Skip to #30*
 Refused *If Refuse, Skip to #30*

a. Which condition(s) cause your establishment to reject a shipment(s) of leafy greens? *(Check all that apply)*

- The source was NOT an “Approved” Supplier
 The source did not have required certifications - “GAP”, “ISO”, or “HACCP certified
 No documentation of analysis for specified microbe count or other standard
 Appearance of Product: Browning, wilting, limpness, bruising, cuts, tears, dents rot, mold, and/or dirt
 Bad aroma or taste, off-smells
 Product was out of temperature range or maximum
 Product moisture, soggy, dripping
 Required carton, label, packaging, and/or information was damaged and/or missing/not available
 Condition of transport vehicle
 Recall or traceback
 Other *(describe)* _____
 Unsure
 Refused

EQUIPMENT/SANITATION PRACTICES**30. Does the establishment have any of the following?** *(Check all that apply)*

- Produce only area of the kitchen
 Produce only sinks
 Produce only cutting boards
 Produce only utensils
 Produce only area in the main walk in
 Produce only cooler
 Vegetable spinner
 Refused

If any of the answers in #30 are checked, ask 31, otherwise, skip.

31. Does the establishment have a policy on cleaning and sanitizing these items/areas?

- Yes for all of them
 Yes for some of them
 No *If No, Skip to #32*
 Refused *If Refused, Skip to #32*

a. Is this a written policy?

- Yes Unsure
 No Refuse

EHS-Net Leafy Greens Study: MANAGER INTERVIEW**SERVING****32. Are any leafy green menu items held in a buffet line or on a salad bar?**

- Yes
 No *If No, Skip to#33*
 Refused *If Refused, Skip to#33*

a. Do customers have direct access to unpackaged food when they serve themselves from the buffet/salad bar?

- Yes
 No
 Refused

b. Do managers/food workers monitor customer use of the buffet line or salad bar?

- Yes
 No
 Refused

c. Is the leafy green product in the buffet/salad bar refilled or replaced during service hours?

- Yes
 No *If No, Skip to#33*
 Refused *If Refused, Skip to#33*

d. How often is the leafy green product refilled or replaced?

- | | |
|---|---|
| <input type="radio"/> Hourly | <input type="radio"/> Every 17-19 hours |
| <input type="radio"/> Every 2-4 hours | <input type="radio"/> Every 20-24 hours |
| <input type="radio"/> Every 5-7 hours | <input type="radio"/> Daily |
| <input type="radio"/> Every 8-10 hours | <input type="radio"/> As needed |
| <input type="radio"/> Every 11-13 hours | <input type="radio"/> Unsure |
| <input type="radio"/> Every 14-16 hours | <input type="radio"/> Refused |

33. Does this establishment prepare and/or package for individual service any items containing raw leafy greens, such as salads and sandwiches, for sale to customers?

- Yes
 No *If No, Skip to#34*
 Refused *If Refused, Skip to#34*

a. What is the maximum time these prepared/packaged items are held in the establishment?

- Less than 1 day 6-7 days
 1 day Longer than week
 2 days Unsure
 3-5 days Refused

EHS-Net Leafy Greens Study: MANAGER INTERVIEW-PREPARATION

Now I am going to be asking you some questions about storage, washing, and preparation of leafy greens that will be served raw. I am going to start with questions about storage.

34. Are leafy greens stored in the establishment?

- Yes Unsure *Skip to#36*
 No *Skip to#36* Refused *Skip to#36*

a. What types of leafy greens are stored in this establishment? (Check all that apply)

- | | |
|---|-------------------------------------|
| <input type="checkbox"/> Iceberg | <input type="checkbox"/> Endive |
| <input type="checkbox"/> Romaine | <input type="checkbox"/> Spring mix |
| <input type="checkbox"/> Leaf lettuce | <input type="checkbox"/> Spinach |
| <input type="checkbox"/> Butter lettuce | <input type="checkbox"/> Cabbage |
| <input type="checkbox"/> Baby leaf lettuce | <input type="checkbox"/> Escarole |
| <input type="checkbox"/> Other: <i>(describe)</i> _____ | |
| <input type="radio"/> Unsure | <input type="radio"/> Refused |

EHS-Net Leafy Greens Study: MANAGER INTERVIEW-PREPARATION

Now I am going to ask you a series of questions about storage of each of these types of leafy greens.

Ask each of the questions (a-g) in the following grid for each type of leafy green chosen in 34a. In other words, complete one column for each type of leafy green chose in 34a. You may need to use multiple copies of the grid.

35.	Type #:	Type #:	Type #:
a. What is the type of leafy green?	<input type="radio"/> Iceberg <input type="radio"/> Endive <input type="radio"/> Romaine <input type="radio"/> Spring mix <input type="radio"/> Leaf lettuce <input type="radio"/> Spinach <input type="radio"/> Butter lettuce <input type="radio"/> Cabbage <input type="radio"/> Baby leaf lettuce <input type="radio"/> Escarole <input type="radio"/> Other: _____ <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> Iceberg <input type="radio"/> Endive <input type="radio"/> Romaine <input type="radio"/> Spring mix <input type="radio"/> Leaf lettuce <input type="radio"/> Spinach <input type="radio"/> Butter lettuce <input type="radio"/> Cabbage <input type="radio"/> Baby leaf lettuce <input type="radio"/> Escarole <input type="radio"/> Other: _____ <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> Iceberg <input type="radio"/> Endive <input type="radio"/> Romaine <input type="radio"/> Spring mix <input type="radio"/> Leaf lettuce <input type="radio"/> Spinach <input type="radio"/> Butter lettuce <input type="radio"/> Cabbage <input type="radio"/> Baby leaf lettuce <input type="radio"/> Escarole <input type="radio"/> Other: _____ <input type="radio"/> Unsure <input type="radio"/> Refused
b. Are these leafy greens head; fresh cut, <u>not</u> ready to eat; or fresh cut, ready to eat?	<input type="radio"/> Head <input type="radio"/> Fresh cut, <u>not</u> RTE <input type="radio"/> Fresh cut, RTE <input type="radio"/> Fresh cut, unsure about RTE <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> Head <input type="radio"/> Fresh cut, <u>not</u> RTE <input type="radio"/> Fresh cut, RTE <input type="radio"/> Fresh cut, unsure about RTE <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> Head <input type="radio"/> Fresh cut, <u>not</u> RTE <input type="radio"/> Fresh cut, RTE <input type="radio"/> Fresh cut, unsure about RTE <input type="radio"/> Unsure <input type="radio"/> Refused
c. Where are the leafy greens stored when they arrive? (Check all that apply)	<input type="checkbox"/> Produce cooler <input type="checkbox"/> Walk in cooler <input type="checkbox"/> Reach in cooler <input type="checkbox"/> Ambient storage <input type="checkbox"/> Washed immediately <input type="checkbox"/> Other: _____ <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="checkbox"/> Produce cooler <input type="checkbox"/> Walk in cooler <input type="checkbox"/> Reach in cooler <input type="checkbox"/> Ambient storage <input type="checkbox"/> Washed immediately <input type="checkbox"/> Other: _____ <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="checkbox"/> Produce cooler <input type="checkbox"/> Walk in cooler <input type="checkbox"/> Reach in cooler <input type="checkbox"/> Ambient storage <input type="checkbox"/> Washed immediately <input type="checkbox"/> Other: _____ <input type="radio"/> Unsure <input type="radio"/> Refused
d. In what type of packaging is product stored BEFORE preparation? (Check all that apply)	<input type="checkbox"/> Individual film wrap <input type="checkbox"/> Paper <input type="checkbox"/> Waxed cardboard box <input type="checkbox"/> Unwaxed cardboard box <input type="checkbox"/> Sealed plastic bag <input type="checkbox"/> Other _____ <input type="checkbox"/> Not stored <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="checkbox"/> Individual film wrap <input type="checkbox"/> Paper <input type="checkbox"/> Waxed cardboard box <input type="checkbox"/> Unwaxed cardboard box <input type="checkbox"/> Sealed plastic bag <input type="checkbox"/> Other _____ <input type="checkbox"/> Not stored <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="checkbox"/> Individual film wrap <input type="checkbox"/> Paper <input type="checkbox"/> Waxed cardboard box <input type="checkbox"/> Unwaxed cardboard box <input type="checkbox"/> Sealed plastic bag <input type="checkbox"/> Other _____ <input type="checkbox"/> Not stored <input type="radio"/> Unsure <input type="radio"/> Refused
e. Does the establishment have a policy on how long leafy greens are kept in storage?	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Unsure <input type="radio"/> Refused
f. What is the maximum time the product will be STORED in the establishment?	<input type="radio"/> 1 day <input type="radio"/> 2 - 4 days <input type="radio"/> 5 - 7 days <input type="radio"/> Longer then 1 week <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> 1 day <input type="radio"/> 2 - 4 days <input type="radio"/> 5 - 7 days <input type="radio"/> Longer then 1 week <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> 1 day <input type="radio"/> 2 - 4 days <input type="radio"/> 5 - 7 days <input type="radio"/> Longer then 1 week <input type="radio"/> Unsure <input type="radio"/> Refused
g. What will be done with the product after the maximum time? (Check all that apply)	<input type="checkbox"/> No policy <input type="checkbox"/> Thrown away <input type="checkbox"/> Donated <input type="checkbox"/> Given away to employees <input type="checkbox"/> Other: _____ <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="checkbox"/> No policy <input type="checkbox"/> Thrown away <input type="checkbox"/> Donated <input type="checkbox"/> Given away to employees <input type="checkbox"/> Other: _____ <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="checkbox"/> No policy <input type="checkbox"/> Thrown away <input type="checkbox"/> Donated <input type="checkbox"/> Given away to employees <input type="checkbox"/> Other: _____ <input type="radio"/> Unsure <input type="radio"/> Refused

EHS-Net Leafy Greens Study: MANAGER INTERVIEW-PREPARATION

Now, I'd like to ask you some questions about *washing* of leafy greens that will be served raw.

