

EHS-Net Ground Beef Study Protocol

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Ground Beef Handling in Restaurants



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IRB Protocol

Title: EHS-Net Ground Beef Handling Study

Project Overview

Research studies have found that foodborne illnesses from *Escherichia coli* O157:H7 (*E. Coli* O157:H7) have been associated with consumption of ground beef. It has also been determined that the use of irradiated ground beef can decrease the risk of developing *E. Coli* O157:H7. Based on this information, a study has been developed to evaluate food handling practices associated with ground beef, particularly hamburgers and cheeseburger, and to evaluate the use of irradiated ground beef in restaurants. Data for this study will be collected through interviews with restaurant managers, as well as through observations of food handling practices in restaurant kitchens. 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 eight Emerging Infectious Program sites (California, Colorado, Connecticut, Georgia, Minnesota, New York, Oregon, and Tennessee); these partners have come together in an effort to better understand the environmental causes of foodborne illness.

Introduction

Gastrointestinal illness caused by *Escherichia coli* O157:H7 is characterized by abdominal cramps and profuse, often bloody, diarrhea. It is estimated that *E. Coli*

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O157:H7 causes 62,000 illnesses, 1,800 hospitalizations, and 50 deaths in the United States each year. *E. Coli* O157:H7 is also the leading cause of post-diarrheal hemolytic-uremic syndrome (HUS) among children in the United States and Canada. The mortality rate among children with HUS is 3-5%. Numerous studies have identified beef, more specifically undercooked ground beef, as a risk factor for infection from *E. Coli* O157:H7. Research has also shown that irradiating ground beef effectively destroys *E. Coli* O157:H7, thereby decreasing the risk of developing a foodborne illness.

The health effects from infections of *E. Coli* O157:H7 and the association with ground beef have provided the foundation for additional research in this area. This study has two main objectives. The first objective is to examine ground beef handling and cooking practices related to the control of risk factors associated with foodborne disease, specifically *E. Coli* O157:H7. The second objective is to examine and describe the barriers and facilitators associated with the use of irradiated ground beef in retail food establishments. Findings from this study can be used to address unsafe ground beef handling and cooking practices, and provide a basis for identifying ways to increase the use of irradiated beef products in food service establishments. This can ultimately reduce the risk of developing a foodborne illness from consumption of ground beef. All potential outcomes from this study will help us meet the Healthy People 2010 goals of reducing foodborne illness infections in the U.S. (Healthy People 2010 Section 10-2) and improving employee behaviors and food preparation practices that directly relate to

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foodborne illnesses in retail food establishments (Healthy People 2010 Section 10-6).

Some potential study questions are below:

- What is the frequency of improper hygiene among food workers handling ground beef?
- What is the frequency of undercooking of ground beef?
- What is the frequency of improper holding of ground beef?
- What is the prevalence of the use of irradiated ground beef?
- What are the barriers to the use of irradiated ground beef?
- What are the facilitators to the use of irradiated ground beef?

Design

This study will use a cross-sectional design to collect descriptive information about ground beef handling and cooking practices, and the use of irradiated ground beef in restaurants. Information will be collected through an interview with the kitchen manager and through observations in the restaurant kitchen. The study will be completely anonymous. The study will be performed by an EHS-Net environmental health specialists who work with the Health Department of that State. The EHS-Net specialist will determine restaurant eligibility over the phone. If a restaurant is eligible and willing to participate in the study, it will be assigned an establishment ID number by an electronic database. The only information entered into the database will be the State and zip code of the restaurant. The establishment ID will not be linked to the restaurant in any other way. While the information collected for the study might represent code

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violations; these code violations are not normally considered an imminent health threat. However, Environmental Health Specialists will be obligated to report any imminent public health threats to the local health department. They would discontinue the survey, notify the restaurant of the imminent health threat and then forward this information onto the local health department.

The survey tool will be piloted for one month. Based on the results of the piloting, any necessary changes will be made to the survey tool. After the pilot phase has been completed and the tool has been revised, the six-month data collection period will begin. The data will then be entered into an electronic database for analyses.

The primary audience for this project is food safety and epidemiology program managers and policy makers at the local, state, and federal level. All of these groups are active participants in this project.

