

## **EHS-Net Tomato Handling Study Protocol**

### **I. Project Overview**

#### **Title**

EHS-Net Tomato Handling Study

#### **Protocol Summary**

Few studies have examined in detail the nature of tomato handling policies and practices in food service establishments. The purpose of this study is to collect descriptive data on restaurant tomato handling policies, environments, and food worker food preparation practices in restaurants, and to examine relationships among restaurant tomato handling policies, environment factors, and preparation practices. Data for this study will be collected through interviews with restaurant managers and observations of restaurant kitchen environments and workers. 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 Emerging Infectious Program sites (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 eight EHS-Net sites. Funding for this study will be provided through EHS-Net.

### **II. Introduction**

#### **Literature Review/Justification**

Foodborne illness is a significant public health issue—recent research indicates that foodborne diseases are a significant cause of illness in the United States and are responsible for substantial economic costs (Mead et al, 1999; Frenzen et al, 1999). Research also indicates that eating outside the home is associated with foodborne illness—epidemiological research has found that over half of reported foodborne illness outbreaks are associated with restaurants (Sulka & Huddle, 2003), and case control studies have found that people with foodborne illnesses were more likely to have eaten outside the home than were their non-ill controls (Hennessy et al, 1998; Kassenborg et al, 1998).

Additionally, several outbreaks have implicated tomatoes as the mechanism for foodborne illness. Research has indicated that good tomato handling and preparation practices are of critical importance in preventing the spread of illness in a food service environment. Areas of importance include: the need for appropriate disinfecting washes prior to preparation; proper washing and holding temperatures; and removal of stem scars, cuts and cores. (Zhuang et al, 1995; Wei et al, 1999; Hedberg et al, 1999) Since tomatoes consumed via food service establishments incur several opportunities for contamination we have chosen to focus this study on tomato handling and preparation practices in restaurants.

Thus, the purpose of this study is to collect data on tomato handling and preparation practices in food service establishments. Specifically, this study has two goals:

- 1) to collect descriptive data on food service establishment tomato handling policies and environments, and food service worker tomato preparation practices, and

- 2) to examine relationships among restaurant tomato handling policies, environmental factors, and food service worker preparation practices.

### **Objectives**

The primary objectives of this study are to describe tomato handling and preparation policies, environments, and practices in food service establishments and to examine the relationships among handling and preparation policies, environments, and practices in food service establishments.

## **III. Procedures/Methods**

### **Design**

This study will use a cross-sectional design to collect information about tomato handling and preparation practices, policies, and environments in restaurants. Information will be collected through an interview with the kitchen manager and through observations of the restaurant kitchen and of workers in the kitchen. The study will be performed by EHS-Net environmental health specialists (EHSs) who work in state health departments, and by EHSs who work in local health departments.

### **Data Collection**

The EHS-Net specialists will contact randomly selected restaurants by telephone to determine their interest in participating in the study. If the restaurant is willing to participate, then the EHS-Net specialist will inquire about tomato preparation 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, observing the environment and watching tomato 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 state. 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 state, and includes user administration, correction and deletion of records capabilities. All data records are owned by the state entering the data. Each state has authority over its records and must grant permission to other states or agencies who would like to use the data.

This study meets the two criteria for IRB exemption. First, the data collection is anonymous. Although 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.

### **Study Population**

The study population will include all restaurants in the EHS-Net catchment area. The catchment area for this study includes all or some counties in each of the following eight states: California, Connecticut, Georgia, Iowa, Minnesota, New York, Rhode Island and Tennessee. Each state will select a convenience sample of counties from which to randomly select a minimum of fifty restaurants for the study. Only restaurants that meet the EHS-Net definition of a restaurant will be included in the study. A minimum of fifty restaurants in each of the eight states will yield a total study population of at least 400 restaurants. Each state 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.

<b>Activity</b>	<b>Time Schedule</b>
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

### **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 A). 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: an interview section and an environment observational section (See Appendix B). During the interview section, the specialist will interview the establishment manager, or the person who has authority over the kitchen, about the restaurant and tomato

handling and preparation policies and practices. In the observation sections, the specialist will observe and record data on the environment and activities in the kitchen area.

## **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 states participating in EHS-Net (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. State and local health departments may disseminate reports to the foodservice establishments in which evaluations were done if they so choose.

# Appendix A

## EHS-Net Tomato Handling Study Instructions

### I. Background

#### A. Problem/Purpose Statement

Several *Salmonella* spp. outbreaks associated with consumption of raw tomatoes were identified since 1990 (see following table). Restaurants were the location for consumption of tomatoes for many cases. The outbreak investigation revealed that contamination of the tomatoes likely occurred on the farm or during processing. The handling of contaminated tomatoes may have amplified contamination and little is known about how tomatoes were handled at the involved restaurants. There is currently no literature describing tomato handling in restaurants. Description of the range of tomato handling practices in restaurants will fill in the farm-to-table chain, identify potentially modifiable practices and inform investigations of restaurant associated outbreaks.

Pathogen	Year	State	Tomato Type	Location
S. Javiana	1990	Multiple	Round	Home
S. Montevideo	1993	Multiple	Round	Restaurant, Home
S. Baildon	1999	Multiple	Round	Restaurant
S. Javiana	2002	Florida	Roma, pre-diced	Restaurant
S. Newport	2002	Multiple	Round	Restaurant, Home
S. Javiana et al.	2004	Multiple	Roma, pre-sliced	Restaurant
S. Branderup	2004	Multiple	Roma	Restaurant
S. Javiana	2004	Ontario	Roma	Restaurant

#### B. Objective/Goal

- Identify the type of tomatoes used in restaurants
- Describe tomato handling practices
- Explore tomato handling practices that aid or hinder the survival and proliferation/amplification of *Salmonella*

#### C. Hypotheses

The assumption is that raw tomatoes (whole or pre-sliced) come into the restaurant already contaminated with Salmonella. The focus is on what happens in the restaurant related to survival and amplification/proliferation of the pathogen. The secondary focus is on cross-contamination involving equipment used (sinks, slicers, knives, etc.) in tomato preparation. Some specific hypotheses are as follows:

- Tomatoes are being soaked in water cooler than the tomato pulp
- Tomatoes are not washed or soaked
- Chemical washes are not being used to clean tomatoes
- Food workers and managers are not knowledgeable or trained in produce safety specifically tomato handling

#### D. Study Design

- Study design will be a cross-sectional survey.
- Survey will include 3 sections: manager interview, data collector questions and tomato 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 tomato handling in general and specifically tomato washing and preparation.

## E. Literature Review

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14. Weissinger WR, Chantarapanont W, Beuchat LR. Survival and growth of *Salmonella* baildon in shredded and diced tomatoes, and effectiveness of chlorine as a sanitizer. *Int J Food Microbiol* 2000;62:123-51.