36. Do you wash any leafy greens in this establishment?

- Yes
- No *Skip to#38*
- Unsure *Skip to#38*
- Refused *Skip to#38*

a. What types of leafy greens are washed in this establishment? (Check all that apply)

- Iceberg
- Romaine
- Leaf lettuce
- Butter lettuce
- Baby leaf lettuce
- Other: (describe) _____
- Unsure
- Endive
- Spring mix
- Spinach
- Cabbage
- Escarole
- Refused

Now I am going to ask you a series of questions about washing of each of these types of leafy greens.

Ask each of the questions (a-i) in the following grid for each type of leafy green chosen in 36a. In other words, complete one column for each type of leafy green chose in 36a. You may need to use multiple copies of the grid.

37.	Type #:	Type #:	Type #:
a. What is the type of leafy green?	<input type="radio"/> Iceberg <input type="radio"/> Endive <input type="radio"/> Romaine <input type="radio"/> Spring mix <input type="radio"/> Leaf lettuce <input type="radio"/> Spinach <input type="radio"/> Butter lettuce <input type="radio"/> Cabbage <input type="radio"/> Baby leaf lettuce <input type="radio"/> Escarole <input type="radio"/> Other: _____ <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> Iceberg <input type="radio"/> Endive <input type="radio"/> Romaine <input type="radio"/> Spring mix <input type="radio"/> Leaf lettuce <input type="radio"/> Spinach <input type="radio"/> Butter lettuce <input type="radio"/> Cabbage <input type="radio"/> Baby leaf lettuce <input type="radio"/> Escarole <input type="radio"/> Other: _____ <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> Iceberg <input type="radio"/> Endive <input type="radio"/> Romaine <input type="radio"/> Spring mix <input type="radio"/> Leaf lettuce <input type="radio"/> Spinach <input type="radio"/> Butter lettuce <input type="radio"/> Cabbage <input type="radio"/> Baby leaf lettuce <input type="radio"/> Escarole <input type="radio"/> Other: _____ <input type="radio"/> Unsure <input type="radio"/> Refused
b. Are these leafy greens head; fresh cut, <u>not</u> ready to eat; or fresh cut, ready to eat?	<input type="radio"/> Head <input type="radio"/> Fresh cut, <u>not</u> RTE <input type="radio"/> Fresh cut, RTE <input type="radio"/> Fresh cut, unsure about RTE <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> Head <input type="radio"/> Fresh cut, <u>not</u> RTE <input type="radio"/> Fresh cut, RTE <input type="radio"/> Fresh cut, unsure about RTE <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> Head <input type="radio"/> Fresh cut, <u>not</u> RTE <input type="radio"/> Fresh cut, RTE <input type="radio"/> Fresh cut, unsure about RTE <input type="radio"/> Unsure <input type="radio"/> Refused
c. Do workers wear single use gloves when washing these greens?	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Sometimes <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Sometimes <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Sometimes <input type="radio"/> Unsure <input type="radio"/> Refused
d. How many times are leafy greens washed before service?	<input type="radio"/> No.: _____ <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> No.: _____ <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> No.: _____ <input type="radio"/> Unsure <input type="radio"/> Refused
e. When are leafy greens washed? (Check all that apply)	<input type="checkbox"/> When they arrive <input type="checkbox"/> Immediately before use <input type="checkbox"/> Beginning of each day <input type="checkbox"/> End of each day <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="checkbox"/> When they arrive <input type="checkbox"/> Immediately before use <input type="checkbox"/> Beginning of each day <input type="checkbox"/> End of each day <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="checkbox"/> When they arrive <input type="checkbox"/> Immediately before use <input type="checkbox"/> Beginning of each day <input type="checkbox"/> End of each day <input type="radio"/> Unsure <input type="radio"/> Refused
f. Are chemicals used to wash the leafy greens?	<input type="radio"/> Yes <input type="radio"/> No <i>skip to#37f</i> <input type="radio"/> Sometimes <input type="radio"/> Unsure <i>skip to#37f</i> <input type="radio"/> Refused <i>skip to#37f</i>	<input type="radio"/> Yes <input type="radio"/> No <i>skip to#37f</i> <input type="radio"/> Sometimes <input type="radio"/> Unsure <i>skip to#37f</i> <input type="radio"/> Refused <i>skip to#37f</i>	<input type="radio"/> Yes <input type="radio"/> No <i>skip to#37f</i> <input type="radio"/> Sometimes <input type="radio"/> Unsure <i>skip to#37f</i> <input type="radio"/> Refused <i>skip to#37f</i>

EHS-Net Leafy Greens Study: MANAGER INTERVIEW-PREPARATION

Now I am going to ask you a series of questions about preparation of each of these types of leafy greens.

Ask each of the questions (a-l) in the following grid for each type of leafy green chosen in 38a. In other words, complete one column for each type of leafy green chose in 38a. You may need to use multiple copies of the grid.