Study Population

The catchment area for the ground beef study includes several counties in each of the following eight states: California, Colorado, Connecticut, Georgia, Minnesota, New York, Oregon, and Tennessee. Each state will select a convenient sample of counties from which to randomly select a minimum of fifty restaurants for the study. A minimum of fifty restaurants in each of the eight states will yield a total study population of at least 400 restaurants. The study population will include restaurants that prepare and serve

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hamburgers and/or cheeseburgers to customers. Those restaurants that do not serve hamburgers and/or cheeseburgers will be excluded from the study population. Each state will include only one restaurant from each regional or national chain in its study population.

Consent

We will obtain verbal informed consent according to the following procedures: at the beginning of the interview with the restaurant manager, the environmental health specialist conducting the interview will read the manager a short introduction describing the purpose of the study and how the data will be used. 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 (Appendix A).

Due to the fact that we will only ask for verbal consent, we wish to request a waiver of documentation of informed consent under 45 CFR 46.117 (c). The research involves no more than minimal risk, and involves no procedures for which written consent is normally required outside the research context. The participants in this study are restaurant managers; however, the survey questions will not be about the manager, but rather about the restaurant and the restaurant policies. This study does not adversely affect the rights and welfare of the participants. Also restaurant locations will remain anonymous. Restaurants will be assigned an ID number generated by the electronic

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database and no location or name will be recorded. Without a waiver of documentation of informed consent the anonymity of establishments and interviewees cannot be guaranteed. This research could not be done without assuring restaurants of their anonymity.

PROCEDURES/METHODS

Variables/Interventions

Variables

Information to be explored and variables to be collected fall into the following categories:

- Establishment demographics (“How would you describe this establishment?”)
- Ground beef use (“Does the restaurant grind its own hamburger/ground beef?”),
- Hamburger/cheeseburger preparation, (“Are hamburger patties formed in the restaurant?”)
- Ground beef purchases (“Does the restaurant purchase fresh ground beef in bulk?”),
- Irradiated beef use (“Does the restaurant use irradiated ground beef?”),
- Food safety policies (“Are employees required to report diarrhea and vomiting to the manager or person-in-charge?”),
- Observation of ground beef handling practices (“What is the distance from the ground beef prep area to the nearest hand sink?”).

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Study Instrument

The data collection instrument was developed by EHS-Net sanitarians and epidemiologists. The instrument consists of two sections: an interview section and an observational section. The first portion of the survey is the interview with the establishment manager, or the person who has authority over the kitchen. Data regarding descriptive information about the restaurant and its policies, beef handling and cooking practices, and the use of irradiated beef are collected in the interview portion of the survey. The observation section is the second portion of the survey. Questions in this section will be completed by the EHS-Net specialist during observation of activities in the kitchen area, and include the distance from the cook/prep area to the nearest hand sink, hand washing practices of the food service workers, food handling practices of food service workers, ground beef storage practices, etc.

(Appendix B).

Study Personnel Training

Study personnel are EHS-Net sanitarians. In some states, other state and local sanitarians will also participate in data collection under the supervision of the EHS-Net sanitarians. All study personnel have education, training, and experience in sanitation and food protection. They are considered experts of their individual food safety programs and participated in the development of the survey instrument. Study personnel will also be given a short course on scientific ethics and responsible research during the November 4-

6, 2003 EHS-Net meeting. The course will be based on the CDC online scientific ethics course.

Data Handling and Analysis

Analysis Plan

The analysis of the Beef Study data will proceed in several stages and is limited by sample size, item non-response and the quality of the variables. 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. The descriptive analysis phase will examine ground beef handling practices, the potential for contamination of ground beef through improper hygiene and cross-contamination, and the potential for pathogen survival and amplification through improper cooking and holding temperatures. In addition, we will examine the use of irradiated beef in restaurants and the barriers to using irradiated beef. The final stage, if necessary, will involve regression modeling of the data to examine any multivariable relationships and to control for confounding.

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Data Collection

From the selected restaurant list, the EHS-Net specialist will contact the restaurant by telephone to determine eligibility for inclusion in the study (Attachment C). If the restaurant is eligible and willing to participate, then the EHS-Net specialist will 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 each survey question the EHS-Net specialist will read each question aloud and mark the appropriate response. For the observation portion of the survey, the EHS-Net specialist will spend time in the establishment kitchen, observing the environment and watching the activities of the food workers. The entire survey will take approximately one hour to complete.

Analysis Software

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

Data Entry, Editing and Management

Restaurant evaluation 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 a 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 state, and includes user administration, correction and deletion of records. All data records are owned by the state entering the

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data. Each state has authority over its records and must grant permission to other states or agencies who would like to use the data.