## II. Recruitment

### A. Recruiting Procedure

We expect each state to collect data for this study 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 Beef Study & Hand Hygiene Study refusal and ineligible rates to ensure that each state will be able to meet the target of 50 restaurants. For example, if 25% of restaurants in a state refused or were ineligible (e.g., they were shut down, didn't meet the EHS-Net definition of a restaurant), 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 can be found in back of this manual (p. 7). 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.
3. **Record the final disposition of all restaurants in the Participation Log.** The Excel file called *Tomato 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.
    - **CLOSED (CLSD):** Use this code if you determine that the restaurant is closed.
    - **NOT A RESTAURANT (N):** 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.
    - **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.
    - **CHAIN (C):** Use this code if a restaurant on your list is part of chain, and you have already collected data from a restaurant in that chain.
    - **INELIGIBLE RESTAURANT (I):** Use this code if you are able to contact a restaurant, it meets the EHS-Net definition, it serves raw, fresh tomato, it is not part of an already participating chain but does not serve raw, fresh tomatoes in any menu item.
    - **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, and the restaurant agrees to participate.
    - **OTHER (O):** Something that does not fall into any of the other categories.
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 tomato handling policies and practices and your location has been randomly selected to participate. Does this establishment serve any food item that includes raw, fresh tomatoes? For example, sandwiches, hamburgers or salads that include raw, fresh tomatoes not tomato sauces or soups where the raw, fresh tomato has been cooked.*

*No → Thank you for your time.*

Yes ↓

*Great! The study consists of a brief interview with the manager and observation of tomato preparation. Specifically we would like to observe tomato preparation that includes actions like washing and cutting or slicing of tomatoes. 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 tomatoes 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 tomatoes 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 parts A. Informed Consent, B. Manager Interview and C. Questions to be answered by data collector. Take along several copies of parts D. Observation and E. Additional Observations because you will have to complete these sections for each tomato type 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.*

#### Part A. 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.**

#### Part B. 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 present in questions 7, 12, 16, 29, 33, 37.
- *Open-ended questions:* Questions 13d, 23, 24, 26, 31 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 *should* be, as that may impact their answers.
- *Questions 24 - 39:* These questions appear in a grid. When asking these questions, keep in mind that the questions in the grid should be asked for each type of tomato that the respondent identified in question #23. To help you keep track of which tomato types you will be asking questions about, the columns are labeled with the appropriate tomato type and a check box. Each question has a blank space where the name of the appropriate tomato type can be inserted as you are reading the question aloud. It may be easiest to ask the list of questions for each tomato type separately.
- *Question 11 & 16:* Mark ‘Yes’, if the manager or food worker has received any training that addressed tomato handling from on-the-job training to formal food safety certification training.
- *Question 23:* If the manager does not know the names of the tomato types used then you may have to use one or more of the following methods to identify the tomato types used:
  - Look at tomatoes currently in the establishment
  - Look at available tomato shipment invoices
  - Provide respondent with pictures of tomato types (*see photos attached at the end of the data collection tool*)
- *Question 28:* Some tomato shipments may be measured by crates or boxes instead of pounds. In these cases you may have to calculate weight (pounds).
- *Questions 37 & 38:* When reading the question aloud, “(further)” should only be read aloud if you are talking about tomatoes that are pre-sliced, diced or cut.

## Part C. Questions To Be Answered By Data Collector

This section contains several questions that the data collector should answer. The data collector should determine the FoodNet establishment type (Question 2) and the EHS-Net establishment type (Question 1), and describe the establishment (Question 4) through a survey of the restaurant and the menu. They should also indicate who is collecting the data (Question 3).

## Part D. Observation of Tomato Handling

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

### 1. General Guidelines

- The Observation section should be completed for each tomato type in the establishment at the time of that evaluation. For example if at the time the evaluation is conducted there are whole Roma tomatoes and sliced Red Round tomatoes in the establishment you should complete two observations. Indicate the tomato type you are observing in question 1.
- After each question in the observation section circle the appropriate symbol “**I**” for Interview and “**O**” for Observation to indicate how data was obtained. Some questions require an answer that can only be obtained by observation and are indicated by “**O**” or “**Observation**”. The observation section is to be completed primarily by the data collector. Although there are a few questions that will more than likely require the knowledge of the kitchen manager or food worker and for that purpose the question can be obtained by interview or observation. Please try to obtain data by observation where possible.
- All temperatures taken should be rounded to the nearest whole number ( $\geq 0.5$  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.

## 2. Specific Questions

- Please note and follow skip patterns present in questions 3, 4, 14, 17, 21, 23, and 27-32.
- *Open-ended questions:* Questions 8, 18 and 27b – 32b 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.
- Question 2: For observations the determination of vine-ripened or field packed tomatoes 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 15 & 16: During tomato soaking or immersion in water, the temperature of the water and the temperature of the tomatoes should both be taken *before* soaking or immersion. If data is collected by interview and the respondent indicates that temperatures were not taken this should be recorded as “Unsure”.
- Questions 27 – 32: After the preparation of type being followed, you will identify where the product is placed (location, unit). For each location identified answer the following questions:
  - a. What is the temperature of the location (i.e. refrigerated unit) where the product placed?
  - b. What is the maximum time (hrs.) the product will stay in that location?
  - c. What is done with the product after the maximum time in that location?

\*NOTE: This answer grid should be completed for the tomato type that you are currently following in the establishment. For example, if you encounter a container of diced tomatoes prepared the day before being held in a refrigerated unit, do not record that tomato data in this answer grid. There is similar answer grid provided in Part E. Additional Observation where storage data of previously prepared tomatoes can be recorded.

## Part E. Additional Observation

After the manager interview and any time during the observation of the kitchen and workers, observe and record data on tomatoes in certain refrigerated units and/or locations.

### 1. General Guidelines

- The Additional Observation section should be completed for any held tomato product, (i.e. fresh tomatoes or food items that containing fresh tomatoes) from a previous period of preparation, (i.e. day before), that are being held in the following locations: ready-to-eat location, made-to-order station, buffet line or salad bar, walk-in cooler, reach-in cooler or dry (ambient) storage.
- Do not record data in this section about the tomatoes types you observed during this evaluation. There is a section for those data to be recorded in Part D. Observation of Tomato Handling. This answer grid is similar to the answer grid found in Part D, although here, we are only interested in data on previously prepared tomatoes.
- After each question in the observation section circle the appropriate symbol “**I**” for Interview and “**O**” for Observation to indicate how data was obtained. Some questions require an answer that can only be obtained by observation and are indicated by “**O**” or “**Observation**”. The observation section is to be completed primarily by the data collector. In this section there are a few questions that will require the knowledge of the kitchen manager or food worker and for that purpose the question can be obtained by interview. Please try to obtain data by observation where possible.
- All temperatures taken should be rounded to the nearest whole number ( $\geq 0.5$  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.