39.	Type #:	Type #:	Type #:
a. What is the type of leafy green?	<input type="radio"/> Iceberg <input type="radio"/> Endive <input type="radio"/> Romaine <input type="radio"/> Spring mix <input type="radio"/> Leaf lettuce <input type="radio"/> Spinach <input type="radio"/> Butter lettuce <input type="radio"/> Cabbage <input type="radio"/> Baby leaf lettuce <input type="radio"/> Escarole <input type="radio"/> Other, describe: _____ <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> Iceberg <input type="radio"/> Endive <input type="radio"/> Romaine <input type="radio"/> Spring mix <input type="radio"/> Leaf lettuce <input type="radio"/> Spinach <input type="radio"/> Butter lettuce <input type="radio"/> Cabbage <input type="radio"/> Baby leaf lettuce <input type="radio"/> Escarole <input type="radio"/> Other, describe: _____ <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> Iceberg <input type="radio"/> Endive <input type="radio"/> Romaine <input type="radio"/> Spring mix <input type="radio"/> Leaf lettuce <input type="radio"/> Spinach <input type="radio"/> Butter lettuce <input type="radio"/> Cabbage <input type="radio"/> Baby leaf lettuce <input type="radio"/> Escarole <input type="radio"/> Other, describe: _____ <input type="radio"/> Unsure <input type="radio"/> Refused
b. Are these leafy greens head; fresh cut, <u>not</u> ready to eat; or fresh cut, ready to eat?	<input type="radio"/> Head <input type="radio"/> Fresh cut, <u>not</u> RTE <input type="radio"/> Fresh cut, RTE <input type="radio"/> Fresh cut, unsure about RTE <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> Head <input type="radio"/> Fresh cut, <u>not</u> RTE <input type="radio"/> Fresh cut, RTE <input type="radio"/> Fresh cut, unsure about RTE <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> Head <input type="radio"/> Fresh cut, <u>not</u> RTE <input type="radio"/> Fresh cut, RTE <input type="radio"/> Fresh cut, unsure about RTE <input type="radio"/> Unsure <input type="radio"/> Refused
c. Do workers wear single use gloves when preparing these greens?	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Sometimes <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Sometimes <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Sometimes <input type="radio"/> Unsure <input type="radio"/> Refused
d. Are these leafy greens culled in your establishment? In other words, do you get rid of the bad pieces?	<input type="radio"/> Yes <input type="radio"/> No <i>skip to #39f</i> <input type="radio"/> Sometimes <input type="radio"/> Unsure <i>skip to #39f</i> <input type="radio"/> Refused <i>skip to #39f</i>	<input type="radio"/> Yes <input type="radio"/> No <i>skip to #39f</i> <input type="radio"/> Sometimes <input type="radio"/> Unsure <i>skip to #39f</i> <input type="radio"/> Refused <i>skip to #39f</i>	<input type="radio"/> Yes <input type="radio"/> No <i>skip to #39f</i> <input type="radio"/> Sometimes <input type="radio"/> Unsure <i>skip to #39f</i> <input type="radio"/> Refused <i>skip to #39f</i>
e. When do you cull these leafy greens? (Check all that apply)	<input type="checkbox"/> Before washing <input type="checkbox"/> After washing <input type="checkbox"/> Before prepping <input type="checkbox"/> Before service <input type="checkbox"/> While washing <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="checkbox"/> Before washing <input type="checkbox"/> After washing <input type="checkbox"/> Before prepping <input type="checkbox"/> Before service <input type="checkbox"/> While washing <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="checkbox"/> Before washing <input type="checkbox"/> After washing <input type="checkbox"/> Before prepping <input type="checkbox"/> Before service <input type="checkbox"/> While washing <input type="radio"/> Unsure <input type="radio"/> Refused
f. Are these leafy greens cut/chopped /sliced in the establishment?	<input type="radio"/> Yes <input type="radio"/> No <i>skip to #39i</i> <input type="radio"/> Unsure <i>skip to #39i</i> <input type="radio"/> Refused <i>skip to #39i</i>	<input type="radio"/> Yes <input type="radio"/> No <i>skip to #97i</i> <input type="radio"/> Unsure <i>skip to #39i</i> <input type="radio"/> Refused <i>skip to #39i</i>	<input type="radio"/> Yes <input type="radio"/> No <i>skip to #39i</i> <input type="radio"/> Unsure <i>skip to #39i</i> <input type="radio"/> Refused <i>skip to #39i</i>
g. Is the cutting done by hand or mechanically?	<input type="radio"/> By hand <input type="radio"/> Mechanically <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> By hand <input type="radio"/> Mechanically <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> By hand <input type="radio"/> Mechanically <input type="radio"/> Unsure <input type="radio"/> Refused
h. Are these greens washed?	<input type="radio"/> Yes <input type="radio"/> No <i>skip to #39j</i> <input type="radio"/> Sometimes <input type="radio"/> Unsure <i>skip to #39j</i> <input type="radio"/> Refused <i>skip to #39j</i>	<input type="radio"/> Yes <input type="radio"/> No <i>skip to #39j</i> <input type="radio"/> Sometimes <input type="radio"/> Unsure <i>skip to #39j</i> <input type="radio"/> Refused <i>skip to #39j</i>	<input type="radio"/> Yes <input type="radio"/> No <i>skip to #39j</i> <input type="radio"/> Sometimes <input type="radio"/> Unsure <i>skip to #39j</i> <input type="radio"/> Refused <i>skip to #39j</i>
i. Is the cutting done before or after washing? (Check all that apply)	<input type="checkbox"/> Before <input type="checkbox"/> After <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="checkbox"/> Before <input type="checkbox"/> After <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="checkbox"/> Before <input type="checkbox"/> After <input type="radio"/> Unsure <input type="radio"/> Refused

EHS-Net Leafy Greens Study: MANAGER INTERVIEW-PREPARATION

39. Continued	Type #:	Type #:	Type #:
j. How are these leafy greens packaged or held after preparation? <i>(Check all that apply)</i>	<input type="checkbox"/> Lexan pan <input type="checkbox"/> Stainless steel pan <input type="checkbox"/> Aluminum pan <input type="checkbox"/> Plastic bag <input type="checkbox"/> Paper <input type="checkbox"/> Shipping box <input type="checkbox"/> Box (not shipping) <input type="checkbox"/> Plated for service <input type="checkbox"/> In water <input type="checkbox"/> Used immediately/not stored <input type="checkbox"/> Other: _____ <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="checkbox"/> Lexan pan <input type="checkbox"/> Stainless steel pan <input type="checkbox"/> Aluminum pan <input type="checkbox"/> Plastic bag <input type="checkbox"/> Paper <input type="checkbox"/> Shipping box <input type="checkbox"/> Box (not shipping) <input type="checkbox"/> Plated for service <input type="checkbox"/> In water <input type="checkbox"/> Used immediately/not stored <input type="checkbox"/> Other: _____ <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="checkbox"/> Lexan pan <input type="checkbox"/> Stainless steel pan <input type="checkbox"/> Aluminum pan <input type="checkbox"/> Plastic bag <input type="checkbox"/> Paper <input type="checkbox"/> Shipping box <input type="checkbox"/> Box (not shipping) <input type="checkbox"/> Plated for service <input type="checkbox"/> In water <input type="checkbox"/> Used immediately/not stored <input type="checkbox"/> Other: _____ <input type="radio"/> Unsure <input type="radio"/> Refused
k. Where are these leafy greens held after preparation? <i>(Check all that apply)</i>	<input type="checkbox"/> Produce cooler <input type="checkbox"/> Walk in cooler <input type="checkbox"/> Reach in cooler <input type="checkbox"/> Serving/Prep line <input type="checkbox"/> Salad/Buffer bar <input type="checkbox"/> Ambient storage area <input type="checkbox"/> Other, describe: _____ <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="checkbox"/> Produce cooler <input type="checkbox"/> Walk in cooler <input type="checkbox"/> Reach in cooler <input type="checkbox"/> Serving/Prep line <input type="checkbox"/> Salad/Buffer bar <input type="checkbox"/> Ambient storage area <input type="checkbox"/> Other, describe: _____ <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="checkbox"/> Produce cooler <input type="checkbox"/> Walk in cooler <input type="checkbox"/> Reach in cooler <input type="checkbox"/> Serving/Prep line <input type="checkbox"/> Salad/Buffer bar <input type="checkbox"/> Ambient storage area <input type="checkbox"/> Other, describe: _____ <input type="radio"/> Unsure <input type="radio"/> Refused
l. What is the maximum time that these prepared leafy greens will be held?	<input type="radio"/> < 1 day <input type="radio"/> 5-7 days <input type="radio"/> 1 day <input type="radio"/> > 7 days <input type="radio"/> 2-4 days <input type="radio"/> Until rotting <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> <1 day <input type="radio"/> 5-7 days <input type="radio"/> 1 day <input type="radio"/> > 7 days <input type="radio"/> 2-4 days <input type="radio"/> Until rotting <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> <1 day <input type="radio"/> 5-7 days <input type="radio"/> 1 day <input type="radio"/> > 7 days <input type="radio"/> 2-4 days <input type="radio"/> Until rotting <input type="radio"/> Unsure <input type="radio"/> Refused

EHS-Net Leafy Greens Study: MANAGER INTERVIEW

For use with question 20

- At the farm
- At the processing plant
- During transportation
- In the food service establishment
- When customers take food from establishments home with them

EHS-Net Leafy Greens Study: OBSERVATION

Time Observation Began: _____:_____ am pm

1. Types of raw, fresh leafy greens observed: (Check all that apply)

- Iceberg Lettuce
- Romaine Lettuce
- Leaf Lettuce
- Butter Lettuce
- Baby Leaf Lettuce (immature leaf lettuce/leafy greens)
- Escarole
- Endive
- Spring mix
- Spinach
- Cabbage
- Other: _____

Receiving

2. Did you observe the delivery of a shipment of leafy greens?

- Yes
- No *If No, Skip to#3*

a. What type of leafy green was observed during delivery? (Check all that apply)

- | | |
|---|---------------------------------------|
| <input type="checkbox"/> Iceberg Lettuce | <input type="checkbox"/> Endive |
| <input type="checkbox"/> Romaine Lettuce Leaf Lettuce | <input type="checkbox"/> Spring mix |
| <input type="checkbox"/> Butter Lettuce | <input type="checkbox"/> Spinach |
| <input type="checkbox"/> Baby Leaf Lettuce | <input type="checkbox"/> Cabbage |
| <input type="checkbox"/> Escarole | <input type="checkbox"/> Other: _____ |

b. Temperature of shipment: _____ °F

c. Quality/condition of product when it arrived?

- Acceptable (fresh, clean looking, few if any external wilted leaves, no mold or spoilage apparent)
- Unacceptable (significant wilt, appears spoiled or rotting)

Serving

3. Did you observe the assembly/service of any menu item(s) with raw leafy greens, such as salads or sandwiches?

- Yes
- No *If No, Skip to#4*

a. Did you observe glove use during this process?