Restaurant evaluation records will be entered into this system by each state. This system will maintain a listing of all restaurant evaluations and will allow the state account administrator to correct any evaluation records that have been entered.

Restaurant evaluation records will be assigned an identification number when submitted to CDC through this system. The name, address, and contact information for the restaurant will not be collected by the state during the evaluations. The only information collected and submitted to CDC will be the state and zip code in which the restaurant is located. Previous research indicates that men are more likely than women to purchase irradiated food. Given this information, the gender of the interviewee will be collected and submitted to CDC for analyses as well.

The data entered into this system may only be analyzed, presented, or published by permission of the states owning the data according to the EHS-Net publication procedures.

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.

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Intermediate reviews and analyses

Bi-weekly conference calls will be conducted with the beef study working group. During these conference calls data collection, analysis and general study progress will be tracked and assessed.

Study Limitations

Data will be collected in those states participating in EHS-Net (California, Colorado, Connecticut, Georgia, Minnesota, New York, Oregon, 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.

Handling of Unexpected or Adverse Events

Beef study working group bi-weekly conference calls will be the platform for identifying and handling new or unexpected findings, and responding to changes in the study environment.

IRB will be notified if new or unexpected findings or changes to the study environment occur, such as, lost or stolen data.

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Dissemination, Notification, and Reporting of Results

Results of the analysis of the beef study 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.

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EHS-Net Ground Beef Study Instrument

Establishment ID (generated by the electronic database): _____

Date survey was conducted: ____/____/2004

Interviewer Name: _____

State: _____

Zip Code of Establishment: _____

EHS-Net establishment type? (*Choose one*)

- Prep Serve
- Cook Serve
- Complex

FoodNet establishment type? (*Choose one*)

- Quick Service
- Regular Sit-down Service
- Cafeteria/buffet

Gender of person interviewed:

- Male
- Female

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1. Does this restaurant serve hamburgers/cheeseburgers?
 - Yes
 - No (*If NO, end interview*)
 - Don't know
 - Refused

DEMOGRAPHICS / CLASSIFICATIONS:

2. Describe the ownership of this restaurant: (*Read the list. Choose one.*)
 - Independent
 - Local chain
 - Regional chain
 - National chain – FRANCHISE
 - National chain – CORPORATE
 - Other _____
 - Don't know
 - Refused
3. How would you describe this establishment? (*Read the list. Choose all that apply.*)

YES	NO	Banquet hall
YES	NO	Buffet
YES	NO	Caterer
YES	NO	Ethnic (If YES, what type? _____)
YES	NO	Family
YES	NO	Fine dining
YES	NO	Quick service/fast food
YES	NO	Other (If YES, what type? _____)
YES	NO	Refused
4. Approximately how many meals are served daily? _____
5. How many employees (total) work here? _____
6. How would you best define your title? (*Choose one.*)
 - Owner
 - Manager (includes all types of managers)
 - Cook/chef
 - Food Worker
 - Other _____
 - Don't know
 - Refused

8888=Unsure
9999=Refused

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7. How long have you worked in the food service industry?
- <1 year
 - 1 year to <3 years
 - 3 years to <5 years
 - 5 years to <10 years
 - 10 years to <15 years
 - ≥15 years
 - Don't know
 - Refused
8. What is the highest level of education you completed?
- Never attended school or only Kindergarten
 - Elementary (Grades 1-8)
 - Some High School (Grades 9-11)
 - High School graduate or GED (Grade 12)
 - Some college or technical school (College 1 year to 3 years)
 - College graduate (College 4 years or more)
 - Don't know
 - Refused

GROUND BEEF:

Questions with the answer choices, always, often, sometimes, rarely, and never should be read to the interviewee and their response recorded. If they ask for clarification these guidelines can be used: always is 100% of the time, often is around 75%, sometimes is around 50%, rarely is around 25%, and never is 0% of the time.