#### IV. 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.
- **Dry Storage** – Any non-refrigerated area used to store food items that do not require refrigeration or freezing.
- **Field packed** – Process of packing food (tomatoes) at the point of harvest. These tomatoes require no further ripening.
- **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).

## V. 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.





# **Appendix B**

## **EHS-Net Tomato Handling Study Instrument**

### **A. 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 \_\_\_\_\_ (state health department) on a research project designed to help us better understand restaurant tomato handling policies and practices. 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 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.

We are doing this study to get a better understanding of restaurant policies and practices concerning the handling of raw fresh tomatoes. While I'm here, I'm going to ask you some questions about this restaurant's policies and practices, and I will observe your kitchen and some of your employees working. The questions in the interview do not ask anything private. If any of the questions make you uncomfortable you can choose not to answer them. The information we 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.

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 be part of the study? *(Check appropriate box)*

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

Okay, I'd like to interview you first and then I'd like to see your kitchen.

**B. MANAGER INTERVIEW**

Date evaluation conducted: \_\_\_\_/\_\_\_\_/\_\_\_\_

Time evaluation conducted: \_\_\_\_:\_\_\_\_ am pm

*DEMOGRAPHICS/ CLASSIFICATIONS*

1. **Approximately how long have you been employed as a manager in this establishment?**
  - Less than 1 month
  - 1 month – less than 6 months
  - 6 months – less than 12 months
  - 1 year – less than 2 years
  - 2 years – less than 3 years
  - 3 or more years
  - Unsure
  - Refused
  
2. **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.**
  - (If 1 or more), No. of kitchen mangers: \_\_\_\_\_
  - None
  - Unsure
  - Refused
  
3. **How many food workers are currently employed in this establishment? By food workers I mean employees who work in the kitchen, not wait-staff that 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.**
  - (If 1 or more), No. of food workers: \_\_\_\_\_
  - None
  - Unsure
  - Refused
  
4. **How many food workers prepare fresh produce? \_\_\_\_\_**  Unsure  Refused
  
5. **Approximately how many meals are served here daily?**
  - None
  - 1 – 50 meals per day
  - 51 – 100 meals per day
  - 101 – 200 meals per day
  - 201 – 300 meals per day
  - 301 – 500 meals per day
  - More than 500 meals per day
  - Unsure
  - Refused
  
6. **Is this an independent establishment or a chain establishment?**
  - Independent
  - Chain
  - Unsure
  - Refused

*FOOD SAFETY TRAINING & CERTIFICATION*

7. **Are any kitchen managers food safety certified? By food safety certification I mean food safety training where a certificate is awarded upon completion of the training course.**
  - Yes
  - No (Skip to #9)
  - Unsure
  - Refused
  
8. **How many kitchen managers are food safety certified? \_\_\_\_\_**  Unsure  Refused
  
9. **Did the kitchen manager(s) receive food safety certification from...**

a. ...this corporation or company?

- Yes       Unsure  
 No       Refused

b. ...a private organization or consultant (e.g. local technical college, culinary arts classes)?

- Yes       Unsure  
 No       Refused

c. ...a state or local regulatory agency (e.g. local health department)?

- Yes       Unsure  
 No       Refused

d. ...another organization?

- Yes       Unsure  
 No       Refused

10. Are you food safety certified?

- Yes       Unsure  
 No       Refused

11. Have you received any training covering produce safety or instructions about how to handle fresh produce?

- Yes       Unsure  
 No       Refused

12. Have the food workers here received food safety training, such as a course, a class or on-the-job training?

- Yes       Unsure  
 No (Skip to #15)       Refused

13. Was the food safety training...

a. ...on the job training?

- Yes       Unsure  
 No       Refused

b. ...a manual or video?

- Yes       Unsure  
 No       Refused

c. ...a course or class?

- Yes       Unsure  
 No       Refused

d. ...another type of training?

- Yes, please specify: \_\_\_\_\_  
 No  
 Unsure  
 Refused

14. How many food workers have received food safety training? \_\_\_\_\_  Unsure  
 Refused

15. Did the food workers receive food safety training from...

a. ...this corporation or company?

- Yes       Unsure  
 No       Refused

b. ...a private organization or consultant (e.g. local technical college, culinary arts classes)?

- Yes       Unsure  
 No       Refused

c. ...a state or local regulatory agency (e.g. local health department)?

- Yes       Unsure  
 No         Refused

**d. ...another organization?**

- Yes       Unsure  
 No         Refused

**16. Are any food workers given training or instructions about how to handle fresh produce?**

- Yes                       Unsure  
 No (*Skip to #16*)       Refused

**17. How many food workers have been given training or instruction about how to handle fresh produce? \_\_\_\_\_**       Unsure       Refused

*KNOWLEDGE*

**18. On a scale of 1 to 5, 1 being “Very little risk” and 5 being “great deal of risk”, Please indicate how much risk you think there is of the following foods making someone ill if they are not prepared properly. (*Read responses a. – l.*)**

	<i>Very little risk</i>				<i>Great deal of risk</i>	<i>Unsure</i>	<i>Refused</i>
	1	2	3	4	5		
a. Fried Chicken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Smoked Fish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Sliced Tomatoes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Cut Lettuce	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Alfalfa sprouts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Green onions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Roast Beef	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. Baked Potatoes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i. Roast Pork	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
j. French Bread	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
k. Fresh Berries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
l. Cut melons	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*GENERAL TOMATO HANDLING PRACTICES & POLICIES*

Now, I'd like to ask you some general questions about this establishment's tomato handling practices and policies. I am only interested in activities that involve fresh tomatoes that will be served raw. For example, I want to know about tomatoes in menu items like sandwiches, hamburgers or salsa and not cooked tomatoes in soups or sauces.

**19. Does this establishment serve raw, fresh tomatoes in any menu items?**

- Yes                       Unsure  
 No (*End interview*)       Refused

**20. Is there a separate area in the kitchen dedicated to the preparation of raw produce items like tomatoes?**

- Yes             Unsure  
 No               Refused

21. Are single-use gloves ever used during the preparation of tomatoes?

- Yes             Unsure  
 No               Refused

22. Does this establishment designate certain cutting boards as produce only (or tomato only) cutting boards?

- Yes             Unsure  
 No               Refused

*TOMATO TYPES AND HANDLING*

Now, I'd like to ask you some questions about how this establishment handles specific tomato types. Please remember, I am only interested in activities that involve fresh tomatoes that will be served raw.

23. Which of the following raw, fresh tomatoes types are served? (*Read answer choices*)

- (*Check all that apply*)             Unsure             Refused

- Roma, whole
- Roma, pre-sliced, diced or cut
- Red Round, whole
- Red Round, pre-sliced, diced or cut
- Grape
- Cherry
- Other: \_\_\_\_\_

Please answer the following questions for **each** raw, fresh tomato type you indicated in the previous question.  
 Check the box for tomato types identified in question #23.