- Yes
- No

EHS-Net Leafy Greens Study: OBSERVATION- STORAGE/HOLDING

Storage and Holding

4. Observed leafy greens in the WALK-IN COOLER?

- Yes Complete one row for each type of raw, leafy greens seen in the walk-in cooler.
- No If no, skip to #5

a.	b.	c.	d.	e.	f.	g.	h.	
Type:	Form :	Primary packaging:	Product temp	Cooler temp	Product labeled: (Check all that apply)	Container type:	Stored/cold held could result in contamination:	
<input type="radio"/> Iceberg <input type="radio"/> Romaine <input type="radio"/> Butter <input type="radio"/> Leaf Lettuce <input type="radio"/> Escarole <input type="radio"/> Endive <input type="radio"/> Spring mix <input type="radio"/> Spinach <input type="radio"/> Cabbage <input type="radio"/> Other: _____ <input type="radio"/> Unsure <input type="radio"/> Int. <input type="radio"/> Obs.	<input type="radio"/> Head <input type="radio"/> Fresh Cut, not RTE <input type="radio"/> Fresh Cut, RTE <input type="radio"/> Fresh Cut, Not sure about RTE	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> DNK	____ °F	____ °F	<input type="checkbox"/> Description of contents <input type="checkbox"/> Plant name/location <input type="checkbox"/> No labeling <input type="checkbox"/> Preparation <input type="checkbox"/> Batch code/harvest date <input type="checkbox"/> Product#/UCP code <input type="checkbox"/> Sell by/Best by date <input type="checkbox"/> Use by date	<input type="checkbox"/> Recommended storage temperature <input type="checkbox"/> Recommendation for preparation <input type="checkbox"/> Warnings/conditions for handling <input type="checkbox"/> HACCP/other certification <input type="checkbox"/> Hand printed label	<input type="radio"/> Lexan pan <input type="radio"/> Stainless steel pan <input type="radio"/> Aluminum pan <input type="radio"/> Plastic bag <input type="radio"/> Paper <input type="radio"/> Shipping box <input type="radio"/> Box (not shipping) <input type="radio"/> Plated for service <input type="radio"/> Other: _____ In water? <input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> DNK Describe:
<input type="radio"/> Iceberg <input type="radio"/> Romaine <input type="radio"/> Butter <input type="radio"/> Leaf Lettuce <input type="radio"/> Escarole <input type="radio"/> Endive <input type="radio"/> Spring mix <input type="radio"/> Spinach <input type="radio"/> Cabbage <input type="radio"/> Other: _____ <input type="radio"/> Unsure <input type="radio"/> Int. <input type="radio"/> Obs.	<input type="radio"/> Head <input type="radio"/> Fresh Cut, not RTE <input type="radio"/> Fresh Cut, RTE <input type="radio"/> Fresh Cut, Not sure about RTE	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> DNK	____ °F	____ °F	<input type="checkbox"/> Description of contents <input type="checkbox"/> Plant name/location <input type="checkbox"/> No labeling <input type="checkbox"/> Preparation <input type="checkbox"/> Batch code/harvest date <input type="checkbox"/> Product#/UCP code <input type="checkbox"/> Sell by/Best by date <input type="checkbox"/> Use by date	<input type="checkbox"/> Recommended storage temperature <input type="checkbox"/> Recommendation for preparation <input type="checkbox"/> Warnings/conditions for handling <input type="checkbox"/> HACCP/other certification <input type="checkbox"/> Hand printed label	<input type="radio"/> Lexan pan <input type="radio"/> Stainless steel pan <input type="radio"/> Aluminum pan <input type="radio"/> Plastic bag <input type="radio"/> Paper <input type="radio"/> Shipping box <input type="radio"/> Box (not shipping) <input type="radio"/> Plated for service <input type="radio"/> Other: _____ In water? <input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> DNK Describe:

EHS-Net Leafy Greens Study: OBSERVATION- STORAGE/HOLDING

5. Observed leafy greens in a REACH-IN COOLER?

- Yes Complete one row for each type of raw, leafy greens seen in the reach-in cooler.
- No If no skip to #6

a.	b.	c.	d.	e.	f.	g.	h.	
Type:	Form :	Primary packaging:	Product temp	Cooler temp	Product labeled:		Container type:	Stored/cold held could result in contamination:
<input type="radio"/> Iceberg <input type="radio"/> Romaine <input type="radio"/> Butter <input type="radio"/> Leaf Lettuce <input type="radio"/> Escarole <input type="radio"/> Endive <input type="radio"/> Spring mix <input type="radio"/> Spinach <input type="radio"/> Cabbage <input type="radio"/> Other: _____ <input type="radio"/> Unsure <input type="radio"/> Int. <input type="radio"/> Obs.	<input type="radio"/> Head <input type="radio"/> Fresh Cut, not RTE <input type="radio"/> Fresh Cut, RTE <input type="radio"/> Fresh Cut, Not sure about RTE	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> DNK	____ °F	____ °F	<input type="checkbox"/> Description of contents <input type="checkbox"/> Plant name/location <input type="checkbox"/> No labeling <input type="checkbox"/> Preparation <input type="checkbox"/> Batch code/harvest date <input type="checkbox"/> Product#/UCP code <input type="checkbox"/> Sell by/Best by date <input type="checkbox"/> Use by date	<input type="checkbox"/> Recommended storage temperature <input type="checkbox"/> Recommendation for preparation <input type="checkbox"/> Warnings/conditions for handling <input type="checkbox"/> HACCP/other certification <input type="checkbox"/> Hand printed label	<input type="radio"/> Lexan pan <input type="radio"/> Stainless steel pan <input type="radio"/> Aluminum pan <input type="radio"/> Plastic bag <input type="radio"/> Paper <input type="radio"/> Shipping box <input type="radio"/> Box (not shipping) <input type="radio"/> Plated for service <input type="radio"/> Other: _____ In water? <input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> DNK Describe:
<input type="radio"/> Iceberg <input type="radio"/> Romaine <input type="radio"/> Butter <input type="radio"/> Leaf Lettuce <input type="radio"/> Escarole <input type="radio"/> Endive <input type="radio"/> Spring mix <input type="radio"/> Spinach <input type="radio"/> Cabbage <input type="radio"/> Other: _____ <input type="radio"/> Unsure <input type="radio"/> Int. <input type="radio"/> Obs.	<input type="radio"/> Head <input type="radio"/> Fresh Cut, not RTE <input type="radio"/> Fresh Cut, RTE <input type="radio"/> Fresh Cut, Not sure about RTE	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> DNK	____ °F	____ °F	<input type="checkbox"/> Description of contents <input type="checkbox"/> Plant name/location <input type="checkbox"/> No labeling <input type="checkbox"/> Preparation <input type="checkbox"/> Batch code/harvest date <input type="checkbox"/> Product#/UCP code <input type="checkbox"/> Sell by/Best by date <input type="checkbox"/> Use by date	<input type="checkbox"/> Recommended storage temperature <input type="checkbox"/> Recommendation for preparation <input type="checkbox"/> Warnings/conditions for handling <input type="checkbox"/> HACCP/other certification <input type="checkbox"/> Hand printed label	<input type="radio"/> Lexan pan <input type="radio"/> Stainless steel pan <input type="radio"/> Plastic bag <input type="radio"/> Paper <input type="radio"/> Shipping box <input type="radio"/> Box (not shipping) <input type="radio"/> Plated for service <input type="radio"/> Other: _____ In water? <input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> DNK Describe:

EHS-Net Leafy Greens Study: OBSERVATION- STORAGE/HOLDING

6. Observed pre-prepared/pre-packaged raw leafy greens, (e.g salads, sandwiches), on a SERVICE LINE?

Yes *Complete one row for each type of raw, leafy greens seen in the service line.*

No *If no skip to # 7*

a.	b.	c.	d.	e.	f.	g.
Type:	Product temp.	Holding unit temp:	Time product held on this line:	Product labeled:	Container type:	Stored/cold held could result in contamination:
<input type="radio"/> Iceberg <input type="radio"/> Romaine <input type="radio"/> Butter <input type="radio"/> Leaf Lettuce <input type="radio"/> Escarole <input type="radio"/> Endive <input type="radio"/> Spring mix <input type="radio"/> Spinach <input type="radio"/> Cabbage <input type="radio"/> Other: _____ <input type="radio"/> Unsure <input type="radio"/> Int. <input type="radio"/> Obs.	_____ °F	_____ °F	_____ Min. <input type="radio"/> Int. <input type="radio"/> Obs.	<input type="checkbox"/> No labeling <input type="checkbox"/> Preparation <input type="checkbox"/> Sell by/Best by date <input type="checkbox"/> Use by date <input type="checkbox"/> Recommended storage temperature <input type="checkbox"/> Hand printed label	<input type="radio"/> Plastic bag/ wrap <input type="radio"/> Serving container <input type="radio"/> Other: _____	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> DNK Describe:
<input type="radio"/> Iceberg <input type="radio"/> Romaine <input type="radio"/> Butter <input type="radio"/> Leaf Lettuce <input type="radio"/> Escarole <input type="radio"/> Endive <input type="radio"/> Spring mix <input type="radio"/> Spinach <input type="radio"/> Cabbage <input type="radio"/> Other: _____ <input type="radio"/> Unsure <input type="radio"/> Int. <input type="radio"/> Obs.	_____ °F	_____ °F	_____ Min. <input type="radio"/> Int. <input type="radio"/> Obs.	<input type="checkbox"/> No labeling <input type="checkbox"/> Preparation <input type="checkbox"/> Sell by/Best by date <input type="checkbox"/> Use by date <input type="checkbox"/> Recommended storage temperature <input type="checkbox"/> Hand printed label	<input type="radio"/> Plastic bag/ wrap <input type="radio"/> Serving container <input type="radio"/> Other: _____	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> DNK Describe:

EHS-Net Leafy Greens Study: OBSERVATION- STORAGE/HOLDING

7. Observed leafy greens in a **place where customers have direct access to the food items**, such as a **BUFFET AND/OR SALAD BAR ?**

- Yes Complete one row for each type of raw, leafy greens seen in the buffet and/or salad bar.
- No If no skip to #8

a.	b.	c.	d.	e.	f.	g.	h.
Type:	Product temp.	Product labeled:	Time before item refilled:	Container type:	Observed manager/employee monitoring buffet/salad bar:	Observed signs telling customers to use new plates:	Stored/cold held could result in contamination:
<input type="radio"/> Iceberg <input type="radio"/> Romaine <input type="radio"/> Butter <input type="radio"/> Leaf <input type="radio"/> Escarole <input type="radio"/> Endive <input type="radio"/> Spring mix <input type="radio"/> Spinach <input type="radio"/> Cabbage <input type="radio"/> Other: _____ <input type="radio"/> Unsure <input type="radio"/> Int. <input type="radio"/> Obs.	_____ °F	<input type="checkbox"/> No labeling <input type="checkbox"/> Use by time <input type="checkbox"/> Preparation/ Refill time <input type="checkbox"/> Other _____	_____ Min. <input type="radio"/> Int. <input type="radio"/> Obs.	<input type="radio"/> Lexan pan <input type="radio"/> Stainless steel pan <input type="radio"/> Aluminum pan <input type="radio"/> Plastic bag <input type="radio"/> Paper <input type="radio"/> Shipping box <input type="radio"/> Box (not shipping) <input type="radio"/> Plated for service <input type="radio"/> Other: _____ In water? <input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> DNK	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> DNK	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> DNK Describe:
<input type="radio"/> Iceberg <input type="radio"/> Romaine <input type="radio"/> Butter <input type="radio"/> Leaf <input type="radio"/> Escarole <input type="radio"/> Endive <input type="radio"/> Spring mix <input type="radio"/> Spinach <input type="radio"/> Cabbage <input type="radio"/> Other: _____ <input type="radio"/> Unsure <input type="radio"/> Int. <input type="radio"/> Obs.	_____ °F	<input type="checkbox"/> No labeling <input type="checkbox"/> Use by time <input type="checkbox"/> Preparation/ Refill time <input type="checkbox"/> Other _____	_____ Min. <input type="radio"/> Int. <input type="radio"/> Obs.	<input type="radio"/> Lexan pan <input type="radio"/> Stainless steel pan <input type="radio"/> Aluminum pan <input type="radio"/> Plastic bag <input type="radio"/> Paper <input type="radio"/> Shipping box <input type="radio"/> Box (not shipping) <input type="radio"/> Plated for service <input type="radio"/> Other: _____ In water? <input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> DNK	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> DNK	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> DNK Describe:

EHS-Net Leafy Greens Study: OBSERVATION- STORAGE/HOLDING

8. Observed leafy greens in a **SERVING LINE/ PREPARATION LINE** where food workers make food to order that contain raw leafy greens.?

- Yes Complete one row for each type of raw, leafy greens seen in the serving/preparation line.
- No If no skip to #9

a.	b.	c.	d.	e.	f.	g.
Type:	Product temp.	Observed glove use:	Time product held on this line:	Product labeled: (Check all that apply)	Container type:	Stored/cold held could result in contamination:
<input type="radio"/> Iceberg <input type="radio"/> Romaine <input type="radio"/> Butter <input type="radio"/> Leaf <input type="radio"/> Escarole <input type="radio"/> Endive <input type="radio"/> Spring mix <input type="radio"/> Spinach <input type="radio"/> Cabbage <input type="radio"/> Other: _____ <input type="radio"/> Unsure <input type="radio"/> Int. <input type="radio"/> Obs.	_____ °F	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> DNK	_____ Min. <input type="radio"/> Int. <input type="radio"/> Obs.	<input type="checkbox"/> No labeling <input type="checkbox"/> Preparation time <input type="checkbox"/> Use by date/time <input type="checkbox"/> Recommended storage temperature <input type="checkbox"/> Hand printed label	<input type="radio"/> Lexan pan <input type="radio"/> Stainless steel pan <input type="radio"/> Aluminum pan <input type="radio"/> Plastic bag <input type="radio"/> Paper <input type="radio"/> Shipping box <input type="radio"/> Box (not shipping) <input type="radio"/> Plated for service <input type="radio"/> Other: _____ In water? <input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> DNK Describe:
<input type="radio"/> Iceberg <input type="radio"/> Romaine <input type="radio"/> Butter <input type="radio"/> Leaf <input type="radio"/> Escarole <input type="radio"/> Endive <input type="radio"/> Spring mix <input type="radio"/> Spinach <input type="radio"/> Cabbage <input type="radio"/> Other: _____ <input type="radio"/> Unsure <input type="radio"/> Int. <input type="radio"/> Obs.	_____ °F	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> DNK	_____ Min. <input type="radio"/> Int. <input type="radio"/> Obs.	<input type="checkbox"/> No labeling <input type="checkbox"/> Preparation time <input type="checkbox"/> Use by date/time <input type="checkbox"/> Recommended storage temperature <input type="checkbox"/> Hand printed label	<input type="radio"/> Lexan pan <input type="radio"/> Stainless steel pan <input type="radio"/> Plastic bag <input type="radio"/> Paper <input type="radio"/> Shipping box <input type="radio"/> Box (not shipping) <input type="radio"/> Plated for service <input type="radio"/> Other: _____ In water? <input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> DNK Describe:

EHS-Net Leafy Greens Study: OBSERVATION- WASHING

9. Observed leafy greens being washed?

Yes Complete one row for each type of raw, leafy greens observed being washed.

No If No, Skip to#10

a.	b.	c.	d.	e.	f.	g.	h.	i.
Type:	Form :	Observed glove use:	Washing method: (Check all that apply)	Chemicals used: (Check all that apply)	Temp. of LG AFTER washing:	Time LG held at this stage:	Equipment used: (Check all that apply)	Washing could result in contamination:
<input type="radio"/> Iceberg <input type="radio"/> Romaine <input type="radio"/> Butter <input type="radio"/> Leaf <input type="radio"/> Escarole <input type="radio"/> Endive <input type="radio"/> Spring mix <input type="radio"/> Spinach <input type="radio"/> Cabbage <input type="radio"/> Other:____ <input type="radio"/> Unsure <input type="radio"/> Int. <input type="radio"/> Obs.	<input type="radio"/> Head <input type="radio"/> Fresh Cut not RTE <input type="radio"/> Fresh cut RTE <input type="radio"/> Fresh Cut, Not sure about RTE	<input type="radio"/> Yes <input type="radio"/> No	<input type="checkbox"/> Soaked/ Submerged in water/ice bath <input type="checkbox"/> Rinsed under running water <input type="checkbox"/> Rinsed with chemical solution <input type="checkbox"/> Scrubbing <input type="checkbox"/> Not washed <input type="checkbox"/> Other:_____	<input type="checkbox"/> Chlorine <input type="checkbox"/> Soap <input type="checkbox"/> Commercial Produce wash <input type="checkbox"/> Produce wash made by establishment <input type="checkbox"/> Other:_____ <input type="checkbox"/> None	_____ °F	_____ Min. <input type="radio"/> Int. <input type="radio"/> Obs.	<input type="checkbox"/> Produce only sinks <input type="checkbox"/> Multi use sinks <input type="checkbox"/> Utility sink <input type="checkbox"/> Hand sink <input type="checkbox"/> Lexan/metal pans <input type="checkbox"/> Buckets <input type="checkbox"/> Spinners <input type="checkbox"/> Produce only cut boards <input type="checkbox"/> Colanders <input type="checkbox"/> Other:_____	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> DNK Describe:
<input type="radio"/> Iceberg <input type="radio"/> Romaine <input type="radio"/> Butter <input type="radio"/> Leaf <input type="radio"/> Escarole <input type="radio"/> Endive <input type="radio"/> Spring mix <input type="radio"/> Spinach <input type="radio"/> Cabbage <input type="radio"/> Other:____ <input type="radio"/> Unsure <input type="radio"/> Int. <input type="radio"/> Obs.	<input type="radio"/> Head <input type="radio"/> Fresh Cut not RTE <input type="radio"/> Fresh cut RTE <input type="radio"/> Fresh Cut, Not sure about RTE	<input type="radio"/> Yes <input type="radio"/> No	<input type="checkbox"/> Soaked/ Submerged in water/ice bath <input type="checkbox"/> Rinsed under running water <input type="checkbox"/> Rinsed with chemical solution <input type="checkbox"/> Scrubbing <input type="checkbox"/> Not washed <input type="checkbox"/> Other:_____	<input type="checkbox"/> Chlorine <input type="checkbox"/> Soap <input type="checkbox"/> Commercial Produce wash <input type="checkbox"/> Produce wash made by establishment <input type="checkbox"/> Other:_____ <input type="checkbox"/> None	_____ °F	_____ Min. <input type="radio"/> Int. <input type="radio"/> Obs.	<input type="checkbox"/> Produce only sinks <input type="checkbox"/> Multi use sinks <input type="checkbox"/> Utility sink <input type="checkbox"/> Hand sink <input type="checkbox"/> Lexan/metal pans <input type="checkbox"/> Buckets <input type="checkbox"/> Spinners <input type="checkbox"/> Produce only cut boards <input type="checkbox"/> Colanders <input type="checkbox"/> Other:_____	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> DNK Describe:

EHS-Net Leafy Greens Study: OBSERVATION- CUTTING

Cutting

10. Observed leafy greens being chopped /sliced/shredded?

Yes *Complete one row for each type of raw, leafy greens observed being cut.*

No *If No, skip to end*

a.	b.	c.	d.	e.	f.	g.	h.	i.
Type:	Form :	Observed glove use:	Observed LG washed during cut/chopped/shredded observation?*	LG washed BEFORE or AFTER cut/chopping/shredding?	Equipment used: <i>(Check all that apply)</i>	Temp. of LG AFTER chopping/cutting/slice?	Time LG held at this stage:	Preparation that could result in contamination:
<input type="radio"/> Iceberg <input type="radio"/> Romaine <input type="radio"/> Butter <input type="radio"/> Leaf <input type="radio"/> Escarole <input type="radio"/> Endive <input type="radio"/> Spring mix <input type="radio"/> Spinach <input type="radio"/> Cabbage <input type="radio"/> Other: _____ <input type="radio"/> Unsure <input type="radio"/> Int. <input type="radio"/> Obs.	<input type="radio"/> Head <input type="radio"/> Fresh Cut not RTE <input type="radio"/> Fresh cut RTE <input type="radio"/> Fresh Cut, Not sure about RTE	<input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Yes <input type="radio"/> No <i>skip to f</i>	<input type="radio"/> Before <input type="radio"/> After <input type="radio"/> Both	<input type="checkbox"/> Knife <input type="checkbox"/> Produce only cutting board <input type="checkbox"/> Multi purpose cutting board <input type="checkbox"/> Food slicer <input type="checkbox"/> Food Chopper <input type="checkbox"/> Mandolin <input type="checkbox"/> Other: _____	____ °F	____ Min. <input type="radio"/> Int. <input type="radio"/> Obs.	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> DNK Describe:
<input type="radio"/> Iceberg <input type="radio"/> Romaine <input type="radio"/> Butter <input type="radio"/> Leaf <input type="radio"/> Escarole <input type="radio"/> Endive <input type="radio"/> Spring mix <input type="radio"/> Spinach <input type="radio"/> Cabbage <input type="radio"/> Other: _____ <input type="radio"/> Unsure <input type="radio"/> Int. <input type="radio"/> Obs.	<input type="radio"/> Head <input type="radio"/> Fresh Cut not RTE <input type="radio"/> Fresh cut RTE <input type="radio"/> Fresh Cut, Not sure about RTE	<input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Yes <input type="radio"/> No <i>skip to f</i>	<input type="radio"/> Before <input type="radio"/> After <input type="radio"/> Both	<input type="checkbox"/> Knife <input type="checkbox"/> Produce only cutting board <input type="checkbox"/> Multi purpose cutting board <input type="checkbox"/> Food slicer <input type="checkbox"/> Food Chopper <input type="checkbox"/> Mandolin <input type="checkbox"/> Other: _____	____ °F	____ Min. <input type="radio"/> Int. <input type="radio"/> Obs.	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> DNK Describe:

Definitions

Fresh Cut - Fresh fruits and vegetables that have been minimally processed (e.g., no lethal kill step), and altered in form, by peeling, slicing, chopping, shredding, coring, or trimming, with or without washing or other treatment, prior to being packaged for use by the consumer or a retail establishment. Examples of fresh-cut products are shredded lettuce, sliced tomatoes, salad mixes (raw vegetable salads), peeled baby carrots, broccoli florets, cauliflower florets, cut celery stalks, shredded cabbage, cut melon, sliced pineapple, and sectioned grapefruit.⁽²⁾ Fresh-cut produce does not require additional preparation, processing, or cooking before consumption, with the possible exception of washing⁽³⁾ or the addition of salad dressing, seasoning, or other accompaniments

Head- any form of leafy green that is in a compact head form and may or may not have been washed. For example, iceberg lettuce, romaine lettuce, endive.

Fresh Cut , NOT RTE – any form of leafy green that **is not** a compact head and has been minimally processed (e.g., no lethal kill step), and altered in form, by peeling, slicing, chopping, shredding, coring, or trimming, without washing or other treatment, prior to being packaged for use by the consumer or a retail establishment and is NOT labeled as ready to eat. For example, spinach or any type of leaf or other lettuce type that has not been washed.

Fresh Cut, RTE – any form of leafy green that has been minimally processed (e.g., no lethal kill step), and altered in form, by peeling, slicing, chopping, shredding, coring, or trimming, has been washed or received other treatment, prior to being packaged for use by the consumer or a retail establishment and is RTE with no further treatment and is labeled as RTE. For example, bagged prepared spinach or shredded iceberg lettuce.

Leafy Greens Study Manual

I. Background

A. Problem/Purpose Statement

Few studies have examined in detail the nature of leafy green handling policies and practices in food service establishments. The purpose of this study is to collect descriptive data on leafy green handling policies and preparation practices in food service establishments, and examine the relationship between the leafy green practices and food service establishment characteristics. Data for this study will be collected through interviews with restaurant managers and observations of leafy green storage and preparation practices in the restaurant. This is an Environmental Health Specialists Network (EHS-Net) special study. EHS-Net is a collaboration involving the Centers for Disease Control and Prevention (CDC), the U.S. Food and Drug Administration (FDA), and nine EHS-Net sites (comprised of all or some counties in California, Connecticut, Georgia, Iowa, Minnesota, New York, Oregon, Rhode Island and Tennessee); these partners have come together in an effort to better understand the environmental causes of foodborne illness.

B. Objective/Goal

The *primary purpose* of this study is to collect descriptive data on the storage and preparation policies and practices of leafy greens prepared for raw consumption. Specifically examining:

- Leafy green types (e.g., spring mix, iceberg) - form upon receipt (e.g., pre-cut, whole, bagged); type of shipping containers; type of records maintained (e.g., temperature records, source records); and, where possible, the condition and temperature upon receipt.
- Leafy green storage (e.g., type of storage units, temperature of storage units, temperature of product, type of storage containers) in the restaurant.
- Leafy green preparation (e.g., washing, cutting, chopping and mixing practices; buffet serving line practices; temperatures during preparation; form in which greens are served; employee hand contact with leafy greens).

A *secondary purpose* of this study is to determine whether leafy green storage and preparation policies and practices are related to establishment characteristics, such as manager food safety knowledge, restaurant ownership (chain versus independent), presence of certified kitchen managers, and how the restaurant responds to food safety challenges.

Leafy greens include: iceberg lettuce, romaine lettuce, leaf lettuce, butter lettuce, baby leaf lettuce (i.e., immature lettuce or leafy greens), escarole, endive, spring mix, spinach, and cabbage. For the purposes of this study, leafy greens do not include herbs (e.g., cilantro, dill, parsley, sage, rosemary, thyme).

C. Study Design

- Study design will be a cross-sectional survey.
- Survey will include 3 sections: data collector questions, manager interview, and leafy green handling observation.
- This is research; therefore, data collection will be independent of an inspection.
- Restaurants will be randomly selected from a list supplied by the EHS.
- Data will be anonymous.
- EHS and local partners will collect the data.