9. Are you responsible for making decisions about what kinds of ground beef to buy?
- Always (***GO TO Q. 11***)
 - Often (***GO TO Q. 10***)
 - Sometimes (***GO TO Q. 10***)
 - Rarely (***GO TO Q. 10***)
 - Never (***GO TO Q. 10***)
 - Don't know (***GO TO Q. 10***)
 - Refused (***GO TO Q. 11***)
 - Establishment does not buy ground beef (***GO TO Q. 15***)

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10. If you are not responsible (*or not always responsible*) for making decisions about what kinds of ground beef products to buy, who makes those decisions? (***Read the list. Choose all that apply.***)

YES NO Manager
YES NO Chef
YES NO Owner
YES NO Corporate
YES NO Other _____
YES NO Don't know
YES NO Refused

11. Who does the restaurant usually purchase ground beef from? (***Read the list. Choose all that apply.***)

YES NO General distributor
YES NO Grocery store
YES NO Local meat market/butcher shop
YES NO Other (please specify) _____
YES NO Refused

12. Is the temperature of fresh (*i.e. not frozen*) ground beef measured when it is delivered to your facility?

Always (***GO TO Q. 13***)
 Often (***GO TO Q. 13***)
 Sometimes (***GO TO Q. 13***)
 Rarely (***GO TO Q. 13***)
 Never (***GO TO Q. 15***)
 N/A (no fresh ground beef received) (***GO TO Q. 15***)
 Don't know (***GO TO Q. 15***)
 Refused (***GO TO Q. 15***)

13. When is the temperature measured? (***Read the list. Choose all that apply.***)

While it is on the truck, before it is unloaded
 While it is on the delivery handcart
 After it has been unloaded and placed in facility
 Other _____
 Refused

14. Describe how the temperature is measured and what is done if the temperature is found to be out of range (*i.e. what type of instrument is used, are the packages opened, or just felt to be sure they're cold, etc*):

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15. Does the restaurant grind its own hamburger/ground beef?
- Always
 - Often
 - Sometimes
 - Rarely
 - Never
 - Don't know
 - Refused
16. Which menu items contain ground beef? *For each "YES" answer obtained, ask the follow-up question: Of all the ground beef used in this facility, what percentage is used to make this particular food item? (Read the list. Choose all that apply)*
- | | | |
|------------|-----------|----------------------------------|
| YES | NO | Hamburgers/cheeseburger (_____%) |
| YES | NO | Hamburger steak (_____%) |
| YES | NO | Chili/soups/stews (_____%) |
| YES | NO | Meat loaf (_____%) |
| YES | NO | Meatballs (_____%) |
| YES | NO | Salisbury steak (_____%) |
| YES | NO | Tacos (_____%) |
| YES | NO | Others _____ (_____%) |
| YES | NO | Refused |
17. Is ground beef (OTHER THAN HAMBURGERS) cooked from a frozen or partially frozen state?
- Always
 - Often
 - Sometimes
 - Rarely
 - Never
 - Don't know
 - Refused
 - Don't use ground beef for anything besides hamburgers/cheeseburgers
18. Does the restaurant have a consumer advisory regarding the risk of eating undercooked hamburger or ground beef?
- Yes (**GO TO Q. 19**)
 - No (**GO TO Q. 20**)
 - Don't know (**GO TO Q. 20**)
 - Refused (**GO TO Q. 20**)

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19. Where does the consumer advisory appear? (*Read the list. Choose all that apply.*)
- | | | |
|------------|-----------|-------------|
| YES | NO | Menu |
| YES | NO | Table tents |
| YES | NO | Placemats |
| YES | NO | Signs |
| YES | NO | Other _____ |
| YES | NO | Refused |

HAMBURGERS/CHEESEBURGERS:

20. Approximately how many hamburgers are served weekly? _____ 8888=Unsure
9999=Refused

21. What size hamburgers are served? (*Read the list. Choose all that apply.*)

- | | | |
|------------|-----------|-------------|
| YES | NO | 1/8 lb |
| YES | NO | 1/4 lb |
| YES | NO | 1/3 lb |
| YES | NO | 1/2 lb |
| YES | NO | 3/4 lb |
| YES | NO | 1 lb |
| YES | NO | Other _____ |
| YES | NO | Refused |

22. Are hamburger patties formed in the restaurant?

- Always (*GO TO Q. 23*)
- Often (*GO TO Q. 23*)
- Sometimes (*GO TO Q. 23*)
- Rarely (*GO TO Q. 23*)
- Never (*GO TO Q. 29*)
- Don't know (*GO TO Q. 29*)
- Refused (*GO TO Q. 29*)

23. Are hamburger patties formed by hand?

- Always (*GO TO Q. 24*)
- Often (*GO TO Q. 24*)
- Sometimes (*GO TO Q. 24*)
- Rarely (*GO TO Q. 24*)
- Never (*GO TO Q. 25*)
- Don't know (*GO TO Q. 25*)
- Refused (*GO TO Q. 25*)

24. Explain the process for forming by hand: _____

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25. Are hamburger patties formed by machine?

