April 2006

Survey of Meat and Poultry Processing-Only Plants

Final Report

Prepared for

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*RTI International is a trade name of Research Triangle Institute.

Contents

Figures

Tables

1 Introduction

FSIS requires up-to-date information on plant practices to conduct timely and reliable economic analyses. The Recurring Industry Surveys will provide FSIS with timely data on practices used in the meat, poultry, and egg industries to control pathogens and promote food safety. This report describes the survey procedures and results for meat and poultry processing-only plants.

The U.S. Department of Agriculture, Food Safety and Inspection Service (USDA, FSIS) issues regulations affecting a broad range of activities associated with the production of meat, poultry, and egg products. The economic analyses conducted by FSIS to inform the development of these regulations must be based on reliable information. FSIS is required to conduct economic analyses, as mandated by Executive Order 12866, the Regulatory Flexibility Act (RFA), the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), the Unfunded Mandates Act of 1995, the Data Quality Act, and other similar measures.

The cumulative effect of these statutes and guidance has placed even greater demands on the economic and technical information databases available to the agency. The premium for timely and reliable economic analyses, and for the data needed to inform these analyses, has increased significantly. To obtain data needed for conducting economic analyses, FSIS implemented the Recurring Industry Surveys.

In July 2001, FSIS awarded a contract to RTI International (RTI) to design a survey to collect information about practices and technologies used in the meat, poultry, and egg industries to control pathogens and promote food safety and to prepare the Office of Management and Budget (OMB) information request clearance package. FSIS received OMB approval to conduct the surveys in August 2003. The survey of egg packing and egg products processing plants was conducted by RTI in 2003 (Cates et al., 2004). The survey of meat and poultry slaughter and processing plants was conducted by RTI in 2004

(Cates et al., 2005). The survey of meat and poultry processing-only plants was conducted by RTI in 2005. FSIS anticipates conducting the surveys on a recurring basis, which will allow the agency to track changes in the use of food safety technologies and practices over time.

This report describes the survey procedures and presents the results of the meat and poultry processing-only survey. We used a multimodal survey approach. We contacted plants by telephone to screen for eligibility and to identify the target respondent for the survey, mailed a self-administered questionnaire to the target respondent, and made a series of telephone calls to nonrespondents to encourage participation.

This report is organized as follows. Section 2 describes the sample design. Section 3 describes the design and administration of the survey. Section 4 describes the nonresponse bias analysis and weighting and data analysis procedures. Section 5 presents tabulated survey results for meat and poultry processing-only plants. Section 6 concludes the report and includes recommendations for the next round of surveys.

2 Sample Design

This section summarizes our sample design and selection procedures for the survey. The respondent universe (i.e., population) for the survey is federally- and state-inspected meat and poultry processing-only establishments located in the United States. Our approach for developing the sampling frames and drawing the samples for federally- and state-inspected plants is described below.

2.1 SAMPLING FRAME

The Enhanced Facilities Database (EFD) was used to develop the sampling frames for federally-inspected and state-inspected plants.

The Enhanced Facilities Database (EFD)[1] (version dated June 2005) was used to develop the sampling frames. The EFD is a comprehensive Microsoft Access XP database of active meat, poultry, and egg products FSIS-inspected establishments and state-inspected meat and poultry plants. The EFD combines data from several agency databases, with supplementary data from *info*USA (www.infousa.com). The EFD contains information on animal slaughter volumes, annual revenue, number of employees, inspection activities, and contact information. We describe below the development of the sampling frames for federally- and state-inspected plants.

2.1.1 Federally-Inspected Plants

Plants meeting the following criteria were included in the sampling frame for federally-inspected meat and poultry processing-only plants:

[1] RTI developed and maintains the EFD for FSIS and updates it on a periodic basis when requested by FSIS. The EFD provides data for economic impact analyses, evaluation studies, and survey sampling frames.

- Plant has a federal or Talmadge-Aiken[2] inspection authority code.
- Plant has an active code (1 = currently suspended or 2 = currently open).
- Plant does not have a slaughter volume for any species.[3]

In consultation with FSIS, we decided to exclude certain types of plants from the sampling frame so that the frame would be representative of the vast majority of plants inspected by FSIS. Also, consideration was given to minimizing respondent burden for very small plants. We excluded the following types of plants from the sampling frame:

- plants operating for objectives that are not strictly commercial[4] (N = 31), and
- plants located in a U.S. territory (N = 71) (because of the potential for language barriers in completing the survey).

2.1.2 State-Inspected Plants

For most states with state-inspection programs, data were available to classify plants as processing-only plants. For states in which this information was unavailable, all plants were included in the sampling frame and screened for eligibility during data collection. We excluded from the sampling frame plants operating for objectives that are not strictly commercial (N = 26).

2.1.3 Final Survey Universe

We stratified the sample by inspection status (federal versus state) and HACCP size.[5] Table 2-1 provides the universe size (i.e., population) for meat and poultry processing-only plants by HACCP size.

[2]Talmadge-Aiken plants are federal plants inspected by state inspection staff.

[3]We did not use the 03J slaughter code as an exclusion criterion because a plant may have previously slaughtered but is not currently slaughtering. In many cases, the 03J code is not immediately deleted in the Performance-Based Inspection System (PBIS) after a plant discontinues slaughtering operations.

[4]We searched the name of the establishment and excluded those that are universities, religious organizations, prisons, Native American organizations, and state and federal government facilities.

[5]Large plants have 500 or more employees, small plants have 10 or more employees but fewer than 500, and very small plants have fewer than 10 employees or less than $2.5 million in annual sales.

Table 2-1. Universe Size for Meat and Poultry Processing-Only Plants (Number of Establishments)

	HACCP Size			
Inspection Status	**Very Small**	**Small**	**Large**	**Total**
Federal	2,247	1,896	123	4,266
State	1,085	25	0	1,110
Total	3,332	1,921	123	5,376

Source: EFD, 2005.

2.2 SAMPLE SIZE AND PRECISION

An indication of the expected precision of sample survey estimates is the width of the 95 percent confidence intervals (CIs) calculated for statistics of interest. Decisions about desirable sample precision involve a trade-off between the need for accurate data and the costs of obtaining the data. Larger sample sizes yield greater precision, but also increase the cost of data collection.

In consultation with FSIS, we decided on a precision of +/−5 percent. That is, a CI would be no larger than 10 percent and would be centered on the estimated prevalence. Thus, the sample design specifies a sample size that is expected to yield precision of +/−5 percent or better for estimates of all proportions, assuming we met our target eligibility and response rates.

We adjusted the required sample sizes upward for anticipated eligibility and response rates. The eligibility rate accounts for plants with inaccurate information in the sampling frame, plants that no longer process meat or poultry, or plants that are no longer in business. Based on our experience with the slaughter survey, we assumed a 90 percent eligibility rate for very small and small federally-inspected plants and a 95 percent eligibility rate for large federally-inspected plants. We anticipated that the information on state-inspected plants would not be as accurate, so we assumed a 70 percent eligibility rate for state-inspected plants. As specified in the Information Collection Request (ICR) Supporting Statement submitted to OMB, the target response rate was 75 percent.

Table 2-2 summarizes the universe, starting sample size, and sample yield (i.e., anticipated number of respondents) by inspection status and HACCP size. The sample size required to achieve the desired level of precision for large federally-inspected plants and small state-inspected plants required surveying all plants in the population (i.e., taking a census). The sample design was expected to yield 743 completed surveys with federally-inspected plants and 308 completed surveys with state-inspected plants, for a total of 1,051 completed surveys.

Table 2-2. Sample Design for Meat and Poultry Processing-Only Plants (Number of Establishments)

	Federally-Inspected				State-Inspected				
	Very Small	Small	Large	Total	Very Small	Small	Large	Total	Total
Universe	2,247	1,896	123	4,266	1,085	25	0	1,110	5,376
Starting sample size	488	475	123	1,086	541	25	0	566	1,652
Required sample yield	329	320	94	743	284	24	0	308	1,051

2.3 SYSTEMATIC SAMPLING

We used systematic sampling to select the sample of very small and small federally-inspected plants and very small state-inspected plants.[6] The purpose of systematic sampling (instead of random sampling) is to ensure that the selected sample adequately represents the entire target universe or population. Systematic sampling forces the sample to include plants with varying characteristics. With simple random sampling, the sample could be biased, because of coincidence, by including too many or too few particular categories of plants, causing the sample to misrepresent the target universe.

To systematically select the sample for strata where we did not take a census, we used information on product type and geographic location. We defined four categories for product type: (1) meat, (2) poultry, (3) both, and (4) unknown. We

[6]Systematic sampling was not used for large federally- and small state-inspected plants because we took a census.

defined four geographic regions based on the Census regions: Northeast, Midwest, South, and West. We sorted plants within each stratum by product type and then by region. Once sorted, sample points were selected by choosing every *n*th plant in the sorted and ordered list until the entire sample was drawn. The factor *n* is calculated as the universe size of the stratum, divided by the sample size for the stratum. For strata where a census was not taken, we also selected a reserve sample of 100 plants in the event that the actual eligibility and/or response rates were lower than anticipated.[7]

Table 2-3 shows the number and percentage of plants in the survey universe for very small and small federally-inspected plants by product type and geographic region, and Table 2-4 shows the number and percentage of plants in the sample.[8] Table 2-5 shows the number and percentage of plants in the survey universe for very small state-inspected plants by product type and geographic region, and Table 2-6 shows the number and percentage of plants in the sample.[9]

We compared the sample for the processing-only survey to the sample for the slaughter survey and identified 21 plants that were selected for both surveys (10 of the plants were ineligible for the slaughter survey [e.g., they do not slaughter], 7 plants did not complete the survey, and 4 plants completed the survey). The 21 plants were retained in the sample for the processing-only survey. We contacted the ineligibles and nonrespondents for the processing-only survey. Plants that completed the slaughter survey were not contacted for the processing survey because of respondent burden and were assigned a final disposition of nonrespondent or ineligible based on their current eligibility status. Also, sampled plants for which inspection was suspended or withheld during survey administration were not contacted and were assigned a final disposition of ineligible.

[7]We did not need to use the reserve sample.

[8]Large federally-inspected plants are not included in Tables 2-3 and 2-4 because we took a census and thus did not need to draw a sample.

[9]Small state-inspected plants are not included in Tables 2-5 and 2-6 because we took a census and thus did not need to draw a sample.

Table 2-3. Survey Universe for Very Small and Small Federally-Inspected Meat and Poultry Processing-Only Plants, by Product Type and Region

	Region									
	Northeast		Midwest		South		West		Total	
Product Type	No.	%	No.	%	No.	%	No.	%	No.	%
Very Small										
Meat only	194	31.3	235	46.5	300	43.3	165	38.4	894	39.8
Poultry only	25	4.0	14	2.8	28	4.0	14	3.3	81	3.6
Meat & poultry	399	64.5	254	50.3	365	52.7	250	58.1	1,268	56.4
Unknown	1	0.2	2	0.4	0	0.0	1	0.2	4	0.2
Total	619	100.0	505	100.0	693	100.0	430	100.0	2,247	100.0
Small										
Meat only	86	24.6	216	39.1	117	24.1	119	23.5	538	28.4
Poultry only	12	3.4	15	2.7	68	14.0	21	4.1	116	6.1
Meat & poultry	252	72.0	321	58.0	301	61.9	367	72.4	1,241	65.4
Unknown	0	0.0	1	0.2	0	0.0	0	0.0	1	0.1
Total	350	100.0	553	100.0	486	100.0	507	100.0	1,896	100.0

Table 2-4. Survey Sample for Very Small and Small Federally-Inspected Meat and Poultry Processing-Only Plants, by Product Type and Region[a]

	Region									
	Northeast		Midwest		South		West		Total	
Product Type	No.	%	No.	%	No.	%	No.	%	No.	%
Very Small										
Meat only	39	29.5	49	44.6	62	43.7	42	40.4	192	39.3
Poultry only	7	5.3	3	2.7	7	4.9	3	2.9	20	4.1
Meat & poultry	85	64.4	58	52.7	73	51.4	59	56.7	275	56.4
Unknown	1	0.8	0	0.0	0	0.0	0	0.0	1	0.2
Total	132	100.0	110	100.0	142	100.0	104	100.0	488	100.0
Small										
Meat only	19	24.4	52	37.4	34	26.5	30	23.1	135	28.4
Poultry only	3	3.8	3	2.2	18	14.1	6	4.6	30	6.3
Meat & poultry	56	71.8	83	59.7	76	59.4	94	72.3	309	65.1
Unknown	0	0.0	1	0.7	0	0.0	0	0.0	1	0.2
Total	78	100.0	139	100.0	128	100.0	130	100.0	475	100.0

[a]The sample was selected using systematic sampling.

Table 2-5. Survey Universe for Very Small State-Inspected Meat and Poultry Processing-Only Plants, by Product Type and Region

	Region									
	Northeast		Midwest		South		West		Total	
Product Type	No.	%	No.	%	No.	%	No.	%	No.	%
Meat only	3	100.0	343	58.8	247	67.1	97	74.1	690	63.6
Poultry only	0	0.0	23	4.0	19	5.2	4	3.0	46	4.2
Meat & poultry	0	0.0	217	37.2	64	17.4	30	22.9	311	28.7
Unknown[a]	0	0.0	0	0.0	38	10.3	0	0.0	38	3.5
Total	3	100.0	583	100.0	368	100.0	131	100.0	1,085	100.0

[a]Includes plants for which we were unable to determine the type of operation (i.e., slaughter versus processing-only).

Table 2-6. Survey Sample for Very Small State-Inspected Meat and Poultry Processing-Only Plants, by Product Type and Region[a]

	Region									
	Northeast		Midwest		South		West		Total	
Product Type	No.	%	No.	%	No.	%	No.	%	No.	%
Meat only	1	100.0	169	58.1	119	67.6	56	76.7	345	63.8
Poultry only	0	0.0	11	3.8	9	5.1	3	4.1	23	4.2
Meat & poultry	0	0.0	111	38.1	29	16.5	14	19.2	154	28.5
Unknown[b]	0	0.0	0	0.0	19	10.8	0	0.0	19	3.5
Total	1	100.0	291	100.0	176	100.0	73	100.0	541	100.0

[a]The sample was selected using systematic sampling.

[b]Includes plants for which we were unable to determine the type of operation (i.e., slaughter versus processing-only).

3 Survey Design and Administration

This section describes the design of the mail survey instrument, discusses the pretest procedures, and provides an overview of the survey administration procedures.

3.1 SURVEY INSTRUMENT DESIGN

The purpose of the FSIS Recurring Industry Surveys is to obtain uniform information on practices and technologies used to control pathogens and promote food safety in the meat, poultry, and egg products industries.

The purpose of the FSIS Recurring Industry Surveys is to obtain uniform information on practices and technologies used to control pathogens and promote food safety in the meat, poultry, and egg products industries. FSIS uses this information to guide regulatory policy making and to conduct required economic analyses. Additionally, the survey findings can be used to establish baseline measures of current practices and technologies for regulated establishments.

RTI developed the survey instrument for meat and poultry processing-only plants to be as similar as possible to the surveys for egg packers, egg products processors, and meat and poultry slaughter and processing plants. We designed the survey instrument in consultation with various stakeholders at FSIS. Working with these stakeholders, we identified their data needs, and then using their data needs as a guideline, we developed appropriate survey questions and response items to address each data need or element. Table 3-1 identifies the types of information collected in the meat and poultry processing-only survey. Appendix A provides a copy of the final survey instrument.

We designed the survey instrument as a paper-and-pencil self-administered questionnaire. We evaluated other survey modes but determined that a paper-and-pencil questionnaire that is

Table 3-1. Types of Information Collected in the Meat and Poultry Processing-Only Survey

1. Processing Practices
   - Frequency of sanitation practices
   - Current and expected use of pathogen-control technologies and practices
   - Use of third-party food safety audits
   - Processing of imported meat/poultry
   - Production volumes by HACCP product category and species
2. Microbiological Testing Practices
   - Methods of microbiological testing
   - Frequency of microbiological sampling by type of pathogen
   - Methods of environmental testing
   - Frequency of environmental sampling by area
3. Employee Training
   - New hire food safety training
   - Ongoing food safety training
   - HACCP training
4. Plant Characteristics
   - Age of plant
   - Size of plant
   - Number of shifts
   - Number of employees
   - Sales revenue

administered by mail, with initial and follow-up contacts by telephone, afforded the greatest potential for successful data collection with this population. Many smaller establishments do not have up-to-date Internet access readily available, so a Web-based survey was not feasible. Also, from previous experience we have found that it is difficult for establishments to complete surveys over the telephone because of the need to refer to records or consult with other staff at the establishment; thus, we determined that a telephone survey was not appropriate.

3.2 PRETEST PROCEDURES

Our pretest procedures included a review of the survey instrument using RTI's Question Appraisal System (QAS), interviews with personnel at processing plants, and interviews with industry trade associations. Based on the QAS findings, the findings from the interviews with plant personnel and trade association representatives, and comments from FSIS, we

revised the survey instrument. We describe each of the pretest procedures below.

3.2.1 Question Appraisal System

RTI's QAS is a structured, standardized instrument review methodology that evaluates survey questions in relation to the tasks required of the respondents (to understand and respond to the questions) and evaluates the structure and effectiveness of the questionnaire form itself. In part, the QAS is a coding system (that is, an item taxonomy) that describes the cognitive demands of the questionnaire and documents the question features that are likely to lead to response error. These potential errors include errors related to comprehension, task definition, information retrieval, judgment, and response generation. We used RTI's QAS to evaluate the survey instrument with regard to question wording, response wording, and questionnaire format. Following completion of the QAS review, we revised the survey instrument and conducted pretest interviews and interviews with industry trade associations, as described below.

3.2.2 Pretest Interviews

We conducted a combination of on-site and telephone interviews with plant personnel to pretest the survey instrument. We initially conducted interviews with three processing plants—one very small plant, one small plant, and one large plant. We interviewed plants that produced both ready-to-eat (RTE) and not-ready-to-eat (NRTE) products.

The purpose of the pretest interviews was to

- evaluate whether respondents interpreted the questions as intended and understood the question wording and response items,
- determine whether respondents could correctly follow the skip patterns in the questionnaire,
- obtain feedback on the draft FSIS prenotice letter and information brochure, and
- determine the amount of time (i.e., burden) required to complete the survey.

The pretest findings and suggested revisions to the survey instrument are summarized in a separate document (Viator and Kendall, 2002). Based on the pretest findings, we estimated the survey burden to average 30 minutes per response. As part of

the meat and poultry slaughter survey, we conducted additional pretesting of the questionnaires, which included many of the same questions contained in the processing-only survey questionnaire.

In response to the interim final rule regarding removal and disposal of specified risk materials (SRMs) in cattle, and the need for additional information on processing volumes and the types of activities conducted by very small plants, we added several questions to the survey instrument. We conducted telephone interviews with four processing plants to pretest the revised questionnaire (two very small plants, one small plant, and one large plant).

3.2.3 Interviews with Trade Associations

We also obtained feedback on the draft survey instrument and survey protocol from industry trade associations. We conducted telephone interviews with representatives from the following organizations:

- American Association of Meat Processors (AAMP)
- American Meat Institute (AMI)
- National Chicken Council (NCC)
- National Turkey Federation (NTF)
- North American Meat Processors (NAMP).

Most of the trade associations we met with were supportive of the survey effort. They recommended revisions to the draft survey instrument, many of which we incorporated into the revised version.

3.3 SURVEY ADMINISTRATION PROCEDURES

RTI's survey administration procedures are designed to encourage response to the survey using multiple methods.