Roma		Red Round		Grape/Cherry	Other
Whole	Pre-sliced/ diced/ cut	Whole	Pre-sliced/ diced/ cut	Whole	
<input type="checkbox"/>					

24. What are the food or menu items for which (insert tomato types) tomatoes are used?

<input type="radio"/> (✓ all that apply) <input type="checkbox"/> Salad <input type="checkbox"/> Sandwich <input type="checkbox"/> Wrap <input type="checkbox"/> Hamburger <input type="checkbox"/> Salsa <input type="checkbox"/> Other: _____ _____ <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> (✓ all that apply) <input type="checkbox"/> Salad <input type="checkbox"/> Sandwich <input type="checkbox"/> Wrap <input type="checkbox"/> Hamburger <input type="checkbox"/> Salsa <input type="checkbox"/> Other: _____ _____ <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> (✓ all that apply) <input type="checkbox"/> Salad <input type="checkbox"/> Sandwich <input type="checkbox"/> Wrap <input type="checkbox"/> Hamburger <input type="checkbox"/> Salsa <input type="checkbox"/> Other: _____ _____ <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> (✓ all that apply) <input type="checkbox"/> Salad <input type="checkbox"/> Sandwich <input type="checkbox"/> Wrap <input type="checkbox"/> Hamburger <input type="checkbox"/> Salsa <input type="checkbox"/> Other: _____ _____ <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> (✓ all that apply) <input type="checkbox"/> Salad <input type="checkbox"/> Sandwich <input type="checkbox"/> Wrap <input type="checkbox"/> Hamburger <input type="checkbox"/> Salsa <input type="checkbox"/> Other: _____ _____ <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> (✓ all that apply) <input type="checkbox"/> Salad <input type="checkbox"/> Sandwich <input type="checkbox"/> Wrap <input type="checkbox"/> Hamburger <input type="checkbox"/> Salsa <input type="checkbox"/> Other: _____ _____ <input type="radio"/> Unsure <input type="radio"/> Refused
---	---	---	---	---	---

25. Are (insert tomato types) tomatoes considered pre-washed before arriving in the establishment?

<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	<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
--	--	--	--	--	--

26. From where does this establishment receive (insert tomato types) tomatoes?

<input type="radio"/> (✓ all that apply) <input type="checkbox"/> General distributor <input type="checkbox"/> Corporate distributor <input type="checkbox"/> Produce distributor <input type="checkbox"/> Produce market <input type="checkbox"/> Grocery store <input type="checkbox"/> Other: _____ _____ <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> (✓ all that apply) <input type="checkbox"/> General distributor <input type="checkbox"/> Corporate distributor <input type="checkbox"/> Produce distributor <input type="checkbox"/> Produce market <input type="checkbox"/> Grocery store <input type="checkbox"/> Other: _____ _____ <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> (✓ all that apply) <input type="checkbox"/> General distributor <input type="checkbox"/> Corporate distributor <input type="checkbox"/> Produce distributor <input type="checkbox"/> Produce market <input type="checkbox"/> Grocery store <input type="checkbox"/> Other: _____ _____ <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> (✓ all that apply) <input type="checkbox"/> General distributor <input type="checkbox"/> Corporate distributor <input type="checkbox"/> Produce distributor <input type="checkbox"/> Produce market <input type="checkbox"/> Grocery store <input type="checkbox"/> Other: _____ _____ <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> (✓ all that apply) <input type="checkbox"/> General distributor <input type="checkbox"/> Corporate distributor <input type="checkbox"/> Produce distributor <input type="checkbox"/> Produce market <input type="checkbox"/> Grocery store <input type="checkbox"/> Other: _____ _____ <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> (✓ all that apply) <input type="checkbox"/> General distributor <input type="checkbox"/> Corporate distributor <input type="checkbox"/> Produce distributor <input type="checkbox"/> Produce market <input type="checkbox"/> Grocery store <input type="checkbox"/> Other: _____ _____ <input type="radio"/> Unsure <input type="radio"/> Refused
--	--	--	--	--	--

27. Per week, how many (insert tomato types) tomato shipments does this establishment receive?

<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	<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
---	---	---	---	---	---

28. How many pounds of (insert tomato types) tomatoes are in one shipment?

<input type="radio"/> Lbs.: _____ <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> Lbs.: _____ <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> Lbs.: _____ <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> Lbs.: _____ <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> Lbs.: _____ <input type="radio"/> Unsure <input type="radio"/> Refused	<input type="radio"/> Lbs.: _____ <input type="radio"/> Unsure <input type="radio"/> Refused
--	--	--	--	--	--

**29. Where is the (insert tomato types) tomato shipment placed upon delivery?**

<input type="radio"/> Outside establishment					
<input type="radio"/> Inside establishment*					
<input type="radio"/> Moved directly into storage (skip to #31)	<input type="radio"/> Moved directly into storage (skip to #31)	<input type="radio"/> Moved directly into storage (skip to #31)	<input type="radio"/> Moved directly into storage (skip to #31)	<input type="radio"/> Moved directly into storage (skip to #31)	<input type="radio"/> Moved directly into storage (skip to #31)
<input type="radio"/> Unsure					
<input type="radio"/> Refused					

\* Inside the establishment awaiting movement to storage

**30. On average how many hours is the (insert tomato types) tomato shipment left outside/inside the establishment before it is moved to storage or used to prepare a menu item?**

<input type="radio"/> Hours: _____					
<input type="radio"/> Unsure					
<input type="radio"/> Refused					

**31. Where are (insert tomato types) tomatoes stored before they are used to prepare a menu item?**

<input type="radio"/> (✓ all that apply) <input type="checkbox"/> Produce cooler <input type="checkbox"/> Cooler <input type="checkbox"/> Ambient storage <input type="checkbox"/> Other: _____ _____ _____	<input type="radio"/> (✓ all that apply) <input type="checkbox"/> Produce cooler <input type="checkbox"/> Cooler <input type="checkbox"/> Ambient storage <input type="checkbox"/> Other: _____ _____ _____	<input type="radio"/> (✓ all that apply) <input type="checkbox"/> Produce cooler <input type="checkbox"/> Cooler <input type="checkbox"/> Ambient storage <input type="checkbox"/> Other: _____ _____ _____	<input type="radio"/> (✓ all that apply) <input type="checkbox"/> Produce cooler <input type="checkbox"/> Cooler <input type="checkbox"/> Ambient storage <input type="checkbox"/> Other: _____ _____ _____	<input type="radio"/> (✓ all that apply) <input type="checkbox"/> Produce cooler <input type="checkbox"/> Cooler <input type="checkbox"/> Ambient storage <input type="checkbox"/> Other: _____ _____ _____	<input type="radio"/> (✓ all that apply) <input type="checkbox"/> Produce cooler <input type="checkbox"/> Cooler <input type="checkbox"/> Ambient storage <input type="checkbox"/> Other: _____ _____ _____
<input type="radio"/> Unsure					
<input type="radio"/> Refused					