- Always (*GO TO Q. 26*)
- Often (*GO TO Q. 26*)
- Sometimes (*GO TO Q. 26*)
- Rarely (*GO TO Q. 26*)
- Never (*GO TO Q. 27*)
- Don't know (*GO TO Q. 27*)
- Refused (*GO TO Q. 27*)

26. Explain the process for forming by machine: _____

27. Are hamburger patties formed by another method?

- Always (*GO TO Q. 28*)
- Often (*GO TO Q. 28*)
- Sometimes (*GO TO Q. 28*)
- Rarely (*GO TO Q. 28*)
- Never (*GO TO Q. 29*)
- Don't know (*GO TO Q. 29*)
- Refused (*GO TO Q. 29*)

28. Explain the process for forming by another method:

29. Are hamburger patties cooked and then held for later service?

- Always (*GO TO Q. 30*)
- Often (*GO TO Q. 30*)
- Sometimes (*GO TO Q. 30*)
- Rarely (*GO TO Q. 30*)
- Never (*GO TO Q. 31*)
- Don't know (*GO TO Q. 31*)
- Refused (*GO TO Q. 31*)

30. How are they held? _____

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31. What type of equipment is used to cook the hamburgers? (*Read the list. Choose all that apply. See pictures at end of survey for equipment descriptions.*)

- YES NO** Flat top grill (griddle)
YES NO Clam shell grill
YES NO Charcoal grill (i.e. outdoor grill)
YES NO Chain conveyor broiler
YES NO Broiler
YES NO Oven
YES NO Microwave
YES NO Other _____
YES NO Don't know
YES NO Refused

32. Are the final cook temperatures of hamburgers/cheeseburgers measured?

- Always (*GO TO Q. 33*)
 Often (*GO TO Q. 33*)
 Sometimes (*GO TO Q. 33*)
 Rarely (*GO TO Q. 33*)
 Never (*GO TO Q. 37*)
 Don't know (*GO TO Q. 37*)
 Refused (*GO TO Q. 37*)

33. Is an instrument used to check the final cook temperature?

- Always (*GO TO Q. 34*)
 Often (*GO TO Q. 34*)
 Sometimes (*GO TO Q. 34*)
 Rarely (*GO TO Q. 34*)
 Never (*GO TO Q. 37*)
 Don't know (*GO TO Q. 37*)
 Refused (*GO TO Q. 37*)

34. What type of instrument is used to measure the temperature of cooked burgers?

- YES NO** Bimetal stem
YES NO Disposable (single use) temperature indicator
YES NO Fork thermometer
YES NO Thermistor
YES NO Thermocouple
YES NO Other _____
 Refused

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35. Are employees trained to check the accuracy of the instruments?
- Yes (*GO TO Q. 36*)
 - No (*GO TO Q. 37*)
 - Don't know (*GO TO Q. 37*)
 - Refused (*GO TO Q. 37*)
36. How often are instruments checked for accuracy? (*Choose one.*)
- Daily
 - Weekly
 - Monthly
 - Other _____
 - Refused
37. Is doneness checked by color (internal appearance)?
- Always
 - Often
 - Sometimes
 - Rarely
 - Never
 - Don't know
 - Refused
38. Is doneness checked by feel/texture?
- Always
 - Often
 - Sometimes
 - Rarely
 - Never
 - Don't know
 - Refused
39. Is doneness checked by the way it looks (external appearance, i.e. 'the juices run clear')?
- Always
 - Often
 - Sometimes
 - Rarely
 - Never
 - Don't know
 - Refused

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40. Is doneness checked any other way?
- Always (describe: _____)
 - Often (describe: _____)
 - Sometimes (describe: _____)
 - Rarely (describe: _____)
 - Never
 - Don't know
 - Refused
41. Rank from highest to lowest the “doneness” most frequently ordered (1 being the type most frequently ordered, 5 being the least frequently ordered, enter 0 for any level the restaurant does not serve i.e. no rare hamburgers are served rank the other four levels and enter 0 for rare).
- _____ Rare
 - _____ Medium-rare
 - _____ Medium
 - _____ Medium-well
 - _____ Well
 - Don't know
 - Refused
42. If a customer requests it, are they served rare or medium-rare hamburgers or cheeseburgers?
- Always
 - Often
 - Sometimes
 - Rarely
 - Never
 - Don't know
 - Refused
43. Are hamburgers and/or cheeseburgers cooked from a frozen or partially frozen state?
- Always
 - Often
 - Sometimes
 - Rarely
 - Never
 - Don't know
 - Refused

GROUND BEEF PURCHASES:

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44.