We implemented a variety of procedures aimed at maximizing the response rate to the survey. Prior to survey administration, we spoke with representatives from the trade associations identified above to discuss their interest in promoting the survey to their membership and possible mechanisms for promoting the survey. As a result of these meetings,

- AMI and NTF sent e-mails to their membership that described the survey and encouraged their participation,
- NAMP and AAMP placed announcements in their newsletters, and

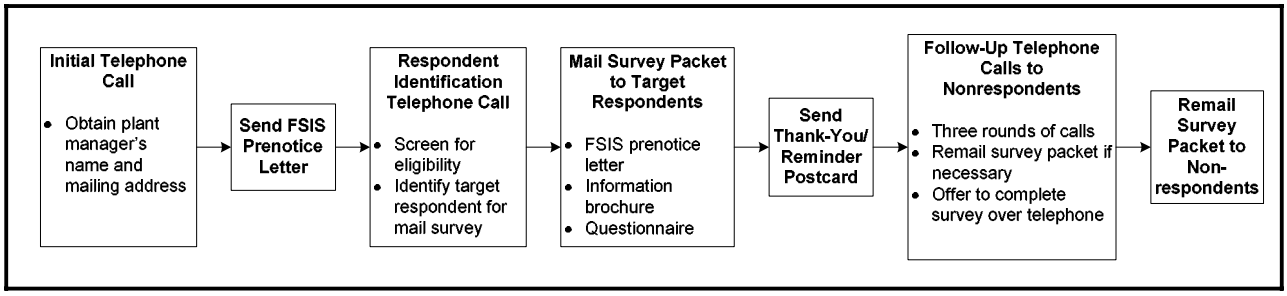
- RTI participated in a conference call with the NTF Technical and Regulatory Committee to provide an overview of the survey and address any questions or concerns.

We also conducted telephone interviews with two state trade associations (the Iowa Turkey Federation and the North Carolina Poultry Federation), but did not conduct interviews with other states because of state associations' limited ability and resources for sharing information with their membership.

Appendix B presents the correspondence that each trade association had with its membership prior to survey administration. After being contacted by several members who were sent the survey, the Food Products Association (FPA) contacted FSIS during survey administration. We sent FPA the survey materials; however, they did not notify their membership about the survey because data collection had already started.

We conducted the full-scale data collection over an approximate 18-week period from July 20, 2005, to November 30, 2005.[1] Figure 3-1 illustrates the steps in the data collection process. We briefly describe each step below.

Figure 3-1. Survey Data Collection Procedures



Contact with inspection personnel. FSIS sent an e-mail to each district manager with information on the survey. The district managers were asked to notify Inspectors-in-Charge (IICs) about the upcoming survey so they could verify the legitimacy of the survey to plant management, if necessary. RTI sent an e-mail to each state inspection office with

[1]For approximately 4 weeks after Hurricane Katrina, we temporarily suspended telephone calls to areas affected by the hurricane.

information on the survey. The state offices were asked to notify their inspectors about the survey.

Initial telephone call. RTI's Call Center Services (CCS) contacted each sampled establishment to obtain the plant manager's name and mailing address.

FSIS prenotice letter. We mailed a letter and information brochure (see Appendix C) to plant managers at sampled establishments. The letter—on FSIS letterhead and signed by the administrator of FSIS—explained the purpose of the survey, the importance of participation, and RTI's pledge of confidentiality. The letter also promised respondents that they would receive a copy of the survey results. The information brochure—a two-color, trifold brochure—highlighted the purpose of the study and provided contact information for FSIS and RTI.

Respondent identification telephone call. Approximately 10 days after mailing the prenotice letters, RTI's CCS contacted plant managers at sampled establishments to verify the plant's eligibility for participation in the survey. Plants had to meet the following criteria to be eligible for the survey: (1) plant did not conduct any slaughter activities during the past year and (2) plant currently debones, fabricates, grinds, or further processes beef, veal, pork, lamb, goat, chicken, or turkey. We also identified the target respondent for the survey (if not the plant manager) and sought to gain their cooperation for the mail survey. Plants that refused to participate were contacted by a member of the project team, and a refusal conversion was attempted.

Survey packet mailing. We mailed the survey packet to the target respondent (as previously identified) via Federal Express. The survey packet included a cover letter on RTI letterhead, another copy of the FSIS prenotice letter and information brochure, the survey booklet, and a metered (i.e., prepaid) envelope for returning the completed questionnaire to RTI.

Toll-free survey help line and e-mail address. During the data collection period, we operated a toll-free survey help line. Respondents could call the survey help line to request assistance when completing the questionnaire. The survey help line was staffed by members of the project team knowledgeable about the survey and the meat and poultry processing industry.

We also provided an e-mail address (SurveyFSIS@rti.org) that respondents could use to request assistance when completing the survey.

Postcard mailing. Approximately 1 week after mailing the survey packets, we sent sampled plants a personalized postcard (see Appendix D). The postcard served as a thank you for those who had returned the completed survey and as a reminder for those who had not.

Follow-up telephone calls. Approximately 2 weeks after the postcard mailing, RTI's CCS began follow-up telephone calls to nonrespondents to remind then to complete and return the survey. These calls were made at three different points during the data collection period. During the follow-up calls, interviewers offered to send a replacement questionnaire and inquired if the respondent would like to complete the survey over the telephone. Also, plants that had not previously completed the respondent identification telephone call were screened for eligibility. Plants that refused to participate in the survey were contacted by a member of the project team, and a refusal conversion was attempted.

Remailing of survey packet. Approximately 7 weeks after the original mailing, we remailed the survey packet (via Federal Express) to all nonrespondents. The cover letter provided a cut-off date for returning the completed survey. We made the final set of follow-up telephone calls approximately 1 week after the remailing.

At each stage of telephone calls (initial, respondent identification, and three follow-ups), at least eight call attempts were made. Sampled plants without a telephone number and plants we were unable to contact by telephone were sent the survey materials (FSIS prenotice letter, survey packet, and reminder postcard); in these cases, the mail packet was addressed to "plant manager."

4 Analysis Procedures

This section presents the survey response and eligibility rates, describes the nonresponse bias analysis and weighting procedures, and discusses the data analysis procedures.

4.1 SURVEY RESPONSE AND ELIGIBILITY RATES

We received 944 completed surveys (66 percent response rate).

Table 4-1 shows the final disposition of the sample and the eligibility and response rates by stratum. We received 944 completed surveys.

We assigned each sample point (i.e., establishment) a final disposition of respondent, nonrespondent, or ineligible. Respondents are those establishments that completed and returned the questionnaire.[1] Nonrespondents are those establishments that were eligible for the survey but did not participate.

The ineligibles disposition includes establishments that

- do not currently debone, fabricate, grind, or further process beef, veal, pork, lamb, goat, chicken, or turkey;
- conducted slaughter activities during the past year;
- previously processed meat or poultry but are now out of business;

[1]Five respondents removed the label with their identification number, so the stratum was unknown. We used logical imputation to assign these respondents to a stratum and then randomly assigned an identification number and the corresponding information (e.g., region and product type) on the sampling frame.

Table 4-1. Eligibility and Response Rates for the Meat and Poultry Processing-Only Survey

	Federally-Inspected				State-Inspected			Total			
	Very Small	Small	Large	Total	Very Small	Small	Total	Very Small	Small	Large	Total
Respondents	**271**	**317**	**84**	**672**	**256**	**16**	**272**	**527**	**333**	**84**	**944**
Nonrespondents	134	97	29	260	155	8	163	289	105	29	423
Unknown eligibility	28	24	4	56	46	0	46	74	24	4	102
Ineligibles											
No processing activities	24	17	3	44	26	0	26	50	17	3	70
Slaughter activities	9	8	3	20	35	1	36	44	9	3	56
Out of business	16	11	0	27	21	0	21	37	11	0	48
Inspection withdrawn	4	1	0	5	0	0	0	4	1	0	5
Other	2	0	0	2	2	0	2	4	0	0	4
Total ineligibles	55	37	6	98	84	1	85	139	38	6	183
Total sample	**488**	**475**	**123**	**1,086**	**541**	**25**	**566**	**1,029**	**500**	**123**	**1,652**
Eligibility rate (%)[a]	88	92	95	90	83	96	84	85	92	95	88
Unweighted response rate (%)[b]	63	72	72	68	56	67	57	59	72	72	64
Weighted response rate (%)[c]	63	73	72	68	57	67	57	61	73	72	66

[a]Eligibility rate = (Respondents + Nonrespondents) / (Respondents + Nonrespondents + Ineligibles).

[b]Unweighted response rate = Respondents / (Respondents + Nonrespondents + Unknown Eligibility).

[c]Calculated using the survey weights adjusted for unknown eligibility (see Section 4.3).

- had their inspection suspended or withdrawn by FSIS during the survey administration period; and
- are food banks, prisons, university research facilities, or retail operations only.

For 102 establishments, the eligibility status could not be determined because

- a telephone number was not available for the establishment (i.e., there was no listing available from directory assistance or the telephone number was not in service) (n = 16);
- a telephone number was available, but we were unable to verify eligibility in the respondent identification call or subsequent follow-up calls (n = 79); or
- there was a language barrier (n = 7).

We evaluated whether adjustments should be made to the final dispositions for plants in areas affected by Hurricane Katrina, but we ultimately decided that no adjustments were necessary based on information provided by FSIS on the operational status of federally-inspected plants.

The eligibility rate—the proportion of the total sample that was eligible for the survey—was calculated as follows:

$$\text{Eligibility Rate} = \frac{\text{Respondents + Nonrespondents}}{\text{Respondents + Nonrespondents + Ineligibles}}. \quad (4.1)$$

The target eligibility rate was 95 percent for large federally-inspected plants and 90 percent for small and very small federally-inspected plants. The actual eligibility rate among federally-inspected plants was 95 percent for large plants, 92 percent for small plants, and 88 percent for very small plants. In contrast, the target eligibility rate for state-inspected plants was 70 percent, but the actual eligibility rate was 84 percent.

The response rate for the survey—the proportion of eligible establishments that completed the questionnaire—was calculated as follows:

$$\text{Response Rate} = \frac{\text{Respondents}}{\text{Respondents + Nonrespondents + Unknown Eligibility}}. \quad (4.2)$$

We computed unweighted and weighted response rates. The unweighted response rates were calculated without making any adjustments for unknown eligibility, and the weighted response rates were calculated using the survey weights adjusted for unknown eligibility (see Section 4.3). The weighted response

rates provide a measure of the percentage of plants on the sampling frame (i.e., the population) that are represented by the responding plants.

The overall weighted response rate for all plants was 66 percent. Response rates were higher for federally-inspected plants compared with state-inspected plants—68 percent for federally-inspected plants and 57 percent for state-inspected plants. For federally-inspected plants, the response rates were higher for large and small plants (72 percent to 73 percent) compared with very small plants (63 percent). Likewise, for state-inspected plants, the response rate was higher for small plants (67 percent) compared with very small plants (57 percent).

We did not achieve the target number of completed surveys (944 versus 1,051) because the response rate to the survey was lower than anticipated. However, a response rate of 66 percent is quite good for a voluntary establishment survey.

4.2 NONRESPONSE BIAS ANALYSIS

Nonresponse may cause bias in survey estimates if plants choosing not to respond would have provided answers to questions that differ systematically from answers provided by plants that choose to respond. Using weighting class adjustments in developing the survey weights (as described in Section 4.3) can help reduce nonresponse bias to the extent that weighting classes are homogeneous (i.e., within a class plants have similar characteristics).

We examined the characteristics of respondents and nonrespondents to determine if there were any statistically significant differences. The characteristics used in the nonresponse bias analysis included region, HACCP size, and product type, because these characteristics are available from the EFD for both nonrespondents and respondents. The analysis was conducted by inspection status (federal versus state) using the survey weights adjusted for unknown eligibility (see Section 4.3).

Table 4-2 compares the characteristics of respondents and nonrespondents for all plants, federally-inspected plants, and state-inspected plants. For federally-inspected plants, a significantly larger percentage of respondents were in the

Table 4-2. Comparison of Respondents and Nonrespondents

	Respondents		Nonrespondents[a]		*t* test *p* value[b]
	n	%	n	%	
All Plants					
Region					
Northeast	124	16.5	80	20.6	0.0499**
Midwest	354	32.7	175	27.7	0.0514
South	286	28.8	164	29.8	0.6901
West	180	22.0	106	21.8	0.9377
Total	944	100.0	525	100.0	
HACCP Size					
Very small	527	56.3	363	68.7	<0.0001*
Small	333	41.0	129	29.3	<0.0001*
Large	84	2.7	33	2.0	0.4118
Total	944	100.0	525	100.0	
Product Type					
Meat only	394	40.0	221	38.9	0.6806
Poultry only	43	4.0	27	5.1	0.3282
Meat & poultry	501	55.6	269	55.1	0.8337
Unknown	6	0.4	8	1.0	0.1651
Total	944	100.0	525	100.0	
Federally-Inspected Plants					
Region					
Northeast	123	19.8	80	27.3	0.0077*
Midwest	201	27.8	69	20.1	0.0094*
South	197	28.2	92	28.5	0.9173
West	151	24.3	75	24.1	0.9527
Total	672	100.0	316	100.0	
HACCP Size					
Very small	271	48.1	162	59.2	0.0011*
Small	317	48.7	121	38.2	0.0019*
Large	84	3.2	33	2.6	0.6080
Total	672	100.0	316	100.0	
Product Type					
Meat only	218	34.9	95	32.0	0.3718
Poultry only	31	4.0	21	5.9	0.1835
Meat & poultry	423	61.2	200	62.1	0.7653
Unknown	0	0.0	0	0.0	—
Total	672	100.0	316	100.0	

(continued)

Table 4-2. Comparison of Respondents and Nonrespondents (continued)

	Respondents		Nonrespondents[a]		*t* test *p* value[b]
	n	%	n	%	
State-Inspected Plants					
Region					
Northeast	1	0.4	0	0.0	—
Midwest	153	56.6	106	51.2	0.2383
South	89	32.0	72	33.9	0.6611
West	29	11.0	31	14.9	0.2039
Total	272	100.0	209	100.0	
HACCP Size					
Very small	256	97.0	201	98.0	0.4845
Small	16	3.0	8	2.0	0.4845
Large	0	0.0	0	0.0	—
Total	272	100.0	209	100.0	
Product Type					
Meat only	176	65.0	126	60.1	0.2718
Poultry only	12	4.2	6	2.8	0.4094
Meat & poultry	78	28.6	69	33.2	0.2759
Unknown	6	2.3	8	4.0	0.2863
Total	272	100.0	209	100.0	

*Differences are statistically significant at the 0.01 level.

**Differences are statistically significant at the 0.05 level.

[a]Includes nonrespondents and sample points with unknown eligibility.

[b]*t* tests were performed on the percentage values.

Midwest and a significantly smaller percentage were in the Northeast region compared with nonrespondents. Also, a significantly larger percentage of respondents were small plants and a significantly smaller percentage were very small plants compared with nonrespondents. By product type, there were no significant differences in percentages of respondents versus nonrespondents. For state-inspected plants, there were no significant differences in percentages of respondents versus nonrespondents by region, HACCP size, or product type.

As described in the next section, based on the findings from the nonresponse bias analysis, we used HACCP size and region as weighting classes for the nonresponse adjustment.

4.3 WEIGHTING PROCEDURES

We generated all statistical estimates for the survey by applying appropriate survey weights to the respondent record data. We computed survey weights in three steps:

1. We computed initial sampling weights by stratum.[2]
2. We adjusted the initial sampling weights for unknown eligibility.
3. We used weighting class adjustments to adjust the weights for nonresponse to the survey.

We describe each step in our weighting procedures below.

4.3.1 Initial Sampling Weights

We first assigned each establishment in the sample (i.e., sample point) an initial sampling weight. The initial sampling (W_0) weight is equal to the inverse of the selection probability, where the selection probability is equal to the sample size (n) divided by the population (N). Thus, we calculated the initial sampling weight for each stratum as follows:

$$W_0 = \frac{\text{Population size(N)}}{\text{Sample size (n)}} . \qquad (4.3)$$

In cases where we took a census, the initial sampling weight is equal to 1. For each stratum, the sum of the initial sampling weights across all sampled establishments is equal to the population.

4.3.2 Adjustment for Unknown Eligibility

We calculated adjustment factors within each stratum to adjust for sample points for which the eligibility status was unknown. The adjustment factor for establishments with unknown eligibility was calculated as follows:

$$F_1 = \frac{\begin{array}{c}\text{Sum of weights } (W_0) \\ \text{for known eligibles in stratum}\end{array}}{\begin{array}{c}\text{Sum of weights } (W_0) \\ \text{for known eligibles and ineligibles in stratum}\end{array}} . \qquad (4.4)$$

The adjustment factor for establishments with known eligibility is equal to 1 (i.e., $F_1 = 1$).

[2]The sample design includes five strata for the different combinations of inspection status and HACCP size.

The adjusted weight for each establishment in a stratum is equal to

$$W_1 = W_0 \times F_1 \, . \qquad (4.5)$$

4.3.3 Nonresponse Adjustment

Nonresponse adjustments ensure that, within each weighting class, respondent weights sum to the population counts of eligible establishments. These adjustments, implemented with the computation and application of adjustment factors in each weighting class, can help reduce nonresponse bias to the extent that weighting classes are homogeneous.

Given the sample size, the data available for nonrespondents, and the findings from Table 4-2 that compared the characteristics of respondents and nonrespondents, we used HACCP size and region as our weighting classes. Because of the small number of establishments in some cells, it was necessary to collapse some weighting classes. For federally-inspected plants, we used 10 weighting classes (we combined large Northeast and large West plants with large Midwest plants). For state-inspected plants, we combined all small plants into one weighting class and combined the Northeast and Midwest very small plants, for a total of four weighting classes.

We calculated adjustment factors (F_2) within each weighting class as follows:

$$F_2 = \frac{\text{Sum of weights } (W_1) \text{ for eligibles in class}}{\text{Sum of weights } (W_1) \text{ for respondents in class}} \, . \qquad (4.6)$$

The adjusted weight for each responding establishment in a weighting class is equal to

$$W_2 = W_1 \times F_2 . \qquad (4.7)$$

The adjusted weight varies by size, region, and inspection status. This causes the survey design effect[3] to be 1.1456 for all plants, 1.1250 for very small plants, 1.0305 for small plants, and 1.0000 for large plants. These values indicate that the design effect is small and should have little effect on the standard errors of the aggregated responses.

[3]The survey design effect is equal to the sample variance for the study divided by the variance of a simple random sample (with no stratification).

We weighted all results using the final adjusted weights (W_2). For each stratum, the sum of the final adjusted weights across all respondents to the survey is equal to the population of eligible establishments.

4.4 DATA ANALYSIS PROCEDURES

Prior to tabulating the survey data, we conducted data editing and coding and data cleaning. We describe these procedures and our data analysis procedures below.

4.4.1 Data Editing and Coding

RTI's Fulfillment Department Staff edited the questionnaires to resolve any data errors prior to data entry. The most common error made by respondents was not selecting a response option for each question (i.e., item nonresponse). This error was most often made when completing questions in a table format. For example, Questions 1.16 and 1.17 (Appendix A provides a copy of the questionnaire) ask the respondent to indicate whether each technology or process is used now, is expected to be used within 1 to 3 years, or is not expected to be used within 1 to 3 years. In some cases, respondents did not provide an answer for each technology/process; that is, they only provided a response for technologies/processes that are currently used and left the other technologies/processes blank. Respondents made a similar error when providing information on the frequency of microbiological testing by type of organism (Section 2 of the survey); that is, they only provided a response for organisms tested, although "do not test" was a response option. Item nonresponse was recorded as a missing value in the data set.

Some respondents wrote "not applicable," "NA," or "doesn't apply" by some questions. We added response options so that we could distinguish between "not applicable" responses and missing values (i.e., "no response") when analyzing the survey data. When appropriate, we excluded the "not applicable" responses from the tabulations; otherwise, we combined the "not applicable," "no response," and "multiple response" options when reporting the results.

Question 4.15 allowed the respondent to enter a text response if "other" was selected. We manually coded the open-ended text responses and created new response categories as appropriate.

The edited and coded questionnaires were keyed into a database using a data entry system developed by RTI. All data were double-keyed (i.e., 100 percent verification) for quality control purposes.

4.4.2 Data Cleaning

Prior to tabulating survey responses, we systematically examined the survey data set to isolate and address data inconsistencies, reporting errors, or otherwise erroneous data. Specific data-cleaning procedures are described below.

Questions 1.13, 1.15, and 4.3 required respondents to enter numeric responses that sum to 100 percent. Some respondents entered values that did not sum to 100 percent. Respondents' answers were excluded from the analysis if the sum of their responses was less than 80 percent or greater than 120 percent, because values outside this range likely indicate respondents misunderstood the question. If the sum of the responses was between 80 and 120 percent, then we normalized the responses to 100 percent using the initial response distribution and included the responses in the analysis.