**32. On average how many hours are (insert tomato types) tomatoes stored before they are used to prepare a menu item?**

<input type="radio"/> Hours: _____					
<input type="radio"/> Unsure					
<input type="radio"/> Refused					

**33. Are (insert tomato types) tomatoes washed before being prepared for a menu item?**

<input type="radio"/> Yes					
<input type="radio"/> No(skip to #37)					
<input type="radio"/> Unsure					
<input type="radio"/> Refused					

**34. Is tomato temperature monitored with a thermometer during washing?**

<input type="radio"/> Yes					
<input type="radio"/> No					
<input type="radio"/> Unsure					
<input type="radio"/> Refused					

**35. Is water temperature monitored with a thermometer during washing?**

<input type="radio"/> Yes					
<input type="radio"/> No					
<input type="radio"/> Unsure					
<input type="radio"/> Refused					

**36. Are chemicals (e.g. chlorine or produce washes) used to wash tomatoes?**

<input type="radio"/> Yes					
<input type="radio"/> No					
<input type="radio"/> Unsure					
<input type="radio"/> Refused					

**37. Are (insert tomato types) tomatoes cut, sliced or diced (further)?**

<input type="radio"/> Yes					
<input type="radio"/> No(skip to #39)					
<input type="radio"/> Unsure					
<input type="radio"/> Refused					

**38. What equipment or utensils are used to cut, slice or dice (insert tomato types) tomatoes (further)?**

<input type="radio"/> (✓ all that apply) <input type="checkbox"/> Knife & cutting board <input type="checkbox"/> Other kitchen tools *	<input type="radio"/> (✓ all that apply) <input type="checkbox"/> Knife & cutting board <input type="checkbox"/> Other kitchen tools *	<input type="radio"/> (✓ all that apply) <input type="checkbox"/> Knife & cutting board <input type="checkbox"/> Other kitchen tools *	<input type="radio"/> (✓ all that apply) <input type="checkbox"/> Knife & cutting board <input type="checkbox"/> Other kitchen tools *	<input type="radio"/> (✓ all that apply) <input type="checkbox"/> Knife & cutting board <input type="checkbox"/> Other kitchen tools *	<input type="radio"/> (✓ all that apply) <input type="checkbox"/> Knife & cutting board <input type="checkbox"/> Other kitchen tools *
<input type="radio"/> Unsure					
<input type="radio"/> Refused					

\*Other kitchen tools (food slicer, food processor, blender, mandolin, etc)

**39. After preparation where is the final product (food item or (insert tomato types) tomatoes) placed?**

<input type="radio"/> (✓ all that apply) <input type="checkbox"/> Ready-to-eat location <input type="checkbox"/> Made to order station <input type="checkbox"/> Buffet line or salad bar <input type="checkbox"/> Walk-in cooler <input type="checkbox"/> Reach-in cooler <input type="checkbox"/> Dry Storage	<input type="radio"/> (✓ all that apply) <input type="checkbox"/> Ready-to-eat location <input type="checkbox"/> Made to order station <input type="checkbox"/> Buffet line or salad bar <input type="checkbox"/> Walk-in cooler <input type="checkbox"/> Reach-in cooler <input type="checkbox"/> Dry Storage	<input type="radio"/> (✓ all that apply) <input type="checkbox"/> Ready-to-eat location <input type="checkbox"/> Made to order station <input type="checkbox"/> Buffet line or salad bar <input type="checkbox"/> Walk-in cooler <input type="checkbox"/> Reach-in cooler <input type="checkbox"/> Dry Storage	<input type="radio"/> (✓ all that apply) <input type="checkbox"/> Ready-to-eat location <input type="checkbox"/> Made to order station <input type="checkbox"/> Buffet line or salad bar <input type="checkbox"/> Walk-in cooler <input type="checkbox"/> Reach-in cooler <input type="checkbox"/> Dry Storage	<input type="radio"/> (✓ all that apply) <input type="checkbox"/> Ready-to-eat location <input type="checkbox"/> Made to order station <input type="checkbox"/> Buffet line or salad bar <input type="checkbox"/> Walk-in cooler <input type="checkbox"/> Reach-in cooler <input type="checkbox"/> Dry Storage	<input type="radio"/> (✓ all that apply) <input type="checkbox"/> Ready-to-eat location <input type="checkbox"/> Made to order station <input type="checkbox"/> Buffet line or salad bar <input type="checkbox"/> Walk-in cooler <input type="checkbox"/> Reach-in cooler <input type="checkbox"/> Dry Storage
<input type="radio"/> Unsure					
<input type="radio"/> Refused					

**C. QUESTIONS TO BE ANSWERED BY DATA COLLECTOR**

1. Establishment type:
  - Prep Serve
  - Cook Serve
  - Complex
  
2. FoodNet establishment type:
  - Quick Service
  - Regular Sit-Down Service
  - Cafeteria / Buffet Service
  
3. Who is collecting the data in this establishment? (*Check all that apply*)
  - An EHS-Net state person not responsible for inspections in the establishment
  - An EHS-Net state person responsible for inspections in the establishment
  - Other: \_\_\_\_\_
  
4. Is this establishment...
  - a. ... a sit-down restaurant?
    - Yes       No       Unsure
  - b. ... a buffet establishment?
    - Yes       No       Unsure
  - c. ... a quick service or fast food establishment?
    - Yes       No       Unsure
  - d. ... a banquet hall?
    - Yes       No       Unsure
  - e. ... an ethnic establishment?
    - Yes       No       Unsure
  - f. ... a caterer?
    - Yes       No       Unsure

**D. OBSERVATION**

*REMINDER: The Observation section should be completed for each tomato type in the establishment at the time of that evaluation. For example if at the time the evaluation is conducted there are whole Roma tomatoes and sliced Red Round tomatoes in the establishment you should complete two observations. Indicate the tomato type you are observing in question 1.*

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

Time: \_\_\_\_:\_\_\_\_ am pm

**1. Tomato type being observed:**

- |  |   |
|--|---|
| <input type="radio"/> Roma, whole                    | <input type="radio"/> Grape, whole          |
| <input type="radio"/> Roma, pre-slice/diced/cut      | <input type="radio"/> Cherry, whole         |
| <input type="radio"/> Red round, whole               | <input type="radio"/> Other; Specify: _____ |
| <input type="radio"/> Red round, pre-slice/diced/cut |   |

**2. Are tomatoes vine-ripened or field packed? I O**

- |                           |                               |
|---------------------------|-------------------------------|
| <input type="radio"/> Yes | <input type="radio"/> Unsure  |
| <input type="radio"/> No  | <input type="radio"/> Refused |

**Receiving****3. Where is the tomato shipment placed upon delivery? I O**

- Outside the establishment  
 Inside the establishment  
 Into storage unit (skip to #8)  
 Unsure  
 Refused