Does the restaurant purchase FRESH (i.e., not frozen) ground beef in bulk ?		If YES, what percent lean?	If YES, how much is purchased in a week?
YES UNKNOWN REFUSED	NO	70-74%	lbs
		75-79%	lbs
		80-84%	lbs
		85-89%	lbs
		90-95%	lbs
		Unknown	lbs
		Other:	lbs

45.

Does the restaurant purchase FROZEN ground beef in bulk ?		If YES, what percent lean?	If YES, how much is purchased in a week?
YES UNKNOWN REFUSED	NO	70-74%	lbs
		75-79%	lbs
		80-84%	lbs
		85-89%	lbs
		90-95%	lbs
		Unknown	lbs
		Other:	lbs

46.

Does the restaurant purchase FRESH (i.e., not frozen) ground beef in patties ?		If YES, what percent lean?	If YES, how much is purchased in a week?
YES UNKNOWN REFUSED	NO	70-74%	lbs
		75-79%	lbs
		80-84%	lbs
		85-89%	lbs
		90-95%	lbs
		Unknown	lbs
		Other:	lbs

47.

Does the restaurant purchase FROZEN ground beef in patties ?		If YES, what percent lean?	If YES, how much is purchased in a week?
YES UNKNOWN REFUSED	NO	70-74%	lbs
		75-79%	lbs
		80-84%	lbs
		85-89%	lbs
		90-95%	lbs
		Unknown	lbs
		Other:	lbs

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48. Does the restaurant purchase any pre-cooked ground beef products?

- Always (*GO TO Q. 49*)
- Often (*GO TO Q. 49*)
- Sometimes (*GO TO Q. 49*)
- Rarely (*GO TO Q. 49*)
- Never (*GO TO Q. 50*)
- Don't know (*GO TO Q. 50*)
- Refused (*GO TO Q. 50*)

49. Which pre-cooked ground beef products do you buy?

IRRADIATED USE:

50. Does the restaurant use irradiated ground beef?

- Always (*GO TO Q. 51*)
- Often (*GO TO Q. 51*)
- Sometimes (*GO TO Q. 51*)
- Rarely (*GO TO Q. 51*)
- Never (*GO TO Q. 59*)
- Don't know if restaurant buys irradiated ground beef (*GO TO Q. 62*)
- Don't know what irradiated ground beef is (*GO TO Q. 62*)
- Refused (*GO TO Q. 62*)

51. When did the restaurant start using irradiated ground beef? ____/____/____
 Refused

52. Why did the restaurant start using irradiated ground beef?

(Read the list. Choose all that apply)

- | | | |
|------------|-----------|-----------------------------|
| YES | NO | Food safety |
| YES | NO | Customers wanted it |
| YES | NO | Extended shelf life |
| YES | NO | Corporate decided to use it |
| YES | NO | Other _____ |
| YES | NO | Refused |

53. Are customers informed that the restaurant uses irradiated ground beef?

- Yes (*GO TO Q. 54*)
- No (*GO TO Q. 55*)
- Don't know (*GO TO Q. 55*)
- Refused (*GO TO Q. 55*)

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58.

Does the restaurant purchase FROZEN IRRADIATED ground beef in patties?		If YES, what percent lean?	If YES, how much is purchased in a week?
YES	NO	70-74%	lbs
		75-79%	lbs
	UNKNOWN	80-84%	lbs
		85-89%	lbs
	REFUSED	90-95%	lbs
		Unknown	lbs
		Other:	lbs

(GO TO Q. 62 after this question is answered)

59. What prevents the restaurant from using irradiated ground beef? (*Read the list. Choose all that apply.*)

- YES** **NO** Cost
- YES** **NO** Safety concerns
- YES** **NO** Not acceptable to customers
- YES** **NO** Product not available
- YES** **NO** Taste
- YES** **NO** Didn't know I could get it
- YES** **NO** Other _____
- YES** **NO** Refused

(GO TO Q. 62 if Cost is NO)

60. If the cost for irradiated ground beef were the same as non-irradiated ground beef, would the restaurant buy irradiated ground beef?