- An appointment will be made with the establishment to observe leafy handling in general and specifically washing and preparation.

II. Recruitment

Recruiting Procedure

A.

We expect each state to collect data in 50 restaurants. Each state will receive a list of randomly selected restaurants from the CDC and will use this list to obtain restaurant participants for this study. This restaurant list will be inflated by the refusal and ineligible rates from previous studies to ensure that each state will be able to meet the target of 50 restaurants. For example, if the refusal/ineligible rates calculated from past studies was 25% for a state (25% of restaurants refused or were ineligible), we will provide that state with a list of 67 restaurants, expecting that approximately 25% (17) of the 67 would refuse to participate or would be ineligible to participate, and 50 would agree to participate.

When recruiting, please adhere to the guidelines described below.

1. Make multiple attempts to contact restaurants.

Recruiters need to make a concerted effort to establish contact with any restaurant that they initially try to contact. This is important because there may be systematic differences between easy-to-contact restaurants and hard-to-contact restaurants. For example, easy-to-contact restaurants may be less busy, better staffed, or better run than hard-to-contact restaurants. As these systematic differences could impact good handling practices in the restaurant, we want to be sure that hard-to-contact restaurants are represented in our sample as well as easy-to-contact restaurants. To ensure that every effort is made to contact all restaurants in the sample, please do the following:

- **Unanswered calls:** For unanswered calls make a minimum of 10 attempts over 5 days to reach an establishment.
- **Answered calls:** For an answered call where no response was given (i.e. call back later) a minimum of 5 attempts over a minimum of 4 days should be made to the establishment to attempt to get a response.

2. Record all call attempts in the provided Call Tracking Log.

A Call Tracking Log designed to assist in keeping track of your calls is provided at the end of this manual. Please fill out the Call Log with the following information:

- Call Date
 - Call Time
 - Establishment Information
 - Attempt Number: The number of the attempt to call a particular restaurant
 - Results or Disposition of Call: No answer, Nonworking number, Told to call back, etc.
- CDC will not want to see this log; it is provided to assist you.

3. Record the final disposition of all restaurants in the Participation Log.

The Excel file called *Leafy Green Participation Log* should be used to keep track of the responses of the restaurants. Once you have made a final determination about a restaurant, fill out the Participation Log with the following information.

- Sample ID #: Sample ID number from the restaurant selection list
- Response Code: Indicate the response you received from the restaurant using the following codes.

- **UNABLE TO CONTACT (U):** Use this response code if you followed the protocol above for unanswered calls and do not ever make contact with a restaurant. Also use this code if you cannot find a working number for a restaurant.
- **PARTICIPATING (P):** Use this code if you are able to contact a restaurant, it meets the EHS-Net definition, it is not part of an already participating chain, it is eligible to participate, and the restaurant agrees to participate.
- **REFUSED (R):** Use this code if you followed the protocol above for answered calls and make contact with a restaurant, but do not ever get a definitive response on participation. You will also use this code if you do make contact but the manager/owner declines to participate.
- **CLOSED (CL):** Use this code if you determine that the restaurant is closed.
- **CHAIN (C):** Use this code if a restaurant on your list is part of chain, and you have already collected data (or you are scheduled to collect data) from a restaurant in that chain.
- **INELIGIBLE RESTAURANT- NOT EHS-NET (I1):** Use this code if you determine that the restaurant *does not meet the EHS-Net definition of a restaurant*. The following is the EHS-Net definition of a restaurant: An establishment that prepares and serves food to customers; institutions, food carts, mobile food units, temporary food stands, restaurants in supermarkets, and establishments that *only cater are not* included.
- **INELIGIBLE RESTAURANT-GREENS (I2):** Use this code if you are able to contact a restaurant, it meets the EHS-Net definition, and it is not part of an already participating chain but it *does not prepare and serve raw leafy greens*.
- **INELIGIBLE RESTAURANT- LANGUAGE (I3):** Use this code if you are able to contact a restaurant, it meets the EHS-Net definition, and it is not part of an already participating chain but *there are no managers who speak English well enough to complete the interview*.
- **OTHER (O):** Something that does not fall into any of the other categories.

For all participating and refusing restaurants, also enter in the appropriate spaces:

- **The answers to the following 3 questions:**
 1. Is this an independent or chain establishment?
 2. How much difficulty did you have communicating with the person who gave you your answer on participation?
None A little Some A lot
 3. How many calls did you make before receiving an answer?
The above questions should be answered by you, *not* the respondent.

For all refusing restaurants, also enter in the appropriate spaces:

- **Refusal reason:** Any information they may provide on the reasons for refusal
- **Whether they agreed to answer the 2 refuser questions.**
- **If so, the respondent's answers to the 2 refuser questions:**
 1. **Approximately how many meals are served in this restaurant daily?**
 - 1-50 meals per day
 - 51-100 meals per day
 - 101-500 meals per day
 - 501-1000 meals per day
 - More than 1000 meals per day
 - Unsure
 - Refused

2. Which one of the following best describes your restaurant's menu—American, Asian, Italian, Mexican, or other?

- American (non-ethnic)
- Asian
- Mexican
- Italian
- Other
- Unsure
- Refused

You will need to forward the participation log to CDC at the completion of the study.

4. Stop collecting data once you have collected data in 50 restaurants. When you have collected data in 50 restaurants, you do not have to collect any more data, even if you have restaurants on the list that you have not yet contacted.

B. Recruiting Script

Below is a suggested recruiting script for calls to managers.

Hello this is _____ with the _____ Health Department. We are working on a research project that focuses on restaurant leafy green handling policies and practices and your location has been randomly selected to participate. Does this establishment serve any food item that includes raw, fresh leafy greens? For example, sandwiches, hamburgers or salads which include raw, fresh leafy greens and not soups or other dishes where the raw, fresh leafy greens have been cooked. Leafy greens include all types of lettuce, escarole, endive, spring mix, spinach, and cabbage.

- No → Thank you for your time.
- Yes ↓

Great! The study consists of a brief interview with the manager and observation of leafy green preparation. Specifically we would like to observe leafy green preparation that includes washing and cutting or slicing of leafy greens. Please keep in mind this is not an inspection and participation is voluntary, but we would really appreciate your participation.

Having said that, I need to let you know that at any time during the survey if I see something that is an imminent health hazard, such as no power, no water or sewage on the floor, I will stop the study and report the problem to your local health department. Could we schedule a time to come out when you will be preparing leafy greens and complete the survey?"

- No → Thank you for your time.
- Yes ↓

Great! I'll visit your restaurant for an (insert time frame). Keeping in mind that a manager responsible for managing the kitchen must be available for the interview section, and that we would like to be there when leafy greens are being washed and cut, when would be a convenient time to schedule the visit?

Date: _____ Time: _____

Please call me at _____ if you need to cancel or re-schedule, or if you have any questions. Thank you.

III. Data Collection

In the Field. When going into the restaurant you will need to bring one copy of the data collection questions, informed consent, and the manager interview, up to page 10. You should bring along several copies of the manager interview storage, washing, and preparation grids, as you will complete the questions in these grids for each type of leafy green in the restaurant. You will also need to take along several copies of the observations grids, as they are also completed for each type of leafy green observed.

Organizing Forms. We are keeping the data collected in this study anonymous, meaning that we do not want to be able to link any data collected to the restaurant from which the data came. Thus, once you complete your data collection, you will need to separate any identifying information on the

restaurant from the restaurant's data. However, to ensure that we can link all the data from one establishment together, you should consider giving each data collection packet an ID number. You would write this ID number in the top right-hand corner of each page of the data collection instrument.

Questions To Be Answered By Data Collector

This section contains several questions that the data collector should answer.

1. Establishment Type:

Take care in reviewing the menu. Ask questions about the ingredients of all the menu items. Do not make assumptions about the ingredients used or the process used to prepare them. Upon completion of the menu review determine the Establishment Type using the most complex process that occurs in this establishment and using the following definitions:

- Prep Serve Establishment – An establishment where all food items are prepared and served without a kill step. Some food on the menu that is a commercially prepared, ready-to-eat food, may be heated for service.
- Cook Serve Establishment – An establishment where at least one food item is prepared for same day service and involves a kill step. The menu may include prep serve items or have some food on the menu that is commercially prepared and heated for service.
- Complex Establishment – An establishment where at least one food item requires a kill step and holding beyond same day service or a kill step and some combination of holding, cooling, re-heating, and freezing. The menu may include any combination of prep serve, cook serve, and complex food items.