We found that some respondents were inconsistent in their responses regarding whether they produce ready-to-eat (RTE) and not-ready-to-eat (NRTE) products (Questions 1.4, 1.5, 1.10, 1.11, 2.5–2.8, 2.11, and 2.12). To address any inconsistencies, we generally used the responses to Question 1.4 as a filter or screening question for subsequent questions pertaining to RTE and NRTE products. We also reviewed other inconsistencies on a case-by-case basis and made additional adjustments to the survey responses as appropriate.

We found that some respondents were inconsistent in their responses for the questions on processing volume (Questions 1.12 and 1.13 for meat products and Questions 1.14 and 1.15 for poultry products). For example, in some cases, respondents answered Question 1.12 but not 1.13, or vice versa. If a response was entered for one question but not the corresponding question, then the response provided was included in the tabulations and the question without a response was reported as "no response" in the tabulations. We also checked that the responses to the volume questions were consistent with the response to the question on types of inputs

(Question 1.3) and, when possible, made adjustments as appropriate.

4.4.3 Data Analysis

Section 5 of this report provides tabulations for each survey question. Additionally, we provide results by HACCP size for selected questions.

All analyses were conducted using SAS, a statistical analysis software tool (SAS, 1999), using the final survey weights. We computed proportions for questions in which respondents could select one or more responses from a list of responses. Respondents who were instructed to skip a question because it did not apply were excluded from the calculation of proportions. Respondents who did not answer a question (i.e., item nonresponse) were included in the denominator in the calculation of proportions. The number and percentage of nonrespondents are provided in the results tables. We computed means for questions that required a numeric response from respondents.

Cross-tabulations were conducted for specific questions of interest to FSIS. For the selected cross-tabulations, we provide the 95 percent CIs. An indication of the precision of survey estimates is the width of the 95 percent CIs. For example, if we report that the 95 percent CI for the percentage of small plants that use a particular technology is (50 percent, 60 percent), this means that the probability that the true population value lies between 50 percent and 60 percent is 0.95. This means there remains a probability of 0.05 that the true population value lies outside the (50 percent, 60 percent) CI. The CIs were computed using Stata, a statistical analysis software tool that takes the sample design into consideration when computing the variances (StataCorp, 2005). The CIs for proportions are constructed using a logit transformation so the endpoint probabilities are between 0 and 1. This transformation is not made for the CIs for means.

We do not report results if the number of responses was small (less than three or five, depending on the sensitivity of the question) to preserve confidentiality of responses and to avoid the possibility of revealing the identity of plants selected for the sample. Suppressions of results are noted in the results tables with an asterisk (*).

5 Survey Results

The survey results are representative of the population of meat and poultry processing-only plants, as defined in Section 2. Some regulated establishments were excluded from the sampling frame (e.g., plants operating for objectives that are not strictly commercial, such as university facilities) so that the sampling frame was representative of the vast majority of FSIS- and state-inspected plants.

Survey responses are reported for questions on

- processing operations,
- microbiological testing practices,
- employee training, and
- plant characteristics.

Tables 5-1 through 5-4 provide weighted tabulations for each survey question. Tables 5-5 through 5-11 provide weighted cross-tabulations for selected questions by HACCP size. We computed proportions for questions in which respondents could select one or more responses from a list of responses and means for questions that required a numeric response from respondents. For the cross-tabulations, we provide the 95 percent CIs for the estimated proportions or means.

A summary of some of the key survey findings, based on the overall results presented in Tables 5-1 through 5-4, is provided below.

Processing Operations

- Most plants use pork (82 percent), beef (79 percent), and chicken (59 percent) as inputs to production.
- About 54 percent of plants produce RTE products, 69 percent produce NRTE products, and 16 percent produce inputs to further processing by another plant. Less than one-fourth of plants produce both RTE and NRTE products.

- More than one-third of plants import raw meat or poultry from other countries for further processing.
- For plants receiving beef carcasses, less than 5 percent receive beef carcasses or parts of beef carcasses containing vertebral column from cattle 30 months of age and older.
- Many plants (58 percent) do not have their further processing operations audited by independent, third-party auditors.
- Over 70 percent of plants sanitize hands or gloves that contact raw meat and poultry in the further processing area of the plant once per shift or more often; 83 percent follow this procedure for RTE products.
- Most meat product volume is for raw product (ground and not ground, primal cuts) and fully cooked, not shelf-stable product.
- Most poultry product volume is for raw, not ground, primal cuts, and fully cooked, not shelf-stable product.
- Many plants have adopted the pathogen-control processes for further processing asked about in Question 1.16 in Table 5-1. Specifically, most plants sanitize hand tools during operations (89 percent) and treat drains with sanitizers for pathogen control (84 percent). Many plants rotate sanitizing chemicals on an annual or more frequent basis (68 percent) and treat food contact equipment surfaces to remove biomatter during operations (59 percent).
- About 64 percent of plants stipulate practices for controlling pathogens in purchase specifications for raw meat and poultry; fewer plants (37 percent) stipulate practices for controlling chemical residues.
- Seventy percent or more of plants have written policies and procedures for recalling product, controlling the use of hazardous chemicals, and forward/backward tracking for inputs and finished product.
- Less than one-half of plants have written policies and procedures in place to protect against terrorism.
- The majority of plants have not adopted the pathogen-control technologies for further processing asked about in Question 1.17 in Table 5-1.

Microbiological Testing Practices

- Seventy-one percent of plants conduct microbiological testing using either their own lab or an independent commercial lab. Of those that test, about one-half do

not know the type of testing method used (e.g., traditional culture or rapid method).

- One-half of plants that receive raw meat test it before fabrication, grinding, or further processing. The majority test for *E. coli* O157:H7 (75 percent), *Salmonella* species (57 percent), and generic *E. coli* (56 percent); nearly one-half test for *Listeria* species.
- Twenty-one percent of plants that receive raw poultry test it before deboning, grinding, or further processing. The majority test for generic *E. coli* (69 percent), total coliforms (62 percent), aerobic plate count (APC) (53 percent), and *Salmonella* species (53 percent); nearly one-half test for total plate count (TPC) and *Listeria* species.
- For plants that produce RTE finished product, 79 percent test their product after it is packaged. The majority test for *Listeria monocytogenes* (71 percent), *Listeria* species (69 percent), and *Salmonella* species (64 percent); nearly one-half test for APC and total coliforms.
- For plants that produce NRTE finished product, 45 percent test their product after it is packaged. The majority test for generic *E. coli* (58 percent), *E. coli* O157:H7 (58 percent), and *Salmonella* species (53 percent); nearly one-half test for APC and total coliforms.
- Seventy percent of plants conduct environmental sampling; the majority use traditional cultural methods (56 percent). For producers of RTE product that conduct environmental sampling, nearly all sample product contact surfaces and over 75 percent sample nonproduct contact surfaces. For producers of NRTE product that conduct environmental sampling, about 66 percent sample product contact surfaces; fewer plants sample nonproduct contact surfaces (55 percent).
- For plants conducting environmental sampling, 84 percent test for *Listeria* species on a routine basis.

Employee Training

- Nearly all plants provide some type of food safety training—either on-the-job training or formal training—to new hires (96 percent) and current employees (91 percent).
- Ninety percent of plants have employees that have attended formal HACCP training.

Plant Characteristics

- Most plants operate 5 to 6 days a week, have one processing shift, and operate one clean-up shift.
- Sixty-four percent of plants report that they have a food safety manager on staff and one-half have a quality control/quality assurance department
- Some plants conduct other activities at their plant, such as in-store retail sales (35 percent), mail-order or Internet sales (14 percent), and restaurant facilities (12 percent).
- About one-half of plants have annual sales revenue less than $2.5 million, and 80 percent are part of a company that owns only one USDA- or state-inspected plant.

Table 5-1. Weighted Responses for Section 1 of the Meat and Poultry Processing-Only Survey: Processing Operations[a]

	Question	n	%
1.3[b]	What types of inputs are used by this plant?		
	1. Beef	750	78.7
	2. Veal	175	20.1
	3. Pork	776	82.4
	4. Lamb	166	18.2
	5. Goat	40	4.3
	6. Other meat	252	27.1
	7. Chicken	567	58.5
	8. Turkey	352	34.1
	9. Other poultry	63	6.5
1.4A[b]	What types of food products does this plant produce?		
	1. Ready-to-eat (RTE) finished products	522	54.0
	2. Not-ready-to-eat (NRTE) finished products	656	69.1
	3. Products that are inputs to further processing by another plant	163	15.6
	No response	10	1.0
1.4B[c]	What types of food products does this plant produce?		
	1. Only RTE products	215	23.9
	2. Only NRTE products	333	36.7
	3. Only products that are inputs to further processing	21	2.1
	4. RTE and NRTE products	223	22.9
	5. RTE products and inputs to further processing	25	2.2
	6. NRTE products and inputs to further processing	52	5.6
	7. RTE products, NRTE products, and inputs to further processing	65	5.7
	No response	10	1.0
	Total	944	100.0

(continued)

[a]The results for Questions 1.1 and 1.2 are not reported because they are screening questions.

[b]Respondents could select multiple responses.

[c]Results are shown so that the responses sum to 100 percent.

Table 5-1. Weighted Responses for Section 1 of the Meat and Poultry Processing-Only Survey: Processing Operations (continued)

	Question	n	%
1.5[a]	Thinking only about NRTE finished products that include cooking instructions on the label, for approximately how many of such products has this plant validated the cooking instructions?		
	1. This plant's NRTE products do not have cooking instructions	218	33.9
	2. None	103	16.3
	3. Less than half	50	8.1
	4. Half	4	0.6
	5. More than half	34	4.5
	6. All	232	34.4
	No response	15	2.1
	Total	656	100.0
1.6	To the best of your knowledge, what percentage of raw meat and poultry processed at this plant during the past year was imported?		
	1. None	580	61.6
	2. 1 to 9 percent	183	18.6
	3. 10 to 24 percent	78	8.4
	4. 25 to 49 percent	54	6.0
	5. 50 percent or more	30	3.4
	No response	19	1.9
	Total	944	100.0
1.7[b]	Did this plant receive beef carcasses or parts of beef carcasses containing vertebral columns from cattle 30 months of age and older during the past year?		
	1. Yes	33	4.9
	2. No	502	90.3
	Multiple response	27	4.8
	Total	562	100.0

(continued)

[a]Excludes respondents who do not produce NRTE products.

[b]Excludes respondents who do not receive beef carcasses or parts of beef carcasses.

Table 5-1. Weighted Responses for Section 1 of the Meat and Poultry Processing-Only Survey: Processing Operations (continued)

	Question	n	%
1.8[a]	Who conducts independent, third-party food safety audits of this plant's processing operations?		
	1. This plant's processing operations are not audited by independent, third-party auditors	523	58.1
	2. Independent, third-party auditors that are hired by this plant or by corporate headquarters	260	25.3
	3. Customers of this plant	211	19.7
	4. Independent, third-party auditors that are hired by customers of this plant	189	17.6
	No response	29	2.9
1.9[b]	What is the routine frequency used by this plant for sanitizing hands or gloves that contact raw meat and poultry?		
	1. Always before handling the next piece of product	228	27.7
	2. More than once per hour	143	17.3
	3. Once per hour	26	3.0
	4. One or more times per shift, but less than once per hour	220	24.1
	5. No specific routine frequency	229	26.0
	No response	16	1.9
	Total	862	100.0
1.10[c]	What is the routine frequency used by this plant for sanitizing hands or gloves that contact RTE finished product?		
	1. Always before handling the next piece of product	159	31.4
	2. More than once per hour	139	26.2
	3. Once per hour	19	4.2
	4. One or more times per shift, but less than once per hour	117	20.9
	5. No specific routine frequency	79	15.9
	No response	9	1.4
	Total	522	100.0

(continued)

[a]Respondents could select multiple responses.

[b]Excludes respondents who do not handle raw meat or poultry.

[c]Excludes respondents who do not produce RTE products.

Table 5-1. Weighted Responses for Section 1 of the Meat and Poultry Processing-Only Survey: Processing Operations (continued)

	Question	n	%
1.11[a]	What is the routine frequency used by this plant for sanitizing product-handling equipment (such as spatulas, forks, or tongs) that contacts RTE finished product?		
	1. Always before handling the next piece of product	112	21.7
	2. More than once per hour	60	10.5
	3. Once per hour	10	2.0
	4. One or more times per shift, but less than once per hour	117	21.0
	5. Daily	50	9.0
	6. At the end of each shift	38	8.0
	7. At the end of each production lot	77	16.0
	8. No specific routine frequency	43	9.2
	No response	15	2.7
	Total	522	100.0

(continued)

[a]Excludes respondents who do not produce RTE products.

Table 5-1. Weighted Responses for Section 1 of the Meat and Poultry Processing-Only Survey: Processing Operations (continued)

	Question	n	%
1.12[a]	What was the total amount of meat products produced by this plant during the past year, by type of meat?		
	Beef		
	1. Less than 10,000 pounds	139	20.5
	2. 10,000 to 49,999 pounds	118	17.1
	3. 50,000 to 99,999 pounds	78	11.3
	4. 100,000 to 249,999 pounds	79	11.1
	5. 250,000 to 499,999 pounds	61	8.7
	6. 500,000 to 999,999 pounds	63	9.0
	7. 1,000,000 to 9,999,999 pounds	106	13.8
	8. 10,000,000 pounds or more	61	6.6
	No response—answered Q1.13	14	1.9
	Total	719	100.0
	Pork		
	1. Less than 10,000 pounds	179	24.9
	2. 10,000 to 49,999 pounds	150	21.5
	3. 50,000 to 99,999 pounds	75	9.9
	4. 100,000 to 249,999 pounds	90	12.5
	5. 250,000 to 499,999 pounds	45	6.3
	6. 500,000 to 999,999 pounds	32	4.8
	7. 1,000,000 to 9,999,999 pounds	90	11.8
	8. 10,000,000 pounds or more	63	5.6
	No response—answered Q1.13	19	2.7
	Total	743	100.0
	Other Meat		
	1. Less than 10,000 pounds	129	53.3
	2. 10,000 to 49,999 pounds	40	16.7
	3. 50,000 to 99,999 pounds	18	8.7
	4. 100,000 to 249,999 pounds	12	4.6
	5. 250,000 to 499,999 pounds	6	2.6
	6. 500,000 to 999,999 pounds	5	1.3
	7. 1,000,000 to 9,999,999 pounds	7	2.9
	8. 10,000,000 pounds or more	13	4.3
	No response—answered Q1.13	12	5.7
	Total	242	100.0

(continued)

[a]Excludes respondents who selected "none" or did not answer Questions 1.12 and 1.13.

Table 5-1. Weighted Responses for Section 1 of the Meat and Poultry Processing-Only Survey: Processing Operations (continued)

	Question	n	Mean
1.13	Complete the table below by entering the percentage of total pounds of production during the past year by type of HACCP product category, for each type of meat.		
	Beef	679	
	a. Raw, ground		23.8%
	b. Raw, not ground, primal cuts		27.5%
	c. Thermally processed, commercially sterile		1.7%
	d. Not heat treated, shelf stable		2.7%
	e. Heat treated, shelf stable		9.8%
	f. Fully cooked, not shelf stable		27.5%
	g. Heat treated but not fully cooked, not shelf stable		6.1%
	h. Secondary inhibitors, not shelf stable		1.0%
	Total		100.0%
	No response	40	—
	Pork	688	
	a. Raw, ground		21.7%
	b. Raw, not ground, primal cuts		28.8%
	c. Thermally processed, commercially sterile		1.5%
	d. Not heat treated, shelf stable		2.8%
	e. Heat treated, shelf stable		6.3%
	f. Fully cooked, not shelf stable		29.8%
	g. Heat treated but not fully cooked, not shelf stable		7.7%
	h. Secondary inhibitors, not shelf stable		1.3%
	Total		100.0%
	No response	55	—
	Other Meat	209	
	a. Raw, ground		11.2%
	b. Raw, not ground, primal cuts		51.4%
	c. Thermally processed, commercially sterile		0.7%
	d. Not heat treated, shelf stable		0.1%
	e. Heat treated, shelf stable		5.8%
	f. Fully cooked, not shelf stable		26.4%
	g. Heat treated but not fully cooked, not shelf stable		3.6%
	h. Secondary inhibitors, not shelf stable		0.8%
	Total		100.0%
	No response	33	—

(continued)

Table 5-1. Weighted Responses for Section 1 of the Meat and Poultry Processing-Only Survey: Processing Operations (continued)

	Question	n	%
1.14[a]	What was the total amount of poultry products produced by this plant during the past year, by type of poultry?		
	Chicken		
	1. Less than 10,000 pounds	171	37.0
	2. 10,000 to 49,999 pounds	78	17.4
	3. 50,000 to 99,999 pounds	30	6.4
	4. 100,000 to 249,999 pounds	38	8.3
	5. 250,000 to 499,999 pounds	31	7.0
	6. 500,000 to 999,999 pounds	33	7.0
	7. 1,000,000 to 9,999,999 pounds	50	9.3
	8. 10,000,000 pounds or more	57	7.8
	No response—answered Q1.15	0	0.0
	Total	488	100.0
	Turkey		
	1. Less than 10,000 pounds	135	48.9
	2. 10,000 to 49,999 pounds	41	16.5
	3. 50,000 to 99,999 pounds	16	6.0
	4. 100,000 to 249,999 pounds	19	6.1
	5. 250,000 to 499,999 pounds	8	3.1
	6. 500,000 to 999,999 pounds	17	4.9
	7. 1,000,000 to 9,999,999 pounds	28	7.9
	8. 10,000,000 pounds or more	16	2.8
	No response—answered Q1.15	11	3.8
	Total	291	100.0
	Other Poultry		
	1. Less than 10,000 pounds	35	77.2
	2. 10,000 to 49,999 pounds	5	15.7
	3. 50,000 to 99,999 pounds	*	*
	4. 100,000 to 249,999 pounds	0	0.0
	5. 250,000 to 499,999 pounds	0	0.0
	6. 500,000 to 999,999 pounds	0	0.0
	7. 1,000,000 to 9,999,999 pounds	*	*
	8. 10,000,000 pounds or more	0	0.0
	No response—answered Q1.15	*	*
	Total	44	100.0

(continued)

[a]Excludes respondents who selected "none" or did not answer Questions 1.14 and 1.15.

*Results are suppressed because of the small number of respondents.

Table 5-1. Weighted Responses for Section 1 of the Meat and Poultry Processing-Only Survey: Processing Operations (continued)

	Question	n	Mean
1.15	Complete the table below by entering the percentage of total pounds of production during the past year by type of HACCP product category, for each type of poultry.		
	Chicken	448	
	a. Raw, ground		5.1%
	b. Raw, not ground, primal cuts		43.7%
	c. Thermally processed, commercially sterile		2.8%
	d. Not heat treated, shelf stable		0.3%
	e. Heat treated, shelf stable		3.6%
	f. Fully cooked, not shelf stable		35.3%
	g. Heat treated but not fully cooked, not shelf stable		8.7%
	h. Secondary inhibitors, not shelf stable		0.6%
	Total		100.0%
	No response	40	—
	Turkey	269	
	a. Raw, ground		9.8%
	b. Raw, not ground, primal cuts		20.9%
	c. Thermally processed, commercially sterile		1.7%
	d. Not heat treated, shelf stable		0.1%
	e. Heat treated, shelf stable		7.0%
	f. Fully cooked, not shelf stable		53.2%
	g. Heat treated but not fully cooked, not shelf stable		7.0%
	h. Secondary inhibitors, not shelf stable		0.2%
	Total		100.0%
	No response	22	—
	Other Poultry	34	
	a. Raw, ground		1.2%
	b. Raw, not ground, primal cuts		56.0%
	c. Thermally processed, commercially sterile		0.0%
	d. Not heat treated, shelf stable		0.0%
	e. Heat treated, shelf stable		9.2%
	f. Fully cooked, not shelf stable		25.1%
	g. Heat treated but not fully cooked, not shelf stable		8.5%
	h. Secondary inhibitors, not shelf stable		0.0%
	Total		100.0%
	No response	10	—

(continued)

Table 5-1. Weighted Responses for Section 1 of the Meat and Poultry Processing-Only Survey: Processing Operations (continued)

	Question	n	Use the practice now %	Expect to begin using the practice within 1 to 3 years %	Does not use and does not expect to use the practice within 1 to 3 years %	No response/ Multiple responses %	Total %
1.16	For each practice listed below, check the response that applies for the majority of products produced by this plant.						
	a. Stipulates practices for controlling pathogens in purchasing specifications for raw meat and poultry[a]	931	64.2	6.1	20.5	9.2	100.0
	b. Stipulates practices for controlling chemical residues (e.g., drugs or growth hormones) in purchasing specifications for raw meat and poultry[a]	929	36.8	8.6	42.7	11.9	100.0
	c. Treats drains with sanitizers for pathogen control	944	83.7	3.1	7.1	6.2	100.0
	d. Uses chemical sanitizers, heat, or hot water for hand tools such as knives, spatulas, or tongs used during operations	944	88.5	1.1	5.1	5.3	100.0
	e. Rotates sanitizing chemicals on an annual or more frequent basis	944	67.5	8.0	16.6	7.9	100.0
	f. Treats food contact equipment and surfaces to remove biomatter during operations	944	58.5	6.8	26.0	8.7	100.0
	g. Uses antimicrobial treatment for food contact equipment during operations	944	46.7	9.0	32.3	12.0	100.0
	h. Has written policies and procedures for recalling product	944	78.3	8.4	7.7	5.6	100.0
	i. Has written polices and procedures to protect against bioterrorism	944	41.3	27.6	22.3	8.8	100.0

(continued)

[a]Excludes respondents who do not purchase raw meat or poultry.