- Yes (*GO TO Q. 61*)
- No (*GO TO Q. 62*)
- Don't know (*GO TO Q. 61*)
- Refused (*GO TO Q. 61*)

61. How much more per pound would the restaurant be willing to pay for irradiated ground beef?

- \$0.01 – 0.05
- \$0.06 – 0.09
- \$0.10 - 0.15
- \$0.16 – 0.24
- \$0.25 - 0.49
- \$0.50 - 0.74
- \$0.75 - 1.00
- >\$1.00
- Don't know
- Refused

Ground Beef Handling in Restaurants



62. Does the restaurant use any other irradiated products?
- Always (*GO TO Q. 63*)
 - Often (*GO TO Q. 63*)
 - Sometimes (*GO TO Q. 63*)
 - Rarely (*GO TO Q. 63*)
 - Never (*GO TO Q. 64*)
 - Don't know (*GO TO Q. 64*)
 - Refused (*GO TO Q. 64*)
63. What irradiated products are used? (*Read the list. Choose all that apply.*)
- | | | |
|------------|-----------|-----------------|
| YES | NO | Processed meats |
| YES | NO | Chicken |
| YES | NO | Fruit |
| YES | NO | Vegetables |
| YES | NO | Other _____ |
| YES | NO | Don't know |
| YES | NO | Refused |

FOOD SAFETY POLICIES:

64. Is food safety certification for managers required by your company policy?
- Yes
 - No
 - Don't know
 - Refused
65. Is food safety certification for managers required by local or state regulation?
(*Interested in manager's knowledge*)
- Yes
 - No
 - Don't know
 - Refused
66. Does the restaurant have at least one manager who is food safety certified?
- Yes
 - No
 - Don't know
 - Refused
67. Is food safety training provided to food workers?
- Yes (*GO TO Q. 68*)
 - No (*GO TO Q. 69*)
 - Don't know (*GO TO Q. 69*)
 - Refused (*GO TO Q. 69*)

Ground Beef Handling in Restaurants



68. Who provides food safety training to food workers? (*Read the list. Choose all that apply.*)
- | | | |
|------------|-----------|---------------------------------|
| YES | NO | OJT |
| YES | NO | State/local regulatory |
| YES | NO | Corporate/company course |
| YES | NO | Private organization/consultant |
| YES | NO | Other _____ |
| YES | NO | Refused |
69. Do any food workers (not managers) receive paid sick leave?
- Yes
 - No
 - Don't know
 - Refused
 - No food workers in establishment.
70. Are employees required to report diarrhea and/or vomiting illnesses to the manager or person-in-charge?
- Yes
 - No
 - Don't know
 - Refused
71. Is there a policy that restricts employees from working while ill?
- Yes
 - No
 - Don't know
 - Refused

Ground Beef Handling in Restaurants



OBSERVATION: DO NOT ASK Q. 72 – Q. 103 TO THE OPERATOR/MANAGER/COOK UNLESS OTHERWISE INDICATED.

72. What is the approximate distance from the cook line to the nearest handsink?

- 1 – < 3 feet (***GO TO Q. 73***)
- 3 – < 6 feet (***GO TO Q. 73***)
- 6 – < 8 feet (***GO TO Q. 73***)
- 8 – < 10 feet (***GO TO Q. 73***)
- ≥ 10 feet (***GO TO Q. 73***)
- No handsink (***GO TO Q. 77***)

73. Does the handsink (nearest to the cook line) have warm/hot water?

- Yes
- No

74. Does the handsink (nearest to the cook line) have soap?

- Yes
- No

75. Does the handsink (nearest to the cook line) have paper towels/dryer?

- Yes
- No

76. Is the handsink (nearest to the cook line) blocked or not operational?

- Yes
- No

77. What is the approximate distance from the ground beef prep area to the nearest handsink?

- 1 – < 3 feet (***GO TO Q. 78***)
- 3 – < 6 feet (***GO TO Q. 78***)
- 6 – < 8 feet (***GO TO Q. 78***)
- 8 – < 10 feet (***GO TO Q. 78***)
- ≥ 10 feet (***GO TO Q. 78***)
- No prep area (***GO TO Q. 84***)
- No handsink (***GO TO Q. 82***)