2. How are sinks used for leafy green preparation plumbed?

- Directly- A waste pipe from a water source that uses a piece of equipment/pipe that is connected to a waste drain **without** any air gap or air break.
- Indirectly- – A waste pipe from a water source that uses a piece of equipment that is NOT connected directly to a waste drain, i.e. there **is** an air gap or air break.

3. Do the state/local codes require indirect plumbing?

Specialists should review local codes to determine if they require indirect plumbing.

Informed Consent

Once at the restaurant, you will meet with the manager and obtain their informed consent. This script is included in the protocol.

Note: Throughout the data collection instrument, boxes (☐) indicate that there could be multiple answers to the question, while circles (○) indicate that there should be only one answer to the question.

Manager Interview

After obtaining informed consent, you will interview a *manager with authority over the kitchen*. Please use the following guidelines.

1. General Guidelines

- For each survey question, you will read each question aloud and mark the appropriate response. Note that words that should be read aloud are in bold, while words you should not read aloud are not bolded.
- Answer choices should not be read aloud unless specifically noted.
- When reading answer choices, do not read the responses of “Unsure” or “Refused.”

- You should attempt to obtain an answer to each question in the interview; however, if you believe that the establishment manager is unaware or unsure of the answer to a question, the response should be recorded as “Unsure,” and if the manager refuses to answer a question, the response should be recorded as “Refused.”

2. Specific Questions

- Please note and follow skip patterns.
- *Open-ended questions (Questions 10a, 12a, 15-17, 25a, 28a, 29a):* Some questions are open-ended and could potentially generate a lot of responses. If responses fit into the provided categories, check the appropriate boxes. If not, check “Other” and describe the response. Although it would be tempting to simply provide them with the answer choices, we do not want to cue them as to what their policies or actions *should* be, as that may impact their answers.
- *Question 20:* When asking this question, show respondents the list of answers provided on p. 18 of the instrument.
- *Questions 35, 37, 39:* These questions appear in a grid. You will ask the lettered questions in each grid about each type of leafy green that is stored, washed, and prepared in the establishment.
- *Question 1, 34, 36, 38:* If the manager does not know the names of the leafy green types used or the classified forms then you may have to use one or more of the following methods to identify the leafy green types used:
 - Look at leafy green currently in the establishment
 - Look at available leafy green shipment invoices
 - Provide respondent with pictures of leafy green types (*see photos*)
- *Question 27:* Some leafy green shipments may be measured by crates or boxes instead of pounds. In these cases you may have to calculate weight (pounds).
- *Questions 35b, 37b, 39b: Questions about leafy green type (Head; fresh cut, not RTE; fresh cut, RTE):* If fresh cut leafy green packages or shipping boxes are labeled washed or RTE, then classify the greens as RTE. If the labeling does not specifically state washed or RTE, then classify the greens as not RTE. If you can’t find any labeling, choose the unsure option. However, please make every effort to determine this, as it is important.

Observation of Leafy Green Handling

Once you have completed the manager interview, observe the kitchen and workers and record that data using the following procedure.

1. General Guidelines

- Wrap the leafy greens around the thermocouple, if possible (big leaves, bags of greens), to take the temperature of leafy greens. If working with small loose leaf greens not in bags, place thermocouple in middle of container.
- All temperatures taken should be rounded to the nearest whole number (≥ 0.5 round up, < 0.5 round down).
- If the temperature of a dry storage area is required, take the ambient temperature at the spatial center of the dry storage area.
- Please note and follow all skip patterns.

2. Specific Questions

- Questions 1, 4a-10a: For observations, the determination of leafy green type may first require observing information printed on the original container or invoice. If the information is not

available or sufficient then proceed to interview respondent. If respondent does not know or is not sure then mark question as “Unsure” by interview.

- Questions 4-8, Storage and Holding: Answer questions a-h for each type of raw, leafy greens seen in the walk-in cooler. The answer to h is yes if you saw something which is a reasonable potential cause of cross contamination.
- Question 9, Washing: Answer questions a-i for each type of raw, leafy greens observed being washed during your visit. The answer to i is yes if you saw something which is a reasonable potential cause of cross contamination.
- Question 10, Cutting: Answer questions a-- for each type of raw, leafy greens observed being cut during your visit. The answer to i is yes if you saw something which is a reasonable potential cause of cross contamination.
- *Questions 4, 5, 9, and 10: Questions about leafy green type (Head; fresh cut, not RTE; fresh cut, RTE):* If fresh cut leafy green packages or shipping boxes are labeled washed or RTE, then classify the greens as RTE. If the labeling does not specifically state washed or RTE, then classify the greens as not RTE. If you can't find any labeling, choose the unsure option. However, please make every effort to determine this, as it is important.

Glossary

There are key terms used throughout the instrument that are defined below. Although some terms maybe obvious please review them and become familiar with their definitions. This will help with consistent interpretations and evaluations.

Key Terms

- **Buffet Line (Refrigerated Buffet Units)** – designed to receive refrigerated food and maintain food product temperatures. They are intended for customer self-service, such as a salad bar.
- **Chain Establishment** – An establishment sharing both name *and* operations with other establishments. Ownership may be private, franchise or corporate.
- **Chemical/Produce Wash** – a solution used to facilitate removal of foreign material from produce. A chemical solution specifically designed to rid produce of dirt, pesticides, waxes and other environmental contaminants.
- **Cooler** – A piece of equipment or room (usually mechanically refrigerated) used to keep food at a temperature that is lower than the surrounding temperature but above freezing.
- **Culling** - To pick or select.
- **Dry Storage** – Any non-refrigerated area used to store food items that do not require refrigeration or freezing.
- **Field packed** – Process of packing food (leafy greens) at the point of harvest.
- **Food Safety Certified/Certification** – A document or paper that indicates a person has received training and/or passed an exam on food safety.
- **Food Workers** – An employee who works in the kitchen with unpackaged food, food equipment or utensil, or food contact surfaces. This is not wait staff who have no food handling responsibilities or who have very limited food contact, such as adding garnish or condiments to the plate before it is served.
- **Fresh Produce** – Food of plant origin that has not been physically altered following harvest.
- **Hand Sink** – A sink designed and used for hand washing practices only.
- **Independent Establishment** – An establishment with a name *and* operations unique to other establishments.
- **Kitchen Manager** – A manager (*see Manager*) who has control over the kitchen area.

- **Made to Order Station (Refrigerated Food Preparation Unit)** – designed with a refrigerated open top or open condiment rail. These include refrigerated sandwich units and pizza preparation tables for example.
- **Preparation** – Any process that readies an ingredient or a food item for consumption. Preparation can take place before or after the kill step or cooking of the item.
- **Pre-washed Produce** – Produce that has undergone a cleaning process (immersion, rinsing, soaking washing, etc.) prior to receiving.
- **Produce Cooler** – A cooler (see definition) designed to store produce (fruits and vegetables).
- **Produce Sink** – A sink designed and used for produce preparation operations only.
- **Produce Washing** – The process of physically removing soil and debris from produce using just water, a solution of soap and water or chemical (e.g. chlorine or commercial produce washes) and water.
- **Raw Animal Product Sink (Raw Animal Products)** – A sink designated and used for Animal products that have not been cooked, processed, or pasteurized, such as un-pasteurized eggs un-pasteurized dairy, uncooked meat, uncooked poultry, etc.
- **Reach-in cooler** – A cooler (see definition) designed for cold storage of non-frozen foods between periods of preparation, service and handling. Also known as a day cooler or day refrigerator. Foods stored in this type of cooler are used relatively quickly.
- **Ready-to-eat location** – a piece of equipment used to store pre-wrapped foods that can be eaten without further preparation.
- **Receiving Area (Receiving)** – The initial entry of an ingredient into the establishment.
- **Salad Bar (Refrigerated Buffet Units)** – designed to receive refrigerated food and maintain food product temperatures. They are intended for customer self-service, such as a salad bar.
- **Single-use Gloves** – Gloves designed and used for handling foods, and intended to be discarded following use.
- **Storage Cooler (Storage)** – Holding of a food item after it has been received and prior to any preparation.
- **Utility Sink** – A sink designed and used for non-food operations.
- **Vine Ripened** – Tomatoes that are mature and require no further ripening prior to use.
- **Walk-in cooler** – A cooler (see definition) that is a room designed to maintain cold storage of non-frozen foods for periods longer than non-frozen foods stored in reach-in coolers (see definition).

Other

A. Answers to possible questions.

- “What are you doing?”
“Why are you watching me?”
“What are you looking for?”
We are trying to learn more about how food is prepared in restaurants. So we are watching food workers prepare food, and taking notes on what they do.
- “Why?”
In the long run, we hope to figure out how to make it easier for food workers to do what they need to do.
- “What are you going to do with your notes?”
They will be entered into a computer and analyzed along with other responses. We are not collecting any information that might identify you in any way.