Table 5-1. Weighted Responses for Section 1 of the Meat and Poultry Processing-Only Survey: Processing Operations (continued)

Question	n	Use the practice now	Expect to begin using the practice within 1 to 3 years	Does not use and does not expect to use the practice within 1 to 3 years	No response/ Multiple responses	Total
		%	%	%	%	%
j. Has written polices and procedures to control the use of hazardous chemicals	944	72.0	9.8	12.8	5.5	100.0
k. Identifies and tracks products, by production lot, backward to specific suppliers of raw meat and/or poultry	944	75.0	7.2	10.1	7.7	100.0
l. Identifies and tracks products, by production lot, forward to specific buyers (not consumers) of its products	944	69.1	8.6	14.2	8.0	100.0

(continued)

Table 5-1. Weighted Responses for Section 1 of the Meat and Poultry Processing-Only Survey: Processing Operations (continued)

	Question	n	Use the technology now	Expect to begin using the technology within 1 to 3 years	Does not use and does not expect to use the technology within 1 to 3 years	No response/ Multiple responses	Total
			%	%	%	%	%
1.17	For each technology listed below, check the response that applies for the majority of products produced by this plant.						100.0
	a. Company-owned lab (on site or at another plant) for microbiological testing	944	23.9	5.2	65.6	5.3	100.0
	b. Bioluminescent testing system for preoperative sanitation checks	944	16.8	11.2	64.5	7.6	100.0
	c. Conveyor belts made of materials designed to prevent bacterial growth	944	24.3	11.5	55.2	8.9	100.0
	d. Metal detection equipment	944	29.3	9.8	54.5	6.4	100.0
	e. Irradiation equipment	944	0.6	2.7	88.1	8.6	100.0
	f. High-pressure processing	944	4.2	4.1	82.9	8.9	100.0
	g. Infrared technology	944	2.1	4.2	84.9	8.7	100.0
	h. Application of antimicrobial chemicals	944	32.5	8.1	51.4	8.1	100.0
	i. Other types of pasteurization	944	10.4	4.7	72.0	12.8	100.0

(continued)

Table 5-1. Weighted Responses for Section 1 of the Meat and Poultry Processing-Only Survey: Processing Operations (continued)

	Question	n	%
1.18[a]	Does this plant conduct microbiological testing using either its own lab or an independent commercial lab?		
	1. Yes	675	71.0
	2. No	269	29.0
	Total	944	100.0

[a]Respondents who do not conduct microbiological testing (n = 269) skipped to Question 2.9 and are not included in the results for Questions 2.1 through 2.8.

Table 5-2. Weighted Responses for Section 2 of the Meat and Poultry Processing-Only Survey: Microbiological Testing Practices

	Question	n	%
2.1A[a]	Does this plant test raw meat before fabrication, grinding, or further processing?		
	1. Yes	314	50.7
	2. No	308	49.3
	Total	622	100.0
2.1B[b]	Which methods of microbiological testing are used by this plant, by either its own lab or an independent commercial lab, to test raw meat before fabrication, grinding, or further processing?		
	1. Traditional cultural methods	95	26.5
	2. Enzyme linked immunoassay (ELISA)	26	8.0
	3. Polymerase chain reaction (PCR)	17	4.9
	4. Other rapid methods	41	12.1
	5. Do not know testing method	186	62.3

(continued)

[a]Excludes respondents who do not receive raw meat.

[b]Excludes respondents who do not receive raw meat or do not test raw meat before fabrication, grinding, or further processing. Respondents could select multiple responses.

Table 5-2. Weighted Responses for Section 2 of the Meat and Poultry Processing-Only Survey: Microbiological Testing Practices (continued)

Question	n	Do not test	Less than once per month	Once per month	More than once per month	Once per week	More than once per week	Once per day	Once per shift	More than once per shift	No response/ Multiple responses	Total
		%	%	%	%	%	%	%	%	%	%	%
2.2[a] For each organism listed below, how frequently is microbiological testing done on raw meat before fabrication, grinding, or further processing?												
a. Aerobic plate count (APC)	314	44.1	12.4	6.7	4.5	2.5	4.4	3.8	1.3	3.5	16.8	100.0
b. Total plate count (TPC)	314	47.7	10.8	6.3	4.4	1.1	4.0	4.1	1.0	2.8	17.9	100.0
c. Total coliforms	314	40.2	15.5	8.8	4.7	2.0	3.2	4.5	1.3	2.7	17.1	100.0
d. *Salmonella* species	314	30.3	23.8	16.3	5.2	3.5	1.8	3.3	1.2	1.9	12.7	100.0
e. Generic *E. coli*	314	28.3	21.9	12.2	7.3	3.6	3.4	4.4	0.9	2.6	15.4	100.0
f. *E. coli* O157:H7	314	16.5	33.2	19.4	9.8	3.3	3.8	2.9	0.4	2.2	8.6	100.0
g. *Staphylococcus aureus*	314	48.1	14.4	7.2	4.0	1.5	1.5	1.6	0.3	1.4	20.1	100.0
h. *Listeria* species	314	36.9	16.6	16.8	5.6	3.7	2.0	1.7	0.4	0.7	15.7	100.0
i. *Listeria monocytogenes*	314	40.4	19.9	14.6	4.4	1.6	0.7	1.0	0.4	0.7	16.4	100.0
j. Yeasts and molds	314	60.3	8.8	4.6	1.9	1.2	0.3	1.5	0.7	1.0	19.8	100.0
k. *Clostridium botulinum*	314	63.1	8.2	4.7	1.9	0.6	0.0	0.5	0.0	0.0	20.9	100.0

(continued)

[a]Excludes respondents who do not receive raw meat or do not test raw meat before fabrication, grinding, or further processing.

Table 5-2. Weighted Responses for Section 2 of the Meat and Poultry Processing-Only Survey: Microbiological Testing Practices (continued)

	Question	n	%
2.3A[a]	Does this plant test raw poultry before deboning, grinding, or further processing?		
	1. Yes	104	21.0
	2. No	359	79.0
	Total	463	100.0
2.3B[b]	Which methods of microbiological testing are used by this plant, by either its own lab or an independent commercial lab, to test raw poultry before deboning, grinding, or further processing?		
	1. Traditional cultural methods	51	40.9
	2. Enzyme linked immunoassay (ELISA)	12	9.8
	3. Polymerase chain reaction (PCR)	7	4.3
	4. Other rapid methods	16	13.7
	5. Do not know testing method	45	50.4

(continued)

[a]Excludes respondents who do not receive raw poultry.

[b]Excludes respondents who do not receive raw poultry or do not test raw poultry before deboning, grinding, or further processing. Respondents could select multiple responses.

Table 5-2. Weighted Responses for Section 2 of the Meat and Poultry Processing-Only Survey: Microbiological Testing Practices (continued)

Question	n	Do not test	Less than once per month	Once per month	More than once per month	Once per week	More than once per week	Once per day	Once per shift	More than once per shift	No response/ Multiple responses	Total
		%	%	%	%	%	%	%	%	%	%	%
2.4[a] For each organism listed below, how frequently is microbiological testing done on raw poultry before deboning, grinding, or further processing?												
a. Aerobic plate count (APC)	104	26.4	18.1	8.9	5.1	3.1	2.7	6.0	2.6	6.3	20.8	100.0
b. Total plate count (TPC)	104	36.0	15.3	8.6	4.1	2.8	3.3	6.2	1.5	4.9	17.2	100.0
c. Total coliforms	104	21.7	23.5	10.1	6.5	5.7	1.8	7.2	2.6	5.0	16.1	100.0
d. *Salmonella* species	104	28.9	20.4	15.0	5.4	5.1	0.0	1.3	2.3	3.6	18.1	100.0
e. *Salmonella* Enteritidis	104	46.2	12.9	10.4	5.4	2.6	0.0	0.0	1.2	0.0	21.4	100.0
f. *Campylobacter jejuni*	104	50.8	9.4	6.3	4.2	2.6	0.0	0.0	0.0	1.1	25.6	100.0
g. Generic *E. coli*	104	18.8	27.8	15.6	6.5	7.1	1.5	4.6	1.1	4.7	12.3	100.0
h. *Staphylococcus aureus*	104	38.1	14.9	11.2	5.2	2.5	0.3	2.4	2.3	2.7	20.2	100.0
i. *Listeria* species	104	35.6	16.9	17.5	6.0	6.5	0.3	0.0	0.0	1.4	15.8	100.0
j. *Listeria monocytogenes*	104	35.0	15.9	19.7	4.3	4.0	0.0	0.0	0.0	1.4	19.8	100.0
k. Yeasts and molds	104	49.1	11.6	9.5	3.0	0.3	0.0	2.4	1.1	1.4	21.6	100.0
l. *Clostridium botulinum*	104	52.9	9.2	8.6	1.8	1.4	0.0	0.0	0.0	0.0	26.2	100.0

(continued)

[a]Excludes respondents who do not receive raw poultry or do not test raw poultry before deboning, grinding, or further processing.

Table 5-2. Weighted Responses for Section 2 of the Meat and Poultry Processing-Only Survey: Microbiological Testing Practices (continued)

	Question	n	%
2.5A[a]	Does this plant test ready-to-eat (RTE) finished product after it is packaged?		
	1. Yes	365	79.3
	2. No	91	20.7
	Total	456	100.0
2.5B[b]	Which methods of microbiological testing are used by this plant, by either its own lab or an independent commercial lab, to test RTE finished product after it is packaged?		
	1. Traditional cultural methods	173	44.4
	2. Enzyme linked immunoassay (ELISA)	67	15.5
	3. Polymerase chain reaction (PCR)	40	8.3
	4. Other rapid methods	63	15.5
	5. Do not know testing method	141	42.4

(continued)

[a]Excludes respondents who do not produce RTE finished product.

[b]Excludes respondents who do not produce RTE finished product or do not test RTE finished product. Respondents could select multiple responses.

Table 5-2. Weighted Responses for Section 2 of the Meat and Poultry Processing-Only Survey: Microbiological Testing Practices (continued)

	Question	n	Do not test	Less than once per month	Once per month	More than once per month	Once per week	More than once per week	Once per day	Once per shift	More than once per shift	No response/ Multiple responses	Total
			%	%	%	%	%	%	%	%	%	%	
2.6[a]	For each organism listed below, how frequently is microbio-logical testing done on RTE finished product for the majority of products produced by this plant?												
	a. Aerobic plate count (APC)	365	28.8	15.9	7.7	5.5	2.4	4.0	5.1	1.4	5.4	23.9	100.0
	b. Total plate count (TPC)	365	31.0	16.4	7.8	4.8	2.9	3.0	3.6	1.4	3.9	25.2	100.0
	c. Total coliforms	365	28.3	16.2	8.8	3.9	3.5	3.7	4.7	1.1	5.7	24.1	100.0
	d. *Salmonella* species	365	19.2	27.3	17.0	6.9	3.3	3.1	3.4	0.9	2.4	16.5	100.0
	e. *Salmonella* Enteritidis	365	44.5	13.0	8.3	2.0	1.0	0.7	0.5	0.3	1.2	28.6	100.0
	f. *Campylobacter jejuni*	365	53.7	8.4	4.3	1.1	0.4	1.1	0.0	0.0	0.0	31.1	100.0
	g. Generic *E. coli*	365	29.9	16.6	9.3	3.2	2.4	3.2	4.0	1.8	4.9	24.7	100.0
	h. *E. coli* O157:H7	365	34.3	18.0	11.5	3.7	2.0	1.1	0.8	0.7	1.9	26.0	100.0
	i. *Staphylococcus aureus*	365	37.4	13.8	8.8	3.7	1.5	2.3	2.4	0.7	4.7	24.8	100.0
	j. *Listeria* species	365	13.7	23.5	23.2	9.7	3.8	1.6	2.7	1.4	2.9	17.3	100.0
	k. *Listeria monocytogenes*	365	17.3	26.9	26.3	9.7	2.3	1.5	1.1	0.7	2.3	11.9	100.0
	l. *Listeria*-like organisms	365	38.0	13.3	12.8	4.8	1.4	0.4	1.0	0.4	0.6	27.2	100.0
	m. Yeasts and molds	365	41.6	13.2	5.0	2.8	1.4	3.1	2.5	1.1	1.6	27.7	100.0
	n. *C. perfringens*	365	46.8	13.8	4.7	2.1	1.1	0.5	1.0	0.0	0.7	29.4	100.0
	o. *Clostridium botulinum*	365	51.7	14.3	4.6	1.4	1.0	0.4	0.1	0.0	0.0	26.5	100.0

(continued)

[a]Excludes respondents who do not produce RTE finished product or do not test RTE finished product.

Table 5-2. Weighted Responses for Section 2 of the Meat and Poultry Processing-Only Survey: Microbiological Testing Practices (continued)

	Question	n	%
2.7A[a]	Does this plant test not-ready-to-eat (NRTE) finished product after it is packaged?		
	1. Yes	218	45.1
	2. No	225	54.9
	Total	443	100.0
2.7B[b]	Which methods of microbiological testing are used by this plant, by either its own lab or an independent commercial lab, to test NRTE finished product after it is packaged?		
	1. Traditional cultural methods	105	46.3
	2. Enzyme linked immunoassay (ELISA)	16	6.2
	3. Polymerase chain reaction (PCR)	10	4.8
	4. Other rapid methods	34	12.5
	5. Do not know testing method	94	46.0

(continued)

[a]Excludes respondents who do not produce NRTE finished product.

[b]Excludes respondents who do not produce NRTE finished product or do not test NRTE finished product. Respondents could select multiple responses.

Table 5-2. Weighted Responses for Section 2 of the Meat and Poultry Processing-Only Survey: Microbiological Testing Practices (continued)

	Question	n	Do not test	Less than once per month	Once per month	More than once per month	Once per week	More than once per week	Once per day	Once per shift	More than once per shift	No response/ Multiple responses	Total
			%	%	%	%	%	%	%	%	%	%	%
2.8[a]	For each organism listed below, how frequently is microbiological testing done on NRTE finished product for the majority of products produced by this plant?												
	a. Aerobic plate count (APC)	218	32.3	15.3	9.2	2.9	2.1	5.1	2.5	3.7	7.4	19.5	100.0
	b. Total plate count (TPC)	218	37.8	15.1	8.4	2.4	2.1	2.4	1.4	2.3	6.0	22.2	100.0
	c. Total coliforms	218	31.2	17.5	9.3	1.8	2.1	3.4	2.3	4.2	9.3	18.8	100.0
	d. *Salmonella* species	218	33.2	26.1	13.0	2.7	1.5	1.4	2.3	1.8	4.1	13.9	100.0
	e. *Salmonella* Enteritidis	218	48.5	15.8	8.2	1.8	0.7	0.0	1.0	0.0	0.7	23.3	100.0
	f. *Campylobacter jejuni*	218	56.9	7.0	5.2	0.5	0.1	0.0	0.5	0.0	0.5	29.2	100.0
	g. Generic *E. coli*	218	27.9	25.3	11.0	3.4	2.5	3.2	2.2	2.9	7.5	14.1	100.0
	h. *E. coli* O157:H7	218	26.8	32.6	13.3	5.3	0.3	3.5	1.2	0.5	1.1	15.3	100.0
	i. *Staphylococcus aureus*	218	42.9	14.7	6.5	3.1	1.0	1.8	1.2	1.2	6.2	21.4	100.0
	j. Yeasts and molds	218	49.7	10.3	6.5	2.2	0.7	0.7	1.0	1.6	3.1	24.2	100.0
	k. *Clostridum botulinum*	218	59.9	8.7	4.9	0.5	0.0	0.0	0.5	0.0	0.0	25.5	100.0

(continued)

[a]Excludes respondents who do not produce NRTE finished product or do not test NRTE finished product.

Table 5-2. Weighted Responses for Section 2 of the Meat and Poultry Processing-Only Survey: Microbiological Testing Practices (continued)

	Question	n	%
2.9A	Does this plant test samples from product contact surfaces, other equipment surfaces, or facility surfaces?		
	1. Yes	679	70.2
	2. No	262	29.4
	No response	3	0.4
	Total	944	100.0
2.9B[a]	Which methods of testing are used by this plant, by either its own lab or an independent commercial lab, to test samples from product contact surfaces, other equipment surfaces, and facility surfaces?		
	1. Traditional cultural methods	390	55.7
	2. Adenosine trisodium phosphate (ATP) bioluminescence	103	11.7
	3. Enzyme linked immunoassay (ELISA)	76	9.8
	4. Polymerase chain reaction (PCR)	49	5.4
	5. Other rapid methods	107	14.8
	6. Do not know testing method	185	29.0

(continued)

[a]Excludes respondents who do not test samples from product contact surfaces, other equipment surfaces, or facility surfaces (i.e., environmental sampling). Respondents could select multiple responses.

Table 5-2. Weighted Responses for Section 2 of the Meat and Poultry Processing-Only Survey: Microbiological Testing Practices (continued)

	Question	n	%
2.10[a]	How frequently does this plant's sampling of product contact surfaces, other equipment surfaces, and facility surfaces usually include testing for *Listeria* species?		
	1. Do not test for *Listeria* species	68	9.6
	2. Less than once per month	117	18.9
	3. Once per month	217	33.9
	4. More than once per month	67	10.3
	5. Once per week	88	11.0
	6. More than once per week	43	4.9
	7. Once per day	17	2.3
	8. Once per shift	8	1.3
	9. More than once per shift	11	1.2
	10. No specific routine frequency	26	3.4
	No response	17	3.0
	Total	679	100.0

(continued)

[a]Excludes respondents who do not conduct environmental sampling.

Table 5-2. Weighted Responses for Section 2 of the Meat and Poultry Processing-Only Survey: Microbiological Testing Practices (continued)

Question	n	Do not sample	Less than once per month	Once per month	More than once per month	Once per week	More than once per week	Once per day	Once per shift	More than once per shift	No specific routine fre-quency	No response / Multiple responses	Total
		%	%	%	%	%	%	%	%	%	%	%	%
2.11[a] How frequently is sampling done for each RTE area listed below?													
a. Product contact surfaces	493	0.9	20.7	40.0	11.4	10.3	5.7	3.3	2.1	3.2	1.1	1.3	100.0
b. Equipment surfaces that do not come into direct contact with product	493	20.9	19.3	23.9	10.0	10.4	4.3	3.2	1.8	1.7	2.1	2.3	100.0
c. Walls, floors, overhead structures, and drains	493	21.3	19.7	22.7	10.0	11.4	4.5	2.7	1.2	0.3	3.3	2.9	100.0
2.12[b] How frequently is sampling done for each NRTE area listed below?													
a. Product contact surfaces	434	26.1	13.9	19.6	6.7	7.4	4.2	7.3	1.6	2.2	3.4	7.7	100.0
b. Equipment surfaces that do not come into direct contact with product	434	37.0	13.5	15.9	6.0	7.7	2.1	3.6	1.5	0.6	4.6	7.6	100.0
c. Walls, floors, overhead structures, and drains	434	37.0	16.4	13.5	6.2	7.1	2.6	2.5	1.0	0.6	5.1	8.0	100.0

[a]Excludes respondents who do not conduct environmental sampling and do not produce RTE finished product.