Ground Beef Handling in Restaurants



78. Does the handsink (nearest to the ground beef prep area) have warm/hot water?
 Yes
 No
79. Does the handsink (nearest to the ground beef prep area) have soap?
 Yes
 No
80. Does the handsink (nearest to the ground beef prep area) have paper towels/dryer?
 Yes
 No
81. Is the handsink (nearest to the ground beef prep area) blocked or not operational?
 Yes
 No
82. Is the same prep area used for ground beef and RTE foods?
 Yes (*GO TO Q. 83*)
 No (*GO TO Q. 84*)
83. Are food contact surfaces washed, rinsed and sanitized between ground beef prep and RTE food prep?
 Yes
 No
 Did not observe prep
84. Are hands washed between handling raw ground beef and RTE foods/cooked ground beef?
 Yes
 No
 No hand contact – utensils only
 Did not observe handling/cooking
85. Are the same utensils (spatula, tongs, etc) used on raw ground beef products and RTE foods without being washed, rinsed and sanitized in between?
 Yes
 No
 Did not observe this step

Ground Beef Handling in Restaurants

86. Is raw ground beef stored in the walk-in cooler? **(If no walk-in cooler, observe the largest refrigerated storage area.)**
- Yes (**GO TO Q. 87**)
 - No (**GO TO Q. 89**)
 - No walk-in cooler (**GO TO Q. 89**)
87. Measure the temperature of ground beef in the walk-in cooler. _____°F
88. Is raw ground beef stored above (or in another way that could cross-contaminate) cooked or RTE foods in the walk-in cooler?
- Yes
 - No
89. Is raw ground beef stored in the staging/reach-in cooler?
- Yes (**GO TO Q. 90**)
 - No (**GO TO Q. 92**)
 - No staging/reach-in cooler (**GO TO Q. 92**)
90. Measure the temperature of ground beef in the staging/reach-in cooler. _____°F
91. Is raw ground beef stored above (or in another way that could cross-contaminate) cooked or RTE foods in the staging/reach-in cooler?
- Yes
 - No
92. Are uncooked hamburger patties stored at room temperature prior to cooking?
- Yes (**GO TO Q. 93**)
 - No (**GO TO Q. 95**)
93. What is the temperature of a hamburger patty stored at room temperature? _____°F
94. How long has it been at room temperature? _____minutes
95. What type of hand contact takes place before cooking/heating hamburgers?
- Bare Hand Contact
 - Glove Hand Contact
 - Both Bare Hand and Glove Hand Contact
 - Neither Bare nor Glove Hand Contact (i.e., utensils)
 - Did not observe this step

Ground Beef Handling in Restaurants



96. What type of hand contact takes place after cooking/heating the hamburgers?
- Bare Hand Contact
 - Glove Hand Contact
 - Both Bare Hand and Glove Hand Contact
 - Neither Bare nor Glove Hand Contact (i.e., utensils)
 - Did not observe this step
97. Are the same utensils (spatula, tongs, etc) used on raw and cooked ground beef products without being washed, rinsed and sanitized in between?
- Yes
 - No
 - Did not observe this step
98. Are raw hamburgers placed on the cooking equipment in a way that could contaminate other foods?
- Yes (describe _____)
 - No
 - Did not observe cooking
99. Measure the temperature of a cooked hamburger/cheeseburger. _____°F (*If no hamburger/cheeseburger is available for temping, mark "N/A" and GO TO Q. 102*)
100. **ASK COOK/CHEF:** How did the customer request this hamburger to be cooked?
- Rare
 - Medium rare
 - Medium
 - Medium well
 - Well
 - Unsure
 - Customer does not request - we only cook it one way
101. **ASK COOK/CHEF:** How do you know it reached the requested level of doneness? (*Read the list, choose all that apply*)
- Color (internal appearance)
 - Feel (touch/texture)
 - Sight (external appearance, i.e. juice runs clear)
 - Timing
 - Took temperature
 - Just know
 - Other _____

Ground Beef Handling in Restaurants



102. Are hands wiped on aprons after handling raw ground beef?

- Yes
- No
- Did not observe cooking/prep

103. Are hands wiped on wiping cloths after handling raw ground beef?

- Yes
- No
- Did not observe cooking/prep

COMMENTS: _____

Q. 31 Examples of Cooking Equipment

Broilers



Clamshell Grill



Flat-top grill or Griddles



EHS-Net Ground Beef Study

Participation Log

Instructions: For each selected restaurant, enter the sample identification number and the response code.

Sample ID Response Code:

U= Unable to contact--no one answers phone or the number is non-working

R= Refused--restaurant refuses, or no definitive response is obtained, even though contact is made

I= Ineligible--restaurant does not meet EHS-Net definition

C= Chain--restaurant is part of an already participating chain

P= Participating--restaurant agrees to participate