**4. Is a tomato shipment arriving or sitting outside/ inside the establishment (awaiting movement to storage) during your observation? **Observation****

- Yes  
 No (skip to #7)

**5. What is the ambient temperature (°F) where tomatoes are sitting? **Observation****

- Temperature: \_\_\_\_ °F

**6. What is the internal temperature (°F) of one tomato where tomatoes are sitting? **Observation****

- Temperature: \_\_\_\_ °F

**7. How long did the tomato shipment stay in the receiving area? I O**

- Duration: \_\_\_\_ hours  Unsure  Refused

**Storage Before Preparation****8. Where are tomatoes stored before preparation (slicing, plating for service)? I O**

- |                                       |                                     |
|---------------------------------------|-------------------------------------|
| <input type="radio"/> Ambient storage | <input type="radio"/> Other : _____ |
| <input type="radio"/> Produce cooler  | <input type="radio"/> Unsure        |
| <input type="radio"/> Cooler          | <input type="radio"/> Refused       |

**9. On average how many hours have tomatoes been in storage before they are used to prepare a menu item? I O**

- Duration: \_\_\_\_ days  Unsure  Refused

10. What is the temperature in the storage location? **I O**  
 Temperature : \_\_\_\_ °F  Unsure  Refused

11. What is the internal temperature of one tomato in the storage location? **I O**  
 Temperature : \_\_\_\_ °F  Unsure  Refused

### Washing

12. Are tomatoes being washed? **I O**  
 Yes  Unsure  
 No (*Skip to #20*)  Refused

13. Which type of sink is used to wash tomatoes? **I O**  
 (*Check all that apply*)  
 Multi-use sink  
 Raw animal product only sink  
 Hand sink  
 Produce only sink  
 Utility sink  
 Container  
 Other  
 Unsure  
 Refused

14. How are tomatoes washed? **I O**  
 (*Check all that apply*)  
 Soaked or immersed in only water (*Answer #15*)  
 Rinsed or held under running water (*Answer #19*)  
 Washed with soap and water (*Answer #19*)  
 With chemicals (e.g. chlorine or produce washes) (*Answer to #18*)  
 Unsure  
 Refused

*If soaking or immersion,*

15. What is the water temperature (°F) before soaking or immersion? **I O**  
 Temperature : \_\_\_\_ °F  Unsure  Refused

16. What is the temperature (°F) of the tomato pulp before soaking or immersion? **I O**  
 Temperature : \_\_\_\_ °F  Unsure  Refused

17. How long, in minutes, are tomatoes soaked or immersed in water? **I O**  
 Duration : \_\_\_\_\_ min. (*Go to #19*)  
 Unsure (*Go to #19*)  
 Refused (*Go to #19*)

If washed with chemicals,

18. What type of chemical or washing agent is used? **I O**

(Check all that apply)

Water only

Chlorine

QA

Chemical produce wash

Other : \_\_\_\_\_

Refused

Unsure

19. Was the skin of the tomato torn or broken during or right before washing (this includes removing stems and coring)? **I O**

N/A, tomatoes were pre-cut/sliced/diced  Unsure

Yes

Refused

No

### Cutting, Slicing and Dicing

20. Are any tomatoes cut, sliced or diced in the establishment? **Observation**

Yes

Unsure

No (skip to #27)

Refused

21. Is a knife and cutting board used to cut, slice or dice tomatoes? **I O**

Yes

Unsure

No (skip to #23)

Refused

22. Is a produce or tomato cutting board (color coding system) used to cut, slice or dice tomatoes?

**I O**

Yes

Unsure

No

Refused

23. Is/Are any other kitchen tool(s) (food slicer, food processor, blender, mandolin, etc.) used to cut, slice or dice tomatoes? **I O**

Yes

Unsure

No (Skip to #25)

Refused

24. Is any other kitchen tool (food slicer, food processor, blender, mandolin, etc.) manual or electric? **I O**

(Check all that apply)  Unsure  Refused

Manual

Electric

25. Are gloves worn during cutting, slicing or dicing? **I O**

Yes

Unsure

No

Refused

26. What was the product temperature (°F) after cutting, slicing or dicing? **I O**

Temperature : \_\_\_\_\_ °F

Unsure

Refused

Storage/ Holding After Preparation

After preparation of product (i.e. tomatoes or food item that includes tomatoes), identify where the product is placed (location, unit). For each location identified answer the following questions:

- a. What is the temperature (°F) of the location (i.e. refrigeration unit) where the product is placed?
- b. What is the maximum time (Hrs.) the product will stay in that location (maximum duration/ time)?
- c. What is done with the product after the maximum time in that location?