[b]Excludes respondents who do not conduct environmental sampling and do not produce NRTE finished product.

Table 5-3. Weighted Responses for Section 3 of the Meat and Poultry Processing-Only Survey: Employee Training

	Question	n	%
3.1[a]	What food safety training is provided for newly hired production employees of this plant?		
	1. No food safety training for new hires	27	3.0
	2. Written or audio visual food safety training materials are given to new hires	360	35.6
	3. Informal, unscheduled on-the-job food safety training	606	66.0
	4. Scheduled on-the-job food safety training conducted by plant personnel	347	35.6
	5. Formal food safety course conducted by plant personnel	158	15.5
	6. Formal food safety course conducted by professional trainers	61	6.3
	No response	13	1.5
3.2[a]	What continuing food safety training is provided for production employees of this plant?		
	1. No continuing food safety training for employees	66	7.5
	2. Written or audio visual refresher food safety materials are given to employees	246	24.2
	3. Continuing informal on-the-job food safety training	675	72.6
	4. Scheduled on-the-job refresher food safety training conducted by plant personnel	271	26.9
	5. Formal, periodic refresher course work conducted by plant personnel	211	20.1
	6. Formal, periodic refresher course work conducted by professional trainers	60	6.0
	No response	14	1.6
3.3	Approximately how many production and retail employees currently working at this plant have completed formal HACCP training (for example, a 3- to 5-day course)?		
	1. None	78	9.1
	2. 1 to 3 employees	603	66.9
	3. 4 to 9 employees	157	15.5
	4. 10 to 20 employees	51	4.5
	5. More than 20 employees	42	2.6
	No response	13	1.4
	Total	944	100.0

[a]Respondents could select multiple responses.

Table 5-4. Weighted Responses for Section 4 of the Meat and Poultry Processing-Only Survey: Plant Characteristics

	Question	n	%
4.1[a]	In what calendar year was this plant built? If recently renovated, provide the year for the renovation.		
	Year (mean response = 1988)	906	—
	1. Before 1960	68	7.0
	2. 1960–1969	60	6.4
	3. 1970–1979	99	11.2
	4. 1980–1989	136	14.0
	5. 1990–1999	248	26.2
	6. After 1999	295	31.2
	No response	38	4.0
	Total	944	100.0
4.2[a]	What is the approximate total square footage of the production space for this plant?		
	Square footage (mean response = 36,704)	889	—
	1. Under 1,000 square feet	110	11.0
	2. 1,000–9,999 square feet	390	44.9
	3. 10,000–99,999 square feet	273	30.6
	4. 100,000–999,999 square feet	111	7.4
	5. 1,000,000 or more square feet	5	0.3
	No response	55	5.7
	Total	944	100.0
		n	**Mean**
4.3	Calculated as a percentage of the total square footage given in Question 4.2, what is the approximate percentage of this plant's production space by age category?		
	a. Under 5 years old		22.4%
	b. 5 years to just under 20 years old		38.7%
	c. 20 years old or more		38.9%
	Total	880	100.0%
	No response	64	—

(continued)

[a]Respondents wrote in a number to answer this question. For reporting purposes, we grouped the responses into the categories shown.

Table 5-4. Weighted Responses for Section 4 of the Meat and Poultry Processing-Only Survey: Plant Characteristics (continued)

	Question	n	%
4.4	How many days per week does this plant usually process meat and/or poultry?		
	1. Less frequently than once a week	38	4.3
	2. 1 or 2 days per week	62	6.8
	3. 3 or 4 days per week	166	19.6
	4. 5 or 6 days per week	666	68.3
	No response	12	1.0
	Total	944	100.0
4.5	How many processing shifts does this plant usually operate per day?		
	1. One	723	81.7
	2. Two	191	16.0
	3. Three	22	1.4
	No response	8	0.9
	Total	944	100.0
4.6	How many cleanup shifts does this plant operate daily? This includes cleanups conducted by production and processing personnel, sanitation crews, and contractors.		
	1. None	29	3.6
	2. Clean up shift is not operated on a daily basis	34	3.1
	3. One	718	75.5
	4. Two	122	13.6
	5. Three	32	3.2
	No response	9	1.0
	Total	944	100.0
4.7[a]	For the meat or poultry product with the highest production volume, what is the average lot size?		
	Average lot size (mean response = 14,449)	858	—
	1. 500 pounds or less	306	32.6
	2. 501 to 2,000 pounds	213	25.5
	3. 2,001 to 10,000 pounds	144	15.9
	4. 10,001 to 50,000 pounds	128	12.3
	5. 50,001 to 100,000 pounds	30	2.6
	6. More than 100,000 pounds	37	2.6
	No response	86	8.4
	Total	944	100.0

(continued)

[a]Respondents wrote in a number to answer this question. For reporting purposes, we grouped the responses into the categories shown.

Table 5-4. Weighted Responses for Section 4 of the Meat and Poultry Processing-Only Survey: Plant Characteristics (continued)

	Question	n	%
4.8[a]	Approximately how many people are employed at this plant?		
	Full-time equivalents (mean response = 71)	923	—
	1. Fewer than 10	376	40.7
	2. 10 to 99	343	40.6
	3. 100 to 249	75	8.2
	4. 250 to 499	68	5.8
	5. 500 or more	61	2.4
	No response	21	2.2
	Total	944	100.0
4.9[a]	Approximately how many people employed at this plant work in meat or poultry processing?		
	Full-time equivalents (mean response = 54)	903	—
	1. Fewer than 10	453	50.0
	2. 10 to 99	286	33.7
	3. 100 to 249	58	6.1
	4. 250 to 499	55	4.2
	5. 500 or more	51	2.0
	No response	41	4.1
	Total	944	100.0
4.10	Does this plant have a person on staff whose primary responsibility is to manage food safety activities at the plant (i.e., food safety manager)?		
	1. Yes	611	64.0
	2. No	320	34.7
	No response	13	1.3
	Total	944	100.0

(continued)

[a]Respondents wrote in a number to answer this question. For reporting purposes, we grouped the responses into the categories shown.

Table 5-4. Weighted Responses for Section 4 of the Meat and Poultry Processing-Only Survey: Plant Characteristics (continued)

	Question	n	%
4.11[a]	Approximately what percentage of this plant's food safety manager's time is devoted to managing food safety activities at the plant?		
	1. 1 to 24 percent	171	30.2
	2. 25 to 49 percent	131	22.7
	3. 50 to 74 percent	108	17.2
	4. 75 to 99 percent	103	15.5
	5. 100 percent	73	10.7
	No response	25	3.7
	Total	611	100.0
4.12	Does this plant have a quality control/quality assurance department?		
	1. Yes	492	49.9
	2. No	434	48.3
	No response	18	1.8
	Total	944	100.0
4.13[b]	Approximately how many employees at this plant work in the plant's quality control/quality assurance department?		
	Full-time equivalents (mean response = 5)	473	—
	1. Fewer than 5	301	69.9
	2. 6 to 25	146	24.2
	3. 26 to 50	22	1.6
	4. 51 or more	4	0.2
	No response	19	4.0
	Total	492	100.0
4.14	How many USDA- or state-inspected plants, including this plant, are owned by the company that owns this plant?		
	1. 1	705	79.6
	2. 2 to 5	126	12.2
	3. 6 to 20	44	3.1
	4. 21 or more	48	2.9
	No response	21	1.0
	Total	944	100.0

(continued)

[a]Excludes respondents who do not have a food safety manager.

[b]Excludes respondents who do not have a QC/QA department. Respondents wrote in a number to answer this question. For reporting purposes, we grouped the responses into the categories shown.

Table 5-4. Weighted Responses for Section 4 of the Meat and Poultry Processing-Only Survey: Plant Characteristics (continued)

	Question	n	%
4.15[a]	In addition to meat and poultry processing that is inspected by USDA or state inspectors, what other types of activities are conducted at this plant's location?		
	1. In-store retail sales	341	35.3
	2. Mail order or Internet sales	118	14.2
	3. Restaurant	121	12.0
	4. Catering	89	9.3
	5. Game processing	115	10.9
	6. Custom processing of meat or poultry that is inspected by USDA or state inspectors	159	16.9
	7. Custom processing of meat or poultry that is <u>not</u> inspected by USDA or state inspectors	71	7.2
	8. Wholesale/distribution	20	2.4
	9. None of the above	412	42.6
	No response	10	1.0
4.16	What was the approximate value of total plant sales revenue for the most recently completed fiscal year?		
	1. Under $249,999	164	17.0
	2. $250,000 to $499,999	85	9.8
	3. $500,000 to $1.49 million	154	17.2
	4. $1.5 million to $2.49 million	80	9.4
	5. $2.5 million to $24.9 million	234	26.7
	6. $25 million to $49.9 million	47	4.9
	7. $50 million to $99.9 million	44	4.5
	8. $100 million to $249.9 million	45	3.0
	9. $250 million to $499.9 million	19	1.0
	10. $500 million to $999.9 million	12	0.6
	11. $1 billion or more	0	0.0
	No response	60	5.9
	Total	944	100.0

[a]Respondents could select multiple responses. When possible, we recoded the "other, specify" responses and added the response category "wholesale/distribution."

Table 5-5. Percentage of Meat and Poultry Processing-Only Plants that Routinely Sanitize Hands or Gloves, by HACCP Size

		Very Small			Small			Large			All Plants		
			95% CI			95% CI			95% CI			95% CI	
	Question	%	Low	High	%	Low	High	%	Low	High	%	Low	High
1.9	**Routine frequency after contact with raw meat and poultry** (for plants that handle raw product)	(n = 487)			(n = 301)			(n = 74)			(n = 862)		
	Always before handling next piece of product	35.1	30.7	39.7	16.8	12.9	21.6	5.4	2.0	13.6	27.7	24.6	31.0
	More than once per hour	18.4	15.1	22.3	16.4	12.5	21.1	2.7	0.7	10.2	17.3	14.8	20.2
	Once per hour	3.1	1.8	5.3	2.7	1.4	5.4	5.4	2.0	13.6	3.0	2.0	4.5
	One or more times per shift, but less than once per hour	14.4	11.3	18.2	38.1	32.7	43.8	58.1	46.6	68.8	24.1	21.2	27.3
	No specific routine frequency	26.8	22.9	31.2	24.6	20.0	29.9	27.0	18.1	38.2	26.0	23.0	29.2
	No response	2.1	1.1	4.0	1.4	0.5	3.7	1.4	0.2	9.0	1.9	1.1	3.1
	Total	100.0			100.0			100.0			100.0		
1.10	**Routine frequency after contact with RTE finished product** (for plants that produce RTE product)	(n = 271)			(n = 192)			(n = 59)			(n = 522)		
	Always before handling next piece of product	45.0	38.9	51.3	13.9	9.6	19.7	5.1	1.6	14.7	31.4	27.2	35.8
	More than once per hour	19.3	14.7	24.8	35.4	28.9	42.5	35.5	24.4	48.5	26.2	22.4	30.5
	Once per hour	4.4	2.3	8.3	3.7	1.8	7.6	5.1	1.6	14.7	4.2	2.6	6.6
	One or more times per shift, but less than once per hour	11.5	8.0	16.5	32.1	25.8	39.2	47.5	35.1	60.1	20.9	17.4	24.8
	No specific routine frequency	18.8	14.4	24.3	12.6	8.5	18.2	6.8	2.6	16.7	15.9	12.8	19.7
	No response	0.9	0.3	2.4	2.3	0.9	5.6	0.0	0.0	0.0	1.4	0.7	2.8
	Total	100.0			100.0			100.0			100.0		

Table 5-6. Percentage of Meat and Poultry Processing-Only Plants Currently Using the Pathogen-Control Practice, by HACCP Size

	Question	Very Small			Small			Large			All Plants		
			95% CI			95% CI			95% CI			95% CI	
		%	Low	High	%	Low	High	%	Low	High	%	Low	High
1.16	**Currently use pathogen-control practice**	(n = 527)			(n = 333)			(n = 84)			(n = 944)		
	Stipulates practices for controlling pathogens in purchasing specifications for raw meat and poultry[a]	64.2	59.7	68.5	65.1	59.6	70.2	51.1	40.5	61.6	64.2	60.8	67.5
	Stipulates practices for controlling chemical residues (e.g., drugs or growth hormones) in purchasing specifications for raw meat and poultry[a]	32.8	28.7	37.2	42.6	37.2	48.1	47.0	36.5	57.7	36.8	33.5	40.1
	Treats drains with sanitizers for pathogen control	80.3	76.4	83.6	88.8	84.9	91.7	90.5	82.1	95.2	83.7	81.0	86.0
	Uses chemical sanitizers, heat, or hot water for hand tools such as knives, spatulas, or tongs used during operations	88.3	85.0	90.9	89.1	85.2	92.1	83.3	73.8	89.9	88.5	86.1	90.5
	Rotates sanitizing chemicals on an annual or more frequent basis	62.8	58.4	67.1	74.7	69.6	79.1	75.0	64.7	83.1	67.5	64.2	70.6
	Treats food contact equipment and surfaces to remove biomatter during operations	59.0	54.5	63.4	57.3	51.8	62.6	61.9	51.1	71.7	58.5	55.0	61.8
	Uses antimicrobial treatment for food contact equipment during operations	44.6	40.2	49.1	49.4	44.0	54.9	58.4	47.6	68.4	46.7	43.3	50.1
	Has written policies and procedures for recalling product	72.5	68.2	76.3	86.5	82.3	89.8	97.6	91.0	99.4	78.3	75.3	81.0

(continued)

[a]Excludes respondents who do not purchase raw meat or poultry.

Table 5-6. Percentage of Meat and Poultry Processing-Only Plants Currently Using the Pathogen-Control Practice, by HACCP Size (continued)

	Question	Very Small			Small			Large			All Plants		
			95% CI			95% CI			95% CI			95% CI	
		%	Low	High	%	Low	High	%	Low	High	%	Low	High
1.16	**Currently use pathogen-control practice (continued)**												
	Has written policies and procedures to protect against bioterrorism	29.8	25.8	34.2	56.9	51.4	62.2	89.3	80.7	94.3	41.3	38.0	44.7
	Has written policies and procedures to control the use of hazardous chemicals	66.5	62.1	70.6	79.3	74.5	83.4	96.4	89.5	98.8	72.0	68.7	75.0
	Identifies and tracks products, by production lot, backward to specific suppliers of raw meat and/or poultry	69.4	65.1	73.4	82.9	78.4	86.6	96.4	89.5	98.8	75.0	71.9	77.9
	Identifies and tracks its products, by production lot, forward to specific buyers (not consumers) of its products	61.9	57.5	66.2	79.2	74.4	83.3	94.0	86.5	97.5	69.1	65.9	72.2

Table 5-7. Percentage of Meat and Poultry Processing-Only Plants Currently Using the Technology, by HACCP Size

		Very Small			Small			Large			All Plants		
			95% CI			95% CI			95% CI			95% CI	
	Question	%	Low	High	%	Low	High	%	Low	High	%	Low	High
1.17	**Currently use technology**	(n = 527)			(n = 333)			(n = 84)			(n = 944)		
	Company-owned lab for microbiological testing	11.3	8.6	14.6	41.0	35.7	46.4	78.5	68.5	86.1	23.9	21.2	26.9
	Bioluminescent testing system for preoperative sanitation checks	6.9	4.8	9.7	29.9	25.2	35.1	64.4	53.6	73.9	16.8	14.5	19.4
	Conveyor belts made of materials designed to prevent bacterial growth	13.8	10.8	17.4	40.6	35.4	46.0	39.3	29.4	50.1	24.3	21.5	27.4
	Metal detection equipment	7.6	5.4	10.6	60.5	55.1	65.7	92.9	85.0	96.8	29.3	26.3	32.4
	Irradiation equipment	0.8	0.3	2.2	0.3	0.0	2.0	1.2	0.2	7.9	0.6	0.3	1.5
	High pressure processing	2.1	1.2	3.7	7.2	4.8	10.6	10.7	5.7	19.4	4.2	3.1	5.7
	Infrared technology	0.5	0.2	1.7	4.2	2.5	7.0	9.6	4.8	18.0	2.1	1.4	3.3
	Application of antimicrobial chemicals	25.3	21.5	29.4	42.2	36.9	47.7	63.1	52.3	72.7	32.5	29.4	35.7
	Other types of pasteurization	7.5	5.4	10.4	14.6	11.1	18.9	20.2	13.0	30.2	10.4	8.5	12.7

Table 5-8. Percentage of Meat and Poultry Processing-Only Plants with Microbiological Testing Practices, by HACCP Size

	Question	Very Small			Small			Large			All Plants		
			95% CI			95% CI			95% CI			95% CI	
		%	Low	High	%	Low	High	%	Low	High	%	Low	High
1.18	**Microbiological testing**		(n = 527)			(n = 333)			(n = 84)			(n = 944)	
	Conducts microbiological testing	62.6	58.1	66.8	83.1	78.7	86.8	95.2	88.0	98.2	71.0	67.8	74.0
2.1	**Testing practices for raw meat** (for plants that receive raw meat)		(n = 300)			(n = 254)			(n = 68)			(n = 622)	
	Tests raw meat before fabrication, grinding, or further processing	49.6	43.7	55.6	52.3	46.1	58.5	47.1	35.6	58.9	50.7	46.5	54.9
	Methods of testing used[a]		(n = 148)			(n = 134)			(n = 32)			(n = 314)	
	Traditional cultural methods	16.6	11.2	23.9	35.5	27.7	44.1	68.7	50.9	82.3	26.5	21.7	31.9
	ELISA	2.9	1.1	7.8	13.6	8.7	20.7	12.5	4.8	29.1	8.0	5.4	11.7
	PCR	3.6	1.3	9.2	5.9	2.9	11.3	15.6	6.6	32.6	4.9	2.9	8.2
	Other rapid methods	4.2	1.9	9.1	21.0	14.8	28.9	18.8	8.6	36.1	12.1	8.9	16.4
	Do not know testing method	74.3	66.1	81.0	50.4	41.8	59.0	28.1	15.3	45.9	62.3	56.5	67.9
2.3	**Testing practices for raw poultry** (for plants that receive raw poultry)		(n = 208)			(n = 200)			(n = 55)			(n = 463)	
	Tests raw poultry before deboning, grinding, or further processing	15.5	10.8	21.7	24.9	19.3	31.5	49.2	36.2	62.2	21.0	17.3	25.2
	Methods of testing used[a]		(n = 29)			(n = 48)			(n = 27)			(n = 104)	
	Traditional cultural methods	17.1	6.8	36.7	51.7	37.6	65.6	77.9	58.3	89.8	40.9	31.0	51.7
	ELISA	1.9	0.3	12.9	14.4	6.9	27.7	14.9	5.6	33.9	9.8	5.2	17.7
	PCR	0.0	0.0	0.0	5.8	1.8	16.7	14.9	5.6	33.9	4.3	1.8	10.1
	Other rapid methods	5.7	1.3	22.1	18.5	9.8	32.1	18.6	7.8	38.0	13.7	8.0	22.5
	Do not know testing method	75.3	55.9	88.0	37.7	25.0	52.3	22.1	10.2	41.7	50.4	39.7	61.0

(continued)

[a]Respondents could select multiple responses.

Table 5-8. Percentage of Meat and Poultry Processing-Only Plants with Microbiological Testing Practices, by HACCP Size (continued)

		Very Small			Small			Large			All Plants		
			95% CI			95% CI			95% CI			95% CI	
	Question	%	Low	High	%	Low	High	%	Low	High	%	Low	High
2.5	**Testing practices for ready-to-eat (RTE) finished products** (for plants that produce RTE product)	(n = 220)			(n = 177)			(n = 59)			(n = 456)		
	Tests RTE finished products	69.4	62.7	75.4	90.5	85.0	94.1	94.9	85.3	98.4	79.3	75.0	83.0
	Methods of testing used[a]	(n = 148)			(n = 161)			(n = 56)			(n = 365)		
	Traditional cultural methods	36.2	28.4	44.8	49.7	41.9	57.5	75.0	62.0	84.6	44.4	39.0	50.0
	ELISA	2.7	0.9	7.3	26.0	19.7	33.4	39.2	27.4	52.5	15.5	12.0	19.8
	PCR	2.0	0.6	6.4	12.4	8.1	18.5	30.4	19.8	43.6	8.3	5.9	11.6
	Other rapid methods	7.7	4.2	13.7	21.7	15.9	28.8	30.3	19.7	43.6	15.5	11.9	19.8
	Do not know testing method	57.4	48.8	65.6	30.9	24.2	38.6	7.2	2.7	17.6	42.4	37.0	48.0
2.7	**Testing practices for not-ready-to-eat (NRTE) finished products** (for plants that produce NRTE product)	(n = 215)			(n = 180)			(n = 48)			(n = 443)		
	Tests NRTE finished product	36.1	29.6	43.1	53.8	46.4	61.1	81.2	67.6	89.9	45.1	40.2	50.1
	Methods of testing used[a]	(n = 81)			(n = 98)			(n = 39)			(n = 218)		
	Traditional cultural methods	37.0	26.5	48.9	51.9	41.8	61.8	66.6	50.5	79.6	46.3	39.1	53.6
	ELISA	0.8	0.1	5.5	9.7	5.1	17.7	15.4	7.0	30.4	6.2	3.6	10.4
	PCR	1.9	0.3	12.4	7.3	3.5	14.6	5.2	1.3	18.6	4.8	2.5	9.2
	Other rapid methods	2.8	0.7	11.5	17.8	11.3	26.9	38.5	24.6	54.5	12.4	8.5	17.8
	Do not know testing method	59.4	47.5	70.2	37.8	28.6	47.9	18.0	8.8	33.3	46.0	38.9	53.4

(continued)

[a]Respondents could select multiple responses.

Table 5-8. Percentage of Meat and Poultry Processing-Only Plants with Microbiological Testing Practices, by HACCP Size (continued)

	Question	Very Small			Small			Large			All Plants		
			95% CI			95% CI			95% CI			95% CI	
		%	Low	High	%	Low	High	%	Low	High	%	Low	High
2.9	**Testing practices for environmental sampling**		(n = 527)			(n = 333)			(n = 84)			(n = 944)	
	Conducts environmental sampling	61.3	56.8	65.6	82.9	78.4	86.7	98.8	92.1	99.8	70.2	67.0	73.3
	Methods of testing used[a]		(n = 321)			(n = 275)			(n = 83)			(n = 679)	
	Traditional cultural methods	50.3	44.6	56.1	60.6	54.6	66.3	74.7	64.2	82.9	55.7	51.6	59.7
	ATP	2.1	0.9	4.8	20.4	16.0	25.6	49.4	38.8	60.1	11.7	9.5	14.4
	ELISA	3.8	2.1	6.9	15.5	11.6	20.4	28.9	20.2	39.6	9.8	7.7	12.4
	PCR	0.0	0.0	0.0	10.3	7.2	14.5	25.4	17.1	35.8	5.4	3.9	7.3
	Other rapid methods	7.7	5.0	11.5	22.2	17.6	27.6	30.1	21.2	40.8	14.8	12.2	17.9
	Do not know testing method	41.1	35.6	46.9	16.4	12.4	21.4	3.6	1.2	10.6	29.0	25.5	32.9
2.10	**Tests for *Listeria* species once per week or more often**	5.1	3.0	8.6	36.2	30.6	42.1	67.5	56.7	76.7	20.8	17.8	24.2
2.11	**Conducts environmental sampling of RTE area once per week or more often** (for plants that produce RTE product)		(n = 246)			(n = 188)			(n = 59)			(n = 493)	
	Product contact surfaces	6.8	4.1	11.2	44.0	37.0	51.3	78.0	65.6	86.8	24.6	20.8	28.7
	Equipment surfaces that do *not* come into direct contact with RTE product	4.3	2.2	8.0	39.5	32.6	46.7	84.7	73.2	91.9	21.5	18.0	25.5
	Walls, floors, overhead structures, drains	5.3	3.0	9.4	35.1	28.5	42.3	78.0	65.6	86.8	20.1	16.7	24.0

(continued)

[a]Respondents could select multiple responses.

Table 5-8. Percentage of Meat Slaughter and Processing Plants with Microbiological Testing Practices, by HACCP Size (continued)

	Question	Very Small			Small			Large			All Plants		
			95% CI			95% CI			95% CI			95% CI	
		%	Low	High	%	Low	High	%	Low	High	%	Low	High
2.12	**Conducts environmental sampling of NRTE area once per week or more often** (for plants that produce NRTE product)	(n = 209)			(n = 175)			(n = 50)			(n = 434)		
	Product contact surfaces	9.1	5.6	14.5	36.3	29.4	43.8	58.0	44.0	70.8	22.6	18.7	27.1
	Equipment surfaces that do *not* come into direct contact with NRTE product	7.0	4.0	12.0	23.5	17.7	30.4	44.0	31.0	57.9	15.4	12.2	19.4
	Walls, floors, overhead structures, drains	5.9	3.3	10.6	21.6	16.0	28.4	38.0	25.7	52.1	13.8	10.8	17.6

Table 5-9. Percentage of Meat and Poultry Processing-Only Plants with Training for Production Employees, by HACCP Size

Question	Very Small			Small			Large			All Plants		
		95% CI			95% CI			95% CI			95% CI	
	%	Low	High	%	Low	High	%	Low	High	%	Low	High
3.1 Food safety training for newly hired employees[a]	(n = 527)			(n = 333)			(n = 84)			(n = 944)		
No training for new hires	4.7	3.1	7.0	0.3	0.0	2.0	1.2	0.2	8.0	3.0	2.0	4.4
Written or audio visual training materials are given to new hires	18.9	15.5	22.8	59.6	54.1	64.8	84.6	75.2	90.8	35.6	32.4	38.9
Informal, unscheduled on-the-job training	69.6	65.3	73.6	61.9	56.5	67.1	39.3	29.5	50.1	66.0	62.8	69.2
Scheduled on-the-job training conducted by plant personnel	30.8	26.7	35.1	41.5	36.3	47.0	65.5	54.7	74.9	35.6	32.4	38.9
Formal course conducted by plant personnel	8.2	6.0	11.1	25.9	21.4	30.9	39.3	29.5	50.1	15.5	13.2	18.1
Formal course conducted by professional trainers	6.5	4.7	8.9	6.2	4.0	9.5	2.4	0.6	9.0	6.3	4.8	8.1
3.2 Continuing food safety training[a]	(n = 527)			(n = 333)			(n = 84)			(n = 944)		
No continuing training	10.5	8.0	13.6	3.2	1.8	5.8	0.0	0.0	0.0	7.5	5.9	9.6
Written or audio visual refresher materials are given to employees	13.5	10.6	17.0	39.0	33.8	44.4	64.4	53.6	73.8	24.2	21.4	27.2
Continuing informal on-the-job training	74.7	70.6	78.5	70.1	64.9	74.9	56.0	45.3	66.2	72.6	69.4	75.5
Scheduled on-the-job refresher training conducted by plant personnel	17.5	14.2	21.3	39.9	34.7	45.3	61.9	51.1	71.7	26.9	24.0	30.0
Formal, periodic refresher course work conducted by plant personnel	10.8	8.3	14.0	32.8	27.9	38.1	58.4	47.6	68.4	20.1	17.6	22.9
Formal, periodic refresher course work conducted by professional trainers	4.5	3.0	6.7	8.2	5.7	11.8	7.1	3.2	15.0	6.0	4.6	7.7
3.3 HACCP training	(n = 527)			(n = 333)			(n = 84)			(n = 944)		
One or more production or retail employees has completed formal HACCP training	85.9	82.4	88.8	94.6	91.5	96.6	98.8	92.1	99.8	89.5	87.1	91.4

[a]Respondents could select multiple responses.

Table 5-10. Meat and Poultry Processing-Only Plants' Responses to Questions on Production Volume and Sales Revenue, by HACCP Size

Question	Very Small			Small			Large			All Plants		
		95% CI			95% CI			95% CI			95% CI	
	%	Low	High	%	Low	High	%	Low	High	%	Low	High
1.13 Percentage of total pounds of beef production during past year	(n = 376)			(n = 247)			(n = 56)			(n = 679)		
Raw, ground	27.7	24.1	31.3	18.7	14.7	22.7	7.6	1.9	13.3	23.8	21.2	26.4
Raw, not ground, primal cuts	31.7	27.7	35.8	22.1	17.7	26.5	8.0	1.4	14.5	27.5	24.5	30.4
Thermally processed, commercially sterile	0.8	0.0[a]	1.9	2.8	0.9	4.7	5.0	0.0[a]	10.3	1.7	0.7	2.6
Not heat treated, shelf stable	2.4	0.8	4.0	3.3	1.0	5.5	0.1	0.0[a]	0.3	2.7	1.4	3.9
Heat treated, shelf stable	10.8	7.7	14.0	8.6	5.2	11.9	3.3	0.0[a]	7.2	9.8	7.5	12.1
Fully cooked, not shelf stable	20.8	16.7	24.9	36.4	30.7	42.0	50.7	37.9	63.5	27.5	24.1	30.8
Heat treated but not fully cooked, not shelf stable	4.8	2.7	6.9	7.2	4.1	10.3	23.1	12.2	34.0	6.1	4.4	7.9
Secondary inhibitors, not shelf stable	0.9	0.0[a]	1.9	1.0	0.1	1.9	2.3	0.0[a]	5.9	1.0	0.3	1.6
Total	100.0			100.0			100.0			100.0		
1.13 Percentage of total pounds of pork production during past year	(n = 392)			(n = 235)			(n = 61)			(n = 688)		
Raw, ground	26.4	22.7	30.1	14.9	11.1	18.6	4.1	0.0[a]	8.7	21.7	19.0	24.4
Raw, not ground, primal cuts	31.5	27.2	35.8	25.5	20.3	30.6	7.5	1.1	13.9	28.8	25.5	32.0
Thermally processed, commercially sterile	0.4	0.0[a]	1.1	3.0	0.9	5.1	5.4	0.0[a]	11.1	1.5	0.6	2.3
Not heat treated, shelf stable	2.7	1.1	4.4	3.1	1.0	5.1	2.0	0.0[a]	5.4	2.8	1.6	4.1
Heat treated, shelf stable	6.1	3.7	8.6	6.9	3.8	10.0	3.8	0.2	7.4	6.3	4.5	8.2
Fully cooked, not shelf stable	24.8	20.5	29.0	37.1	31.3	42.9	51.9	39.8	64.0	29.8	26.4	33.2
Heat treated but not fully cooked, not shelf stable	6.4	4.2	8.7	8.7	5.4	11.9	25.1	14.4	35.7	7.7	5.8	9.5
Secondary inhibitors, not shelf stable	1.6	0.4	2.9	0.9	0.0	1.8	0.2	0.0[a]	0.6	1.3	0.5	2.2
Total	100.0			100.0			100.0			100.0		

(continued)

[a]Estimated confidence interval for lower bound was less than zero so we truncated the interval.

Table 5-10. Meat and Poultry Processing-Only Plants' Responses to Questions on Production Volume and Sales Revenue, by HACCP Size (continued)

Question	Very Small			Small			Large			All Plants		
		95% CI			95% CI			95% CI			95% CI	
	%	Low	High	%	Low	High	%	Low	High	%	Low	High
1.13 Percentage of total pounds of other meat production during past year	(n = 119)			(n = 80)			(n = 10)			(n = 209)		
Raw, ground	10.5	5.9	15.0	12.3	5.5	19.0	9.9	0.0[a]	32.4	11.2	7.4	14.9
Raw, not ground, primal cuts	54.9	45.9	64.0	47.1	36.2	58.0	19.9	0.0[a]	50.0	51.4	44.6	58.3
Thermally processed, commercially sterile	0.5	0.0[a]	1.3	1.2	0.0[a]	3.7	0.0	0.0	0.0	0.7	0.0[a]	1.8
Not heat treated, shelf stable	0.1	0.0	0.3	0.2	0.0[a]	0.5	0.0	0.0	0.0	0.1	0.0	0.3
Heat treated, shelf stable	7.3	2.4	12.1	3.7	0.0[a]	7.8	0.0	0.0	0.0	5.8	2.5	9.1
Fully cooked, not shelf stable	24.1	16.0	32.1	29.2	19.1	39.2	50.1	12.4	87.8	26.4	20.2	32.5
Heat treated but not fully cooked, not shelf stable	2.0	0.0[a]	4.5	5.5	0.3	10.6	20.0	0.0[a]	50.2	3.6	1.1	6.1
Secondary inhibitors, not shelf stable	0.7	0.0[a]	1.7	0.9	0.0[a]	2.8	0.0	0.0	0.0	0.8	0.0[a]	1.7
Total	100.0			100.0			100.0			100.0		
1.15 Percentage of total pounds of chicken production during past year	(n = 208)			(n =186)			(n = 54)			(n = 448)		
Raw, ground	6.4	3.5	9.4	3.8	1.4	6.1	1.7	0.0[a]	4.6	5.1	3.2	6.9
Raw, not ground, primal cuts	54.8	47.7	61.9	33.7	27.0	40.3	9.2	2.2	16.1	43.7	38.9	48.5
Thermally processed, commercially sterile	1.6	0.0[a]	3.5	4.0	1.2	6.8	4.6	0.0[a]	10.1	2.8	1.2	4.4
Not heat treated, shelf stable	0.6	0.0[a]	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0[a]	0.9
Heat treated, shelf stable	3.2	0.6	5.8	4.4	1.6	7.3	0.0	0.0	0.0	3.6	1.8	5.5
Fully cooked, not shelf stable	26.2	19.7	32.6	44.0	37.0	51.0	57.8	45.0	70.5	35.3	30.7	40.0
Heat treated but not fully cooked, not shelf stable	6.5	2.8	10.1	9.7	5.7	13.7	26.8	15.7	37.8	8.7	6.0	11.3
Secondary inhibitors, not shelf stable	0.7	0.0[a]	1.5	0.5	0.0[a]	1.3	0.0	0.0	0.0	0.6	0.0	1.1
Total	100.0			100.0			100.0			100.0		

(continued)

[a]Estimated confidence interval for lower bound was less than zero so we truncated the interval.

Table 5-10. Meat and Poultry Processing-Only Plants' Responses to Questions on Production Volume and Sales Revenue, by HACCP Size (continued)

Question	Very Small			Small			Large			All Plants		
		95% CI			95% CI			95% CI			95% CI	
	%	Low	High	%	Low	High	%	Low	High	%	Low	High
1.15 Percentage of total pounds of turkey production during past year	(n = 116)			(n = 106)			(n = 47)			(n =269)		
Raw, ground	10.5	5.0	15.9	9.7	3.9	15.6	5.2	0.0[a]	11.3	9.8	6.1	13.6
Raw, not ground, primal cuts	31.7	23.0	40.4	11.5	5.5	17.5	1.7	0.0[a]	3.9	20.9	15.7	26.1
Thermally processed, commercially sterile	1.5	0.0[a]	4.2	2.0	0.0[a]	4.7	0.3	0.0[a]	1.0	1.7	0.0	3.5
Not heat treated, shelf stable	0.2	0.0[a]	0.7	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0[a]	0.4
Heat treated, shelf stable	8.7	3.2	14.2	5.8	1.4	10.2	2.0	0.0[a]	6.2	7.0	3.7	10.4
Fully cooked, not shelf stable	43.8	34.2	53.4	60.9	51.5	70.3	73.8	61.7	85.8	53.2	46.7	59.6
Heat treated but not fully cooked, not shelf stable	3.5	0.2	6.9	9.7	4.0	15.4	16.1	5.6	26.5	7.0	3.9	10.1
Secondary inhibitors, not shelf stable	0.0	0.0	0.0	0.3	0.0[a]	0.8	0.9	0.0[a]	2.6	0.2	0.0[a]	0.4
Total	100.0			100.0			100.0			100.0		

(continued)

[a]Estimated confidence interval for lower bound was less than zero so we truncated the interval.

Table 5-10. Meat and Poultry Processing-Only Plants' Responses to Questions on Production Volume and Sales Revenue, by HACCP Size (continued)

Question	Very Small			Small			Large			All Plants		
		95% CI			95% CI			95% CI			95% CI	
	%	Low	High	%	Low	High	%	Low	High	%	Low	High
4.16 Total plant sales revenue[a]	(n = 527)			(n = 333)			(n = 84)			(n = 944)		
Under $249,999	26.2	22.5	30.2	3.2	1.7	5.8	0.0	0.0	0.0	17.0	14.6	19.7
$250,000 to $499,999	15.0	12.0	18.5	1.9	0.9	4.0	1.2	0.2	8.0	9.8	7.9	12.1
$500,000 to $1.49 million	24.2	20.5	28.3	6.8	4.5	10.2	2.4	0.6	9.0	17.2	14.8	20.0
$1.5 million to $2.49 million	10.8	8.3	14.0	7.8	5.4	11.3	0.0	0.0	0.0	9.4	7.6	11.7
$2.5 million to $24.9 million	17.5	14.2	21.3	42.9	37.6	48.4	9.5	4.8	17.9	26.7	23.7	29.8
$25 million to $49.9 million	0.5	0.1	2.1	12.0	8.9	16.0	7.1	3.2	15.0	4.9	3.7	6.6
$50 million to $99.9 million	0.7	0.2	2.3	10.4	7.5	14.2	8.3	4.0	16.5	4.5	3.3	6.1
$100 million to $249.9 million	0.0	0.0	0.0	6.1	4.0	9.3	29.8	21.0	40.4	3.0	2.1	4.2
$250 million to $499.9 million	0.0	0.0	0.0	1.5	0.6	3.5	16.7	10.1	26.3	1.0	0.5	1.6
$500 million to $999.9 million	0.2	0.0	1.6	0.6	0.2	2.4	10.7	5.7	19.4	0.6	0.3	1.3
$1 billion or more	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
No response	4.9	3.3	7.3	6.9	4.6	10.2	14.3	8.3	23.5	5.9	4.5	7.7
Total	100.0			100.0			100.0			100.0		

[a]Includes revenue from custom processing and other activities conducted at plant, such as retail sales.

Table 5-11. Meat and Poultry Processing-Only Plants' Responses to Other Selected Questions, by HACCP Size

	Question	Very Small			Small			Large			All Plants		
			95% CI			95% CI			95% CI			95% CI	
		%	Low	High	%	Low	High	%	Low	High	%	Low	High
1.6	**Percentage of raw meat and poultry processed during past year that was imported**	(n = 527)			(n = 333)			(n = 84)			(n = 944)		
	None	67.7	63.3	71.8	51.9	46.4	57.3	57.1	46.4	67.3	61.6	58.2	64.8
	1 to 9 percent	17.5	14.3	21.1	19.9	15.9	24.7	28.6	19.9	39.1	18.6	16.1	21.4
	10 to 24 percent	6.9	4.9	9.6	11.0	8.0	15.0	7.1	3.2	15.0	8.4	6.7	10.5
	25 to 49 percent	3.3	2.0	5.4	10.8	7.8	14.7	2.4	0.6	9.0	6.0	4.6	7.9
	50 percent or more	2.8	1.6	4.8	4.5	2.7	7.5	2.4	0.6	9.0	3.4	2.4	4.9
	No response	1.9	1.0	3.5	1.9	0.8	4.1	2.4	0.6	9.1	1.9	1.2	3.1
	Total	100.0			100.0			100.0			100.0		
1.7	**Specified risk material (SRM) procedures[a]**	(n = 338)			(n = 183)			(n = 41)			(n = 562)		
	Receive beef carcasses or parts of beef carcasses containing vertebral columns from cattle 30 months of age or older	6.4	4.3	9.3	2.2	0.8	5.8	2.4	0.3	15.4	4.9	3.4	6.9
1.8	**Have operations audited by independent third parties[b]**	(n = 527)			(n = 333)			(n = 84)			(n = 944)		
	Not audited	75.7	71.5	79.4	32.9	28.0	38.3	3.6	1.2	10.6	58.1	54.7	61.4
	Auditors hired by plant or corporate headquarters	12.9	10.1	16.4	42.7	37.4	48.2	70.2	59.6	79.0	25.3	22.5	28.4
	Customers	7.2	5.1	10.0	37.1	32.0	42.5	66.7	56.0	75.9	19.7	17.2	22.5
	Auditors hired by customers	5.0	3.3	7.6	35.5	30.4	40.8	60.7	49.9	70.6	17.6	15.3	20.3
4.1	**Food safety manager**	(n = 527)			(n = 333)			(n = 84)			(n = 944)		
	Food safety manager on staff	56.9	52.4	61.4	73.9	68.8	78.4	89.3	80.6	94.3	64.0	60.7	67.2

(continued)

[b]Excludes respondents who do not receive beef carcasses or parts of beef carcasses.