	<b>a.</b>	<b>b.</b>	<b>c.</b>
After preparation is the final product placed...	What is the temp. of the location (i.e refrigeration unit) where the product is placed?	What is the maximum time the product will stay in that location?	After the maximum time, what is done with the product?
<p><b>27. ... in a <u>ready-to-eat</u> location</b></p> <p><input type="radio"/> Yes -----&gt;</p> <p><input type="radio"/> No (<i>Skip to #28</i>)</p> <p><input type="radio"/> Unsure</p> <p><input type="radio"/> Refused</p> <p style="text-align: right;"><b>I O</b></p>	<p><input type="radio"/> _____°F</p> <p><input type="radio"/> On Ice</p> <p><input type="radio"/> Unsure</p> <p><input type="radio"/> Refused</p> <p style="text-align: right;"><b>I O</b></p>	<p><input type="radio"/> _____Hrs.</p> <p><input type="radio"/> Unsure</p> <p><input type="radio"/> Refused</p> <p style="text-align: right;"><b>I O</b></p>	<p><input type="radio"/> (<i>check all that apply</i>)</p> <p><input type="checkbox"/> N/A – None left over</p> <p><input type="checkbox"/> Discard</p> <p><input type="checkbox"/> Give to employees</p> <p><input type="checkbox"/> Give to charity</p> <p><input type="checkbox"/> Other: _____</p> <p><input type="radio"/> Unsure</p> <p><input type="radio"/> Refused <b>I O</b></p>
<p><b>28. ...in a <u>made to order station</u></b></p> <p><input type="radio"/> Yes -----&gt;</p> <p><input type="radio"/> No (<i>Skip to #29</i>)</p> <p><input type="radio"/> Unsure</p> <p><input type="radio"/> Refused</p> <p style="text-align: right;"><b>I O</b></p>	<p><input type="radio"/> _____°F</p> <p><input type="radio"/> On Ice</p> <p><input type="radio"/> Unsure</p> <p><input type="radio"/> Refused</p> <p style="text-align: right;"><b>I O</b></p>	<p><input type="radio"/> _____Hrs.</p> <p><input type="radio"/> Unsure</p> <p><input type="radio"/> Refused</p> <p style="text-align: right;"><b>I O</b></p>	<p><input type="radio"/> (<i>check all that apply</i>)</p> <p><input type="checkbox"/> N/A – None left over</p> <p><input type="checkbox"/> Discard</p> <p><input type="checkbox"/> Give to employees</p> <p><input type="checkbox"/> Give to charity</p> <p><input type="checkbox"/> Other: _____</p> <p><input type="radio"/> Unsure</p> <p><input type="radio"/> Refused <b>I O</b></p>
<p><b>29. ... on a <u>buffet line or salad bar</u></b></p> <p><input type="radio"/> Yes -----&gt;</p> <p><input type="radio"/> No (<i>Skip to #30</i>)</p> <p><input type="radio"/> Unsure</p> <p><input type="radio"/> Refused</p> <p style="text-align: right;"><b>I O</b></p>	<p><input type="radio"/> _____°F</p> <p><input type="radio"/> On Ice</p> <p><input type="radio"/> Unsure</p> <p><input type="radio"/> Refused</p> <p style="text-align: right;"><b>I O</b></p>	<p><input type="radio"/> _____Hrs.</p> <p><input type="radio"/> Unsure</p> <p><input type="radio"/> Refused</p> <p style="text-align: right;"><b>I O</b></p>	<p><input type="radio"/> (<i>check all that apply</i>)</p> <p><input type="checkbox"/> N/A – None left over</p> <p><input type="checkbox"/> Discard</p> <p><input type="checkbox"/> Give to employees</p> <p><input type="checkbox"/> Give to charity</p> <p><input type="checkbox"/> Other: _____</p> <p><input type="radio"/> Unsure</p> <p><input type="radio"/> Refused <b>I O</b></p>
<p><b>30. ... in a <u>walk-in cooler</u></b></p> <p><input type="radio"/> Yes -----&gt;</p> <p><input type="radio"/> No (<i>Skip to #31</i>)</p> <p><input type="radio"/> Unsure</p> <p><input type="radio"/> Refused</p> <p style="text-align: right;"><b>I O</b></p>	<p><input type="radio"/> _____°F</p> <p><input type="radio"/> On Ice</p> <p><input type="radio"/> Unsure</p> <p><input type="radio"/> Refused</p> <p style="text-align: right;"><b>I O</b></p>	<p><input type="radio"/> _____Hrs.</p> <p><input type="radio"/> Unsure</p> <p><input type="radio"/> Refused</p> <p style="text-align: right;"><b>I O</b></p>	<p><input type="radio"/> (<i>check all that apply</i>)</p> <p><input type="checkbox"/> N/A – None left over</p> <p><input type="checkbox"/> Discard</p> <p><input type="checkbox"/> Give to employees</p> <p><input type="checkbox"/> Give to charity</p> <p><input type="checkbox"/> Other: _____</p> <p><input type="radio"/> Unsure</p> <p><input type="radio"/> Refused <b>I O</b></p>

	<b>a.</b>	<b>b.</b>	<b>c.</b>
After preparation is the final product placed...	What is the temp. of the location (i.e refrigeration unit) where the product is placed?	What is the maximum time the product will stay in that location?	After the maximum time, what is done with the product?
<b>31. ... in a <u>reach-in cooler</u></b> <input type="radio"/> Yes -----> <input type="radio"/> No ( <i>Skip to #32</i> ) <input type="radio"/> Unsure <input type="radio"/> Refused <p style="text-align: right;"><b>I O</b></p>	<input type="radio"/> _____°F <input type="radio"/> On Ice <input type="radio"/> Unsure <input type="radio"/> Refused <p style="text-align: right;"><b>I O</b></p>	<input type="radio"/> _____Hrs. <input type="radio"/> Unsure <input type="radio"/> Refused <p style="text-align: right;"><b>I O</b></p>	<input type="radio"/> ( <i>check all that apply</i> ) <input type="checkbox"/> N/A – None left over <input type="checkbox"/> Discard <input type="checkbox"/> Give to employees <input type="checkbox"/> Give to charity <input type="checkbox"/> Other: _____ <input type="radio"/> Unsure <input type="radio"/> Refused <b>I O</b>
<b>32. ... in <u>dry storage</u></b> <input type="radio"/> Yes -----> <input type="radio"/> No ( <i>End</i> ) <input type="radio"/> Unsure <input type="radio"/> Refused <p style="text-align: right;"><b>I O</b></p>	<input type="radio"/> _____°F <input type="radio"/> On Ice <input type="radio"/> Unsure <input type="radio"/> Refused <p style="text-align: right;"><b>I O</b></p>	<input type="radio"/> _____Hrs. <input type="radio"/> Unsure <input type="radio"/> Refused <p style="text-align: right;"><b>I O</b></p>	<input type="radio"/> ( <i>check all that apply</i> ) <input type="checkbox"/> N/A – None left over <input type="checkbox"/> Discard <input type="checkbox"/> Give to employees <input type="checkbox"/> Give to charity <input type="checkbox"/> Other: _____ <input type="radio"/> Unsure <input type="radio"/> Refused <b>I O</b>

Additional Comments:

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**E. Additional Observation**

1. Did you observe any held tomato product, (i.e. fresh tomatoes or food items that containing fresh tomatoes) from ***a previous period of preparation***, in any of the following locations: ready-to-eat location, made-to-order station, buffet line or salad bar, walk-in cooler, reach-in cooler or dry (ambient) storage? **Observation**
- Yes (Go to #2)
  - No

For the location(s) where you observed held tomato product, from a previous period of preparation, answer the following questions:

- a. Were tomatoes cut, sliced or diced?
- b. What is the temperature (°F) of the product?
- c. How long has the product been in that location?
- d. What is the maximum time (hrs.) the product will stay in that location (maximum duration/ time)?
- e. What is done with the product after the maximum time in that location?