[a]Respondents could select multiple responses.

Table 5-11. Meat and Poultry Processing-Only Plants' Responses to Other Selected Questions, by HACCP Size (continued)

Question	Very Small			Small			Large			All Plants		
		95% CI			95% CI			95% CI			95% CI	
	%	Low	High	%	Low	High	%	Low	High	%	Low	High
4.14 Number of USDA or state-inspected plants owned by the company that owns this plant	(n = 527)			(n = 333)			(n = 84)			(n = 944)		
1	92.3	89.5	94.4	63.8	58.5	68.9	6.0	2.5	13.6	79.6	76.9	82.2
2 to 5	4.6	3.0	7.0	23.6	19.3	28.5	29.8	21.0	40.4	12.2	10.2	14.6
6 to 20	0.0	0.0	0.0	6.6	4.4	9.9	26.2	17.9	36.6	3.1	2.2	4.3
21 or more	0.5	0.1	2.2	4.5	2.7	7.3	36.9	27.3	47.7	2.9	2.0	4.1
No response	2.6	1.5	4.4	1.5	0.6	3.5	1.2	0.2	8.0	2.1	1.4	3.3
Total	100.0			100.0			100.0			100.0		

6 Conclusion

The FSIS Recurring Industry Surveys have yielded high response rates and provided FSIS with statistically reliable information on establishment characteristics and sanitation, pathogen reduction, and microbiological testing practices.

The survey of meat and poultry processing-only plants completes the first round of the FSIS Recurring Industry Surveys. The survey procedures used by RTI have yielded high response rates (ranging from 57 percent to 85 percent, depending on plant size, product type, and inspection status) and provided FSIS with statistically reliable information on establishment characteristics and the types of sanitation, pathogen reduction, and microbiological testing practices used by establishments. When combined with agency databases (e.g., the EFD and PBIS), the survey results will provide useful insights on the food safety performance of establishments and will support economic analyses and the transition to risk-based inspection.

FSIS's transition to risk-based inspection and verification testing will result in significant changes in the objectives and content of the agency's information resource development activities. FSIS anticipates that the next round of industry surveys will need to reflect an emphasis on establishments' risk management practices and HACCP plan verification and pathogen control performance. FSIS will need to revise the questionnaires to collect establishment-level information on food safety risk management practices and the effectiveness of FSIS policies.

For the next round of industry surveys, we recommended that FSIS use the same survey approach (mail survey questionnaire with initial and follow-up contacts by telephone), because this approach yielded high response rates for the first round of surveys. Also, we recommend that FSIS work with appropriate

trade associations to revise the questionnaires and to enlist industry's support of the survey effort. For the next survey of processing-only plants, we suggest including FPA in these efforts. In developing the sample design, FSIS may want to consider stratification based on slaughter or processing volume of the establishment, rather than HACCP size, particularly if the agency changes its use of the HACCP size categories.

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Appendix A:
Survey Instrument

Form Approved: OMB No. 0583-0125
Expiration Date: 8-31-06
See OMB Statement on inside cover

FSIS

SURVEY OF MEAT AND POULTRY PROCESSING PLANTS

Place label here.

This survey applies only to the plant listed on this label. Refer to this label as instructed in the survey.

Public reporting burden for this collection of information is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspects of this collection of information, including suggestions for reducing this burden to:

Ronald L. Meekhof
USDA, FSIS
300 12th Street SW, Room 112
Washington, DC 20250
Phone: 202-690-1816
E-mail: Ronald.Meekhof@fsis.usda.gov

An agency may not conduct or sponsor and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number.

If you have questions regarding your rights as a research participant, you may contact RTI's Office of Research Protection toll-free at 866-214-2043.

Instructions

RTI International (RTI)* is conducting a survey of meat and poultry processing plants on behalf of the U.S. Department of Agriculture, Food Safety and Inspection Service (USDA, FSIS). This survey collects information on technologies and food safety practices used in the industry to control pathogens. FSIS needs accurate, up-to-date information to guide policy making and help the agency fulfill its regulatory responsibilities. This survey research will benefit the meat and poultry processing industry by improving the agency's understanding of current industry practices among very small, small, and large processing plants.

The survey will take about 30 minutes to complete. Please try to answer all of the questions. ***We ask that you consult with other members of your organization if you do not know the answer to a particular question.***

For purposes of this survey, we use certain words to have particular meanings. For any word printed in **bold** type in a question, please read the definition provided in the margin near the question.

Please answer all questions as they pertain only to the specific plant named on the mailing label attached to the front of this survey booklet. ***By "plant" we mean all the buildings and facilities used in your processing operations within the general area of the address shown on the mailing label***.

Your participation in this survey is voluntary, and we truly appreciate your help. We will keep your answers strictly ***confidential***. We will report only unidentified data to FSIS. We will not identify any of your answers to FSIS by your name, the name of your company, or your plant. We will also protect your privacy by reporting only aggregate results to the public.

Your participation in this survey is vitally important, and we thank you for your help. As a respondent to the survey, you will receive a summary report of survey results.

We ask that you return the completed survey within 5 business days in the enclosed postage-paid return envelope, or to Justin Taylor, RTI International, P.O. Box 12194, Research Triangle Park, NC 27709.

Questions?
Contact our Survey Helpline

If you have any questions as you complete the survey, please send an e-mail to SurveyFSIS@rti.org or call toll-free at 877-653-1239. We operate the Helpline on weekdays from 9:00 a.m. to 5:00 p.m. EST.

*RTI International is a trade name of Research Triangle Institute.

1 Processing Operations

By **past year** we mean the most recently completed calendar or fiscal year.

By **RTE** we mean a meat or poultry product that is edible without additional preparation by the consumer to achieve food safety, but it may receive additional preparation for taste or appearance purposes (for example, hot dogs and canned soups).

By **NRTE** we mean a meat or poultry product that is not edible without additional preparation by the consumer to achieve food safety (for example, uncooked bacon, portion cuts, and ground product).

By **validated** we mean verified through testing or research that the cooking procedures recommended kill pathogens at a targeted level. This includes validation by a processing authority, use of time-temperature guidelines in the Code of Federal Regulations, and research conducted by this plant or a third party.

1.1 During the **past year**, did this plant conduct any slaughter activities?

1. Yes **Return the uncompleted questionnaire.**
2. No

1.2 Does this plant currently debone, fabricate, grind, or further process meat (beef, veal, pork, lamb, or goat) or poultry (chicken or turkey) products?

1. Yes
2. No **Return the uncompleted questionnaire.**

1.3 What types of inputs are used by this plant? ***Circle all that apply.***

1. Beef
2. Veal
3. Pork
4. Lamb
5. Goat
6. Other meat
7. Chicken
8. Turkey
9. Other poultry

1.4 What types of food products does this plant produce? ***Circle all that apply.***

1. Ready-to-eat **(RTE)** finished products (do not require cooking by consumer for food safety)
2. Not-ready-to-eat **(NRTE)** finished products (require cooking by consumer for food safety)
3. Products that are inputs to further processing by another plant

1.5 Thinking only about not-ready-to-eat **(NRTE)** finished products that include cooking instructions on the label, for approximately how many of such products has this plant **validated** the cooking instructions?

1. This plant does not produce NRTE products
2. This plant's NRTE products do not have cooking instructions
3. None
4. Less than half
5. Half
6. More than half
7. All

By **imported** we mean meat and poultry produced in another country and then transported to the United States.

1.6 To the best of your knowledge, what percentage of raw meat and poultry processed at this plant during the past year was **imported**?

1. None
2. 1 to 9 percent
3. 10 to 24 percent
4. 25 to 49 percent
5. 50 percent or more

1.7 Did this plant receive beef carcasses or parts of beef carcasses containing vertebral columns from cattle 30 months of age and older during the past year?

1. This plant does not receive beef carcasses or parts of beef carcasses
2. Yes
3. No

1.8 Who conducts independent, third-party food safety **audits** of this plant's processing operations? ***Circle all that apply.***

By food safety **audits** we mean review and verification of a plant's operations by an independent, third-party auditor. This does not include government inspections.

1. This plant's processing operations are not audited by independent, third-party auditors
2. Independent, third-party auditors that are hired by this plant or by corporate headquarters
3. Customers of this plant
4. Independent, third-party auditors that are hired by customers of this plant

1.9 What is the routine frequency used by this plant for sanitizing hands or gloves that contact raw meat and poultry? ***Circle only one response.***

1. This plant does not handle raw meat or poultry
2. Always before handling the next piece of product
3. More than once per hour
4. Once per hour
5. One or more times per shift, but less than once per hour
6. No specific routine frequency

By **RTE** we mean a meat or poultry product that is edible without additional preparation by the consumer to achieve food safety, but it may receive additional preparation for taste or appearance purposes (for example, hot dogs and canned soups).

1.10 What is the routine frequency used by this plant for sanitizing hands or gloves that contact ready-to-eat **(RTE)** finished product? ***Circle only one response.***

1. This plant does not produce RTE product
2. Always before handling the next piece of product
3. More than once per hour
4. Once per hour
5. One or more times per shift, but less than once per hour
6. No specific routine frequency

1.11 What is the routine frequency used by this plant for sanitizing product-handling equipment (such as spatulas, forks, or tongs) that contacts ready-to-eat (RTE) finished product? ***Circle only one response.***

1. This plant does not produce RTE product
2. Always before handling the next piece of product
3. More than once per hour
4. Once per hour
5. One or more times per shift, but less than once per hour
6. Daily
7. At the end of each shift
8. At the end of each production lot
9. No specific routine frequency

Questions 1.12 and 1.13 ask about this plant's production of meat products. Questions 1.14 and 1.15 ask about this plant's production of poultry products.

If a product is made with both meat and poultry, include it in Questions 1.12 and 1.13 if the product is mostly meat or Questions 1.14 and 1.15 if the product is mostly poultry.

Your best estimate is acceptable. All answers you give in this survey will be kept strictly confidential.

1.12 What was the total amount of meat products produced by this plant during the past year, by type of meat? ***Check (✓) only one response for each type of meat. If a product is made with more than one type of meat, include the product in the meat type that has the greatest volume.***

Annual Production	1 Beef	2 Pork	3 Other (for example, lamb)
1. None			
2. Less than 10,000 pounds			
3. 10,000 to 49,999 pounds			
4. 50,000 to 99,999 pounds			
5. 100,000 to 249,999 pounds			
6. 250,000 to 499,999 pounds			
7. 500,000 to 999,999 pounds			
8. 1,000,000 to 9,999,999 pounds			
9. 10,000,000 pounds or more			

1.13 Complete the table below by entering the percentage of total pounds of production during the past year by type of HACCP product category, for each type of meat. ***The total for each column should sum to 100 percent. See the table on page 5 for examples of each HACCP product category.***

HACCP Product Category	1 Beef	2 Pork	3 Other
a. Raw, ground	☐☐☐	☐☐☐	☐☐☐
b. Raw, not ground, primal cuts	☐☐☐	☐☐☐	☐☐☐
c. Thermally processed, commercially sterile	☐☐☐	☐☐☐	☐☐☐
d. Not heat treated, shelf stable	☐☐☐	☐☐☐	☐☐☐
e. Heat treated, shelf stable	☐☐☐	☐☐☐	☐☐☐
f. Fully cooked, not shelf stable	☐☐☐	☐☐☐	☐☐☐
g. Heat treated but not fully cooked, not shelf stable	☐☐☐	☐☐☐	☐☐☐
h. Secondary inhibitors, not shelf stable	☐☐☐	☐☐☐	☐☐☐
TOTAL	100%	100%	100%

Example Products*
a. **Raw, ground—**ground beef, ground turkey, fresh pork sausage, other raw sausages, preformed raw patties
b. **Raw, not ground, primal cuts—**whole cuts and steaks, whole birds, tray-packed poultry, breaded cuts, trimmings, mechanically tenderized cuts
c. **Thermally processed, commercially sterile—**canned beef stew, canned pasta with meat or poultry, canned chili, baked beans with ham, canned chicken and dumplings, canned soups, canned Vienna sausages, canned luncheon meat
d. **Not heat treated, shelf stable—**fermented sausages, dry sausages, semi-dry sausages, summer sausage, pepperoni, dry salami, uncooked vinegar pickled product
e. **Heat treated, shelf stable—**jerky, snack sticks, popped pork skins, cooked vinegar pickled product
f. **Fully cooked, not shelf stable—**roast beef, hot dogs, luncheon meats, beef or chicken pot pie, burritos, chicken salad
g. **Heat treated but not fully cooked, not shelf stable—**partially cooked chicken or meat patties, smoked sausage, uncooked bacon
h. **Secondary inhibitors, not shelf stable—**pastrami, corned beef, cured beef tongue, country-style ham, prosciutto

* Some plants may categorize products differently than shown above. Refer to your HACCP plan to determine the HACCP product category for the products produced by this plant.

1.14 What was the total amount of poultry products produced by this plant during the past year, by type of poultry? ***Check (✓) only one response for each type of poultry. If a product is made with more than one type of poultry, include the product in the poultry type that has the greatest volume.***

Annual Production	1 Chicken	2 Turkey	3 Other (for example, duck)
1. None			
2. Less than 10,000 pounds			
3. 10,000 to 49,999 pounds			
4. 50,000 to 99,999 pounds			
5. 100,000 to 249,999 pounds			
6. 250,000 to 499,999 pounds			
7. 500,000 to 999,999 pounds			
8. 1,000,000 to 9,999,999 pounds			
9. 10,000,000 pounds or more			

1.15 Complete the table below by entering the percentage of total pounds of production during the past year by type of HACCP product category, for each type of poultry. ***The total for each column should sum to 100 percent. See the table on page 5 for examples of each HACCP product category.***

HACCP Product Category	1 Chicken	2 Turkey	3 Other
a. Raw, ground	☐☐☐	☐☐☐	☐☐☐
b. Raw, not ground, primal cuts	☐☐☐	☐☐☐	☐☐☐
c. Thermally processed, commercially sterile	☐☐☐	☐☐☐	☐☐☐
d. Not heat treated, shelf stable	☐☐☐	☐☐☐	☐☐☐
e. Heat treated, shelf stable	☐☐☐	☐☐☐	☐☐☐
f. Fully cooked, not shelf stable	☐☐☐	☐☐☐	☐☐☐
g. Heat treated but not fully cooked, not shelf stable	☐☐☐	☐☐☐	☐☐☐
h. Secondary inhibitors, not shelf stable	☐☐☐	☐☐☐	☐☐☐
TOTAL	100%	100%	100%

1.16 For each practice listed below, check the response that applies for the majority of products produced by this plant. ***Check (✓) only one response in each row of the table below.***

Practices	1 This plant uses the practice now	2 This plant expects to begin using the practice within 1 to 3 years	3 This plant does not use and does not expect to use the practice within 1 to 3 years
a. Stipulates practices for controlling pathogens in purchasing specifications for raw meat and poultry			
b. Stipulates practices for controlling chemical residues (e.g., drugs or growth hormones) in purchasing specifications for raw meat and poultry			
c. Treats drains with sanitizers for pathogen control			
d. Uses chemical sanitizers, heat, or hot water for hand tools such as knives, spatulas, or tongs used *during operations*			
e. Rotates sanitizing chemicals on an annual or more frequent basis			
f. Treats food contact equipment and surfaces to remove biomatter *during operations*			
g. Uses antimicrobial treatment for food contact equipment *during operations*			
h. Has **written policies and procedures** for recalling product			
i. Has **written policies and procedures** to protect against bioterrorism			
j. Has **written policies and procedures** to control the use of **hazardous chemicals**			
k. Identifies and tracks products, by production lot, backward to specific suppliers of raw meat and/or poultry			
l. Identifies and tracks products, by production lot, forward to specific buyers (not consumers) of its products			

By **written policy and procedures** we mean a HACCP plan, SSOP, prerequisite program, or other written document that describes the plant's standard operating procedures.

By **hazardous chemicals** we mean substances such as pesticides, detergents, sanitizers, and lubricants.

1.17 For each technology listed below, check the response that applies for the majority of products produced by this plant. ***Check (✓) only one response in each row of the table below.***

Technologies	1 This plant uses the technology now	2 This plant expects to begin using the technology within 1 to 3 years	3 This plant does not use and does not expect to use the technology within 1 to 3 years
a. Company-owned lab (on-site or at another plant) for microbiological testing			
b. Bioluminescent testing system for preoperative sanitation checks			
c. Conveyor belts made of materials designed to prevent bacterial growth			
d. Metal detection equipment			
e. Irradiation equipment			
f. High pressure processing			
g. Infrared technology			
h. Application of antimicrobial chemicals			
i. Other types of pasteurization			

1.18 Does this plant conduct microbiological testing using either its own lab or an independent commercial lab?

1. Yes
2. No **Go to Question 2.9 on page 13**

2 Microbiological Testing Practices

2.1 Which methods of microbiological testing are used by this plant, by either its own lab or an independent commercial lab, to test raw meat before fabrication, grinding, or further processing? ***Circle all that apply.***

1. This plant does not receive raw meat **Go to Question 2.3**
2. This plant does not test raw meat **Go to Question 2.3**
3. Traditional cultural methods
4. Enzyme linked immunoassay (ELISA)
5. Polymerase chain reaction (PCR)
6. Other rapid methods
7. Do not know testing method

2.2 For each organism listed below, how frequently is microbiological testing done on raw meat before fabrication, grinding, or further processing? ***Check (✓) only one response in each row of the table below.***

Organisms	Frequency of Microbiological Testing on Raw Meat								
	1 **Do not test**	2 **Less than Once per Month**	3 **Once per Month**	4 **More than Once per Month**	5 **Once per Week**	6 **More than Once per Week**	7 **Once per Day**	8 **Once per Shift**	9 **More than Once per Shift**
a. Aerobic plate count (APC)									
b. Total plate count (TPC)									
c. Total coliforms									
d. *Salmonella* species									
e. Generic *E. coli*									
f. *E. coli* O157:H7									
g. *Staphylococcus aureus*									
h. *Listeria* species									
i. *Listeria monocytogenes*									
j. Yeasts and molds									
k. *Clostridium botulinum*									

2.3 Which methods of microbiological testing are used by this plant, by either its own lab or an independent commercial lab, to test raw poultry before deboning, grinding, or further processing? ***Circle all that apply.***

1. This plant does not receive raw poultry
   Go to Question 2.5
2. This plant does not test raw poultry
   Go to Question 2.5
3. Traditional cultural methods
4. Enzyme linked immunoassay (ELISA)
5. Polymerase chain reaction (PCR)
6. Other rapid methods
7. Do not know testing method

2.4 For each organism listed below, how frequently is microbiological testing done on raw poultry before deboning, grinding, or further processing? ***Check (✓) only one response in each row of the table below.***

Organisms	Frequency of Microbiological Testing on Raw Poultry								
	1 **Do not test**	2 **Less than Once per Month**	3 **Once per Month**	4 **More than Once per Month**	5 **Once per Week**	6 **More than Once per Week**	7 **Once per Day**	8 **Once per Shift**	9 **More than Once per Shift**
a. Aerobic plate count (APC)									
b. Total plate count (TPC)									
c. Total coliforms									
d. *Salmonella* species									
e. *Salmonella* Enteritidis									
f. *Campylobacter jejuni*									
g. Generic *E. coli*									
h. *Staphylococcus aureus*									
i. *Listeria* species									
j. *Listeria monocytogenes*									
k. Yeasts and molds									
l. *Clostridium botulinum*									

Answer Question 2.5 if this plant produces ready-to-eat (RTE) finished product (you circled "1" for Question 1.4); otherwise, go to Question 2.7.

By **RTE** we mean a meat or poultry product that is edible without additional preparation by the consumer to achieve food safety, but it may receive additional preparation for taste or appearance purposes (for example, hot dogs and canned soups).

2.5 Which methods of microbiological testing are used by this plant, by either its own lab or an independent commercial lab, to test ready-to-eat **(RTE)** finished product after it is packaged? ***Do not include testing of product contact surfaces. Circle all that apply.***

1. This plant does not test RTE finished product after it is packaged **Go to Question 2.7**
2. Traditional cultural methods
3. Enzyme linked immunoassay (ELISA)
4. Polymerase chain reaction (PCR)
5. Other rapid methods
6. Do not know testing method

For each organism listed below, how frequently is microbiological testing done on **RTE** finished product for the majority of products produced by this plant? ***Check (✓) only one response in each row of the table below***.

Organisms	Frequency of Testing on RTE Finished Product after It Is Packaged								
	1 **Do not test**	2 **Less than Once per Month**	3 **Once per Month**	4 **More than Once per Month**	5 **Once per Week**	6 **More than Once per Week**	7 **Once per Day**	8 **Once per Shift**	9 **More than Once per Shift**
a. Aerobic plate count (APC)									
b. Total plate count (TPC)									
c. Total coliforms									
d. *Salmonella* species									
e. *Salmonella* Enteritidis									
f. *Campylobacter jejuni*									
g. Generic *E. coli*									
h. *E. coli* O157:H7									
i. *Staphylococcus aureus*									
j. *Listeria* species									
k. *Listeria monocytogenes*									
l. *Listeria*-like organisms									
m. Yeasts and molds									
n. *C. perfringens*									
o. *Clostridium botulinum*									

Answer Question 2.7 if this plant produces not-ready-to-eat (NRTE) finished product (you circled "2" for Question 1.4); otherwise, go to Question 2.9.

By **NRTE** we mean a meat or poultry product that is not edible without additional preparation by the consumer to achieve food safety (for example, uncooked bacon, portion cuts, and ground product).

2.7 Which methods of microbiological testing are used by this plant, by either its own lab or an independent commercial lab, to test not-ready-to-eat **(NRTE)** finished product after it is packaged? ***Circle all that apply.***

1. This plant does not test NRTE finished product after it is packaged **Go to Question 2.9**
2. Traditional cultural methods
3. Enzyme linked immunoassay (ELISA)
4. Polymerase chain reaction (PCR)
5. Other rapid methods
6. Do not know testing method

For each organism listed below, how frequently is microbiological testing done on **NRTE** finished product for the majority of products produced by this plant? ***Check (✓) only one response in each row of the table below.***

Organisms	Frequency of Testing on NRTE Finished Product after It Is Packaged								
	1 **Do not test**	2 **Less than Once per Month**	3 **Once per Month**	4 **More than Once per Month**	5 **Once per Week**	6 **More than Once per Week**	7 **Once per Day**	8 **Once per Shift**	9 **More than Once per Shift**
a. Aerobic plate count (APC)									
b. Total plate count (TPC)									
c. Total coliforms									
d. *Salmonella* species									
e. *Salmonella* Enteritidis									
f. *Campylobacter jejuni*									
g. Generic *E. coli*									
h. *E. coli* O157:H7									
i. *Staphylococcus aureus*									
j. Yeasts and molds									
k. *Clostridium botulinum*									

2.9 Which methods of testing are used by this plant, by either its own lab or an independent commercial lab, to test samples from product contact surfaces, other equipment surfaces, and facility surfaces? ***Circle all that apply.***

1. This plant does not test samples from product contact surfaces, other equipment surfaces, or facility surfaces **Go to Question 3.1 on page 15**
2. Traditional cultural methods
3. Adenosine trisodium phosphate (ATP) bioluminescence
4. Enzyme linked immunoassay (ELISA)
5. Polymerase chain reaction (PCR)
6. Other rapid methods
7. Do not know testing method

2.10 How frequently does this plant's sampling of product contact surfaces, other equipment surfaces, and/or facility surfaces usually include testing for *Listeria* species? ***Circle only one response.***

1. Do not test for *Listeria* species
2. Less than once per month
3. Once per month
4. More than once per month
5. Once per week
6. More than once per week
7. Once per day
8. Once per shift
9. More than once per shift
10. No specific routine frequency

Answer Question 2.11 if this plant produces ready-to-eat (RTE) finished product (you circled "1" for Question 1.4).

Answer Question 2.12 if this plant produces not-ready-to-eat (NRTE) finished product (you circled "2" for Question 1.4).

2.11 How frequently is sampling done for each ready-to-eat (RTE) area listed below? ***Check (✓) only one response in each row of the table below***.

RTE Areas Sampled	Frequency of Sampling of RTE Areas									
	1 **Do not sample**	2 **Less than Once per Month**	3 **Once per Month**	4 **More than Once per Month**	5 **Once per Week**	6 **More than Once per Week**	7 **Once per Day**	8 **Once per Shift**	9 **More than Once per Shift**	10 **No Specific Routine Fre-quency**
a. Product contact surfaces										
b. Equipment surfaces that do not come into direct contact with product										
c. Walls, floors, overhead structures, and drains										

2.12 How frequently is sampling done for each not-ready-to-eat (NRTE) area listed below? ***Check (✓) only one response in each row of the table below***.

NRTE Areas Sampled	Frequency of Sampling of NRTE Areas									
	1 **Do not sample**	2 **Less than Once per Month**	3 **Once per Month**	4 **More than Once per Month**	5 **Once per Week**	6 **More than Once per Week**	7 **Once per Day**	8 **Once per Shift**	9 **More than Once per Shift**	10 **No Specific Routine Fre-quency**
a. Product contact surfaces										
b. Equipment surfaces that do not come into direct contact with product										
c. Walls, floors, overhead structures, and drains										

3 Employee Training

By **food safety training** we mean training to teach concepts and practices for handling food to control biological, chemical, and physical hazards.

By **newly hired** we mean any production employee who has worked at the plant less than 1 month.

By **formal food safety course** we mean a designed course of study that uses prepared materials and follows a specified outline of content.

By **continuing food safety training** we mean training provided to employees periodically that is designed to refresh or extend the initial food safety training the plant provides to new hires.

By **HACCP** we mean Hazard Analysis and Critical Control Points. HACCP training teaches principles and practices of a formal seven-step method for promoting food safety in food manufacturing processes.

3.1 What **food safety training** is provided for **newly hired** production employees of this plant? ***Circle all that apply.***

1. No food safety training for new hires
2. Written or audio visual food safety training materials are given to new hires
3. Informal, unscheduled on-the-job food safety training
4. Scheduled on-the-job food safety training conducted by plant personnel
5. **Formal food safety course** conducted by plant personnel
6. Formal food safety course conducted by professional trainers

3.2 What **continuing food safety training** is provided for production employees of this plant? ***Circle all that apply.***

1. No continuing food safety training for employees
2. Written or audio visual refresher food safety materials are given to employees
3. Continuing informal on-the-job food safety training
4. Scheduled on-the-job refresher food safety training conducted by plant personnel
5. Formal, periodic refresher course work conducted by plant personnel
6. Formal, periodic refresher course work conducted by professional trainers

3.3 Approximately how many production and retail employees currently working at this plant have completed formal **HACCP** training (for example, a 3- to 5-day course)?

1. None
2. 1 to 3 employees
3. 4 to 9 employees
4. 10 to 20 employees
5. More than 20 employees

4 Plant Characteristics

By **plant** we mean the buildings and facilities used in your processing operations within the general area of the address shown on the mailing label.

By **renovated** we mean major reconstruction or redesign of at least 25 percent of the plant.

4.1 In what calendar year was this **plant** built? If this plant was recently **renovated,** enter the calendar year for the renovation. ***If the plant has multiple sections, provide the year for the newest section.***

☐☐☐☐

4.2 What is the approximate total square footage of the production space for this **plant**?

☐,☐☐☐,☐☐☐ square feet

4.3 Calculated as a percentage of the total square footage given in Question 4.2, what is the approximate percentage of this plant's production space by age category? ***Your responses should sum to 100 percent.***

a. Under 5 years old ☐☐☐%

b. 5 years to just under 20 years old ☐☐☐%

c. 20 years old or more ☐☐☐%

100%

4.4 How many days per week does this plant usually process meat and/or poultry?

1. Less frequently than once a week
2. 1 or 2 days per week
3. 3 or 4 days per week
4. 5 or 6 days per week

4.5 How many processing shifts does this plant usually operate per day? ***Do <u>not</u> include cleanup shifts.***

1. One
2. Two
3. Three

4.6 How many cleanup shifts does this plant operate daily? This includes cleanups conducted by production and processing personnel, sanitation crews, and contractors.

1. None
2. Cleanup shift is <u>not</u> operated on a daily basis
3. One
4. Two
5. Three

By **full-time equivalent** we mean a count of full-time and part-time employees where part-time employees are reported as an appropriate fraction of a full-time position.

4.7 For the meat or poultry product with the highest production volume, what is the average lot size?

☐☐☐,☐☐☐ pounds

4.8 Approximately how many people are employed at this plant? ***Provide your response in full-time equivalents.***

☐☐☐,☐☐☐ **Full-time equivalents**

4.9 Approximately how many people employed at this plant work in meat or poultry processing? ***Provide your response in full-time equivalents. If this plant only processes meat and/or poultry and does no other food manufacturing, enter the same number as in Question 4.8.***

☐☐☐,☐☐☐ **Full-time equivalents**

4.10 Does this plant have a person on staff whose primary responsibility is to manage food safety activities at the plant (that is, a food safety manager)?

1. Yes
2. No **Go to Question 4.12**

4.11 Approximately what percentage of this plant's food safety manager's time is devoted to managing food safety activities at the plant?

1. 1 to 24 percent
2. 25 to 49 percent
3. 50 to 74 percent
4. 75 to 99 percent
5. 100 percent

4.12 Does this plant have a quality control/quality assurance department?

1. Yes
2. No **Go to Question 4.14**

4.13 Approximately how many employees at this plant work in the plant's quality control/quality assurance department? ***Provide your response in full-time equivalents.***

☐☐☐ **Full-time equivalents**

4.14 How many USDA or state-inspected plants, including this plant, are owned by the company that owns this plant?

1. 1
2. 2 to 5
3. 6 to 20
4. 21 or more

4.15 In addition to meat and poultry processing that is inspected by USDA or state inspectors, what other types of activities are conducted at this plant's location? ***Circle all that apply.***

By **custom processing** we mean the processing of meat or poultry products that are not owned by the plant. Examples include outside contracting and private labeling.

1. In-store retail sales
2. Mail order or Internet sales
3. Restaurant
4. Catering
5. Game processing
6. **Custom processing** of meat or poultry that is inspected by USDA or state inspectors
7. Custom processing of meat or poultry that is not inspected by USDA or state inspectors
8. Other (specify) _____
9. None of the above

4.16 What was the approximate value of total plant sales revenue for the most recently completed fiscal year? Include revenue from custom processing and other activities conducted at this location (for example, retail sales).

All answers you give in this survey will be kept strictly confidential.

1. Under $249,999
2. $250,000 to $499,999
3. $500,000 to $1.49 million
4. $1.5 million to $2.49 million
5. $2.5 million to $24.9 million
6. $25 million to $49.9 million
7. $50 million to $99.9 million
8. $100 million to $249.9 million
9. $250 million to $499.9 million
10. $500 million to $999.9 million
11. $1 billion or more

Appendix B:

Trade Association Correspondence and Materials

Announcement in AAMP Newsletter (Capitol Line-Up)
August 3, 2005

FSIS Announces Processor Survey: The week of August 8, 2005, FSIS will be sending selected plants a brochure along with a letter describing the Processor Survey. We encourage processors to take part in the survey if they are selected. Additional information is available at www.aamp.com.

Announcement in NAMP Newsletter (News*Fax*)
August 11, 2005

Pathogen Control Survey Goes Out This Week: On behalf of FSIS, scientific research firm RTI International (RTI) is conducting a survey of meat processors to gather information on practices and technologies used to control pathogens. FSIS wants to gather this information in order to avoid unnecessary or inefficient regulation. If you have been selected to participate in this survey, you should receive information within the next week. Participation is voluntary, but we strongly encourage you to participate if your plant is selected, so that the results will be meaningful and statistically valid. The survey is confidential. FSIS will not be able to see the results for individual plants, only the aggregate results. If you have any questions, contact Ann Rasor, (800) 368-3043 or arasor@namp.com.

E-mail from National Turkey Federation to Its Membership
August 11, 2005

As you know, RTI will be conducting another survey for the Food Safety and Inspection Service. This survey is designed to compile a list current industry practices and technologies that are in place to promote food safety. RTI has conducted similar surveys of the meat and poultry industry previously and will be rolling this survey out next week. As with the most recent survey, the data collected will be confidential and results will only be reported in a format that disallows identifying any single establishment.

The survey is expected to take only 30 minutes to complete and should be returned within 5 business days. The information captured from this survey will be very valuable and we strongly encourage you to complete and return the survey to RTI. Attached is the brochure from RTI explaining the survey in more detail.

If you have any question pertaining to the survey, please feel free to contact me.

Thank you,

Michael L. Rybolt

E-mail from American Meat Institute to Its Membership
August 10, 2005

TO: AMI Members
FROM: Lynn Morrissette
SUBJECT: RTI Survey of Meat and Poultry Processors

The Food Safety and Inspection Service (FSIS or the agency) has once again partnered with RTI International to conduct a survey of the meat and poultry industries. RTI is in the process of contacting meat and poultry processing establishments and asking for their participation in a new survey regarding current practices and technologies in use for controlling pathogens. The agency will use this data to guide it in future policymaking.

Attached is a brochure that provides further information on RTI and the survey process. Participation in the survey is voluntary. However, establishments that participate in the survey will receive a copy of the final report summarizing pathogen control measures in use in the industry today. Individual responses will be kept confidential. Agreeing to participate in the survey does not mean you must answer all survey questions. AMI has reviewed the survey and provided RTI with suggested changes. We encourage you to participate in this survey if you are contacted.

Please feel free to contact me at (202) 587-4237 with any questions you may have about the survey.

cc: J. Boyle
M. Dopp
J. Hodges
S. Seward
R. Huffman

Appendix C:

FSIS Prenotice Letter and Information Brochure

[FSIS letterhead]

(Date)

Plant Manager
Plant Name
Street Address
City, State Zip

Dear (Plant Manager):

The Food Safety and Inspection Service (FSIS) is conducting a survey, and we are asking for your help.

The purpose of the survey is to add to our understanding of the current practices and technologies used in the meat and poultry processing industry to control pathogens and promote food safety. The information from this survey will help ensure that FSIS develops regulations that are science-based and efficient in improving food safety and that also minimize the potential economic burden on establishments such as yours. The enclosed brochure provides additional information on the survey.

Your establishment is among the 1,700 establishments that were selected to participate in the survey. Without your response, the survey results will not properly reflect industry practices. Therefore, your help is crucial. I am requesting that you—or someone that you designate at your establishment—complete the survey. ***It is important that all selected establishments, including those that are state-inspected and those that are very small, complete the survey.***

FSIS has contracted with RTI International (RTI) to develop and conduct this nationwide survey. A representative from RTI will call you soon to identify the person at your plant who should complete the survey. RTI will then send this individual the survey to complete (the survey is <u>not</u> enclosed).

As RTI has done with other surveys it has conducted for Federal agencies, RTI will keep individual responses to this survey completely confidential. Neither FSIS employees nor others will be able to identify the results for a particular establishment. The survey results will be reported only in summary form so that individual responses or respondents cannot be identified. Those who respond to the survey will receive a summary report of the survey results.

If you have any questions, please do not hesitate to contact Dr. Ronald Meekhof, the Agency's principal economist for this survey, at (202) 690-1816 or at Ronald.Meekhof@fsis.usda.gov.

FSIS appreciates your help in this important endeavor.

Sincerely,

Barbara Masters

Dr. Barbara J. Masters
Administrator

Enclosure

Q. What is this study about?

A. This new survey, sponsored by the Food Safety and Inspection Service (FSIS), is designed to collect accurate, up-to-date information about current practices and technologies used by meat and poultry processing plants to control pathogens and promote food safety. The survey also asks questions about pathogen testing practices, food safety training for employees, and plant characteristics. FSIS has contracted with RTI International (RTI) to develop and conduct this nationwide survey.

Q. Why should I complete this survey?

A. Accurate, up-to-date information is needed by FSIS to help the agency avoid unnecessary or inefficient regulation of your industry. The information you provide will help FSIS meet its regulatory responsibilities with the minimum burden possible for industry.

Your participation in the survey is voluntary, but to ensure that survey results are statistically representative for the whole industry, we cannot substitute another plant in your place if you decide not to participate. Without your help, data gathered by this survey could be incomplete and misleading. It is important that all selected plants, including those that are state-inspected and those that are very small, complete the survey.

All plants that respond to the survey will receive a summary report of survey results. By participating in the survey, you have an opportunity to be one of the first in your industry to review summary information about current pathogen control practices and technologies used by plants in your industry.

Q. How long will it take for me to complete the survey?

A. The survey should take about 30 minutes to complete.

Q. When should I return my completed survey?

A. Please return the completed questionnaire within 5 business days.

Q. How was I selected to participate?

A. Your plant was selected as part of a sample of all meat and poultry processing plants in the United States, using methods to ensure statistically valid results. That's one reason your response to the survey is so important. Without your response, the sampling methods used to select your plant could fail to produce information that accurately represents the industry.

Q. Is the survey confidential?

A. Absolutely. As it has for other surveys it conducts for federal agencies, RTI will keep individual responses to this survey completely confidential. Neither FSIS nor others will be able to identify the survey results for a particular plant. The results of the survey will be reported only in summary form so as to not identify individual responses or respondents.

Q. Who is RTI International?*

A. RTI International (RTI) is a not-for-profit contract research institute located in North Carolina's Research Triangle Park. With an established history of conducting scientific research for many government agencies, RTI is a proven leader in statistically valid survey research. RTI will conduct the survey, tabulate data collected, and summarize survey results in a report to FSIS.

Q. How can I find out more about this survey?

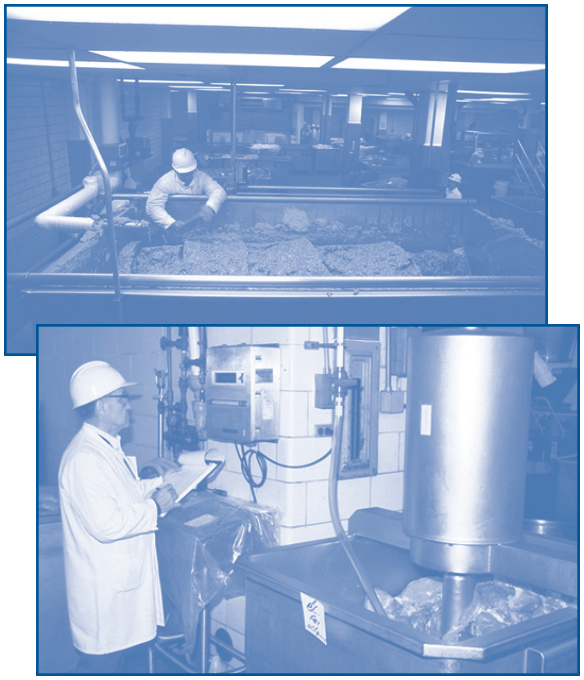
A. For further information about this survey, please contact one of the following individuals:

Ronald L. Meekhof
USDA, FSIS
300 12th Street S.W.
Annex Building, Room 112
Washington, DC 20250-3700
Telephone: (202) 690-1816
E-mail: Ronald.Meekhof@fsis.usda.gov

Justin Taylor
RTI International
3040 Cornwallis Road
P.O. Box 12194
Research Triangle Park, NC 27709
Telephone: (877) 653-1239 (a toll-free #)
E-mail: SurveyFSIS@rti.org

*RTI International is a trade name of Research Triangle Institute

Survey of Meat and Poultry Processing Plants on Current Practices and Technologies for Controlling Pathogens



FSIS

Appendix D:
Thank-You/ Reminder Postcard

(Date)

Dear [Respondent Name]:

Recently, you received a survey on current practices and technologies used in the meat and poultry processing industry for controlling pathogens. RTI International (RTI) is conducting this survey for FSIS. If you have already returned the survey, we would like to thank you. Your assistance is very much appreciated.

If you have not yet returned the survey, please complete the survey and mail it back to us using the return envelope that was included with the survey. It is important that all selected establishments, including those that are state-inspected and those that are very small, complete the survey. The information that you provide will help ensure that FSIS develops regulations that are science-based and efficient and that minimize the potential economic burden on establishments such as yours.

If you have any questions, please contact me toll-free at 1-877-653-1239 or SurveyFSIS@rti.org. Thank you again.

Sincerely,

Justin Taylor