	a.	b.	c.	d.	e.
Did you see any tomatoes, from a previous period of preparation, being held or stored...	Were tomatoes cut, sliced or diced?	What is the temp. of the product?	How long has the product been in that location?	What is the maximum time the product will stay in that location?	After the maximum time, what is done with the product?
<p><b>2. ...in a <u>made to order station</u></b></p> <p><input type="radio"/> Yes -----&gt;</p> <p><input type="radio"/> No (Skip to #3)</p> <p><input type="radio"/> Unsure</p> <p><input type="radio"/> Refused</p> <p style="text-align: right;"><b>O</b></p>	<p><input type="radio"/> Yes</p> <p><input type="radio"/> No</p> <p style="text-align: right;"><b>O</b></p>	<p><input type="radio"/> ___°F</p> <p><input type="radio"/> On Ice</p> <p><input type="radio"/> Unsure</p> <p><input type="radio"/> Refused</p> <p style="text-align: right;"><b>I O</b></p>	<p><input type="radio"/> ___Hrs.</p> <p><input type="radio"/> Unsure</p> <p><input type="radio"/> Refused</p> <p style="text-align: right;"><b>I O</b></p>	<p><input type="radio"/> ___Hrs.</p> <p><input type="radio"/> Unsure</p> <p><input type="radio"/> Refused</p> <p style="text-align: right;"><b>I O</b></p>	<p><input type="radio"/> (check all that apply)</p> <p><input type="checkbox"/> N/A</p> <p><input type="checkbox"/> Discard</p> <p><input type="checkbox"/> Give to employees</p> <p><input type="checkbox"/> Give to charity</p> <p><input type="checkbox"/> Other: _____</p> <p><input type="radio"/> Unsure</p> <p><input type="radio"/> Refused <b>I O</b></p>
<p><b>3. ... on a <u>buffet line or salad bar</u></b></p> <p><input type="radio"/> Yes -----&gt;</p> <p><input type="radio"/> No (Skip to #4)</p> <p><input type="radio"/> Unsure</p> <p><input type="radio"/> Refused</p> <p style="text-align: right;"><b>O</b></p>	<p><input type="radio"/> Yes</p> <p><input type="radio"/> No</p> <p style="text-align: right;"><b>O</b></p>	<p><input type="radio"/> ___°F</p> <p><input type="radio"/> On Ice</p> <p><input type="radio"/> Unsure</p> <p><input type="radio"/> Refused</p> <p style="text-align: right;"><b>I O</b></p>	<p><input type="radio"/> ___Hrs.</p> <p><input type="radio"/> Unsure</p> <p><input type="radio"/> Refused</p> <p style="text-align: right;"><b>I O</b></p>	<p><input type="radio"/> ___Hrs.</p> <p><input type="radio"/> Unsure</p> <p><input type="radio"/> Refused</p> <p style="text-align: right;"><b>I O</b></p>	<p><input type="radio"/> (check all that apply)</p> <p><input type="checkbox"/> N/A</p> <p><input type="checkbox"/> Discard</p> <p><input type="checkbox"/> Give to employees</p> <p><input type="checkbox"/> Give to charity</p> <p><input type="checkbox"/> Other: _____</p> <p><input type="radio"/> Unsure</p> <p><input type="radio"/> Refused <b>I O</b></p>
<p><b>4. ... in a <u>walk-in cooler</u></b></p> <p><input type="radio"/> Yes -----&gt;</p> <p><input type="radio"/> No (Skip to #5)</p> <p><input type="radio"/> Unsure</p> <p><input type="radio"/> Refused</p> <p style="text-align: right;"><b>O</b></p>	<p><input type="radio"/> Yes</p> <p><input type="radio"/> No</p> <p style="text-align: right;"><b>O</b></p>	<p><input type="radio"/> ___°F</p> <p><input type="radio"/> On Ice</p> <p><input type="radio"/> Unsure</p> <p><input type="radio"/> Refused</p> <p style="text-align: right;"><b>I O</b></p>	<p><input type="radio"/> ___Hrs.</p> <p><input type="radio"/> Unsure</p> <p><input type="radio"/> Refused</p> <p style="text-align: right;"><b>I O</b></p>	<p><input type="radio"/> ___Hrs.</p> <p><input type="radio"/> Unsure</p> <p><input type="radio"/> Refused</p> <p style="text-align: right;"><b>I O</b></p>	<p><input type="radio"/> (check all that apply)</p> <p><input type="checkbox"/> N/A</p> <p><input type="checkbox"/> Discard</p> <p><input type="checkbox"/> Give to employees</p> <p><input type="checkbox"/> Give to charity</p> <p><input type="checkbox"/> Other: _____</p> <p><input type="radio"/> Unsure</p> <p><input type="radio"/> Refused <b>I O</b></p>

	a.	b.	c.	d.	e.
Did you see any tomatoes, from a previous period of preparation, being held or stored...	Were tomatoes cut, sliced or diced?	What is the temp. of the product?	How long has the product been in that location?	What is the maximum time the product will stay in that location?	After the maximum time, what is done with the product?
<b>5. ... in a reach-in cooler</b> <input type="radio"/> Yes -----> <input type="radio"/> No ( <i>Skip to #6</i> ) <input type="radio"/> Unsure <input type="radio"/> Refused <p style="text-align: right;"><b>O</b></p>	<input type="radio"/> Yes <input type="radio"/> No <p style="text-align: right;"><b>O</b></p>	<input type="radio"/> ___°F <input type="radio"/> On Ice <input type="radio"/> Unsure <input type="radio"/> Refused <p style="text-align: right;"><b>I O</b></p>	<input type="radio"/> ___Hrs. <input type="radio"/> Unsure <input type="radio"/> Refused <p style="text-align: right;"><b>I O</b></p>	<input type="radio"/> ___Hrs. <input type="radio"/> Unsure <input type="radio"/> Refused <p style="text-align: right;"><b>I O</b></p>	<input type="radio"/> ( <i>check all that apply</i> ) <input type="checkbox"/> N/A <input type="checkbox"/> Discard <input type="checkbox"/> Give to employees <input type="checkbox"/> Give to charity <input type="checkbox"/> Other: _____ <input type="radio"/> Unsure <input type="radio"/> Refused <p style="text-align: right;"><b>I O</b></p>
<b>6. ... in dry storage</b> <input type="radio"/> Yes -----> <input type="radio"/> No ( <i>End</i> ) <input type="radio"/> Unsure <input type="radio"/> Refused <p style="text-align: right;"><b>O</b></p>	<input type="radio"/> Yes <input type="radio"/> No <p style="text-align: right;"><b>O</b></p>	<input type="radio"/> ___°F <input type="radio"/> On Ice <input type="radio"/> Unsure <input type="radio"/> Refused <p style="text-align: right;"><b>I O</b></p>	<input type="radio"/> ___Hrs. <input type="radio"/> Unsure <input type="radio"/> Refused <p style="text-align: right;"><b>I O</b></p>	<input type="radio"/> ___Hrs. <input type="radio"/> Unsure <input type="radio"/> Refused <p style="text-align: right;"><b>I O</b></p>	<input type="radio"/> ( <i>check all that apply</i> ) <input type="checkbox"/> N/A <input type="checkbox"/> Discard <input type="checkbox"/> Give to employees <input type="checkbox"/> Give to charity <input type="checkbox"/> Other: _____ <input type="radio"/> Unsure <input type="radio"/> Refused <p style="text-align: right;"><b>I O</b></p>

**EHS-Net Tomato Handling Study**

**Tomato Handling Study Participation Log**

Instructions: For each selected restaurant, enter the sample identification number and the response code.  
For restaurants that are ineligible or refuse, enter the reason for the ineligibility or refusal.

	Sample ID	Response Code: U=Unable to contact/Closed CLSD= Closed R=Refusal N=Not an EHS-Net restaurant C=Chain P=Participating I=Ineligible restaurant O=Other	Reasons for Refusal/Comments
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