



**Partnership for Food Protection**  
**Interactive Information Technology Work Group (IIT WG)**

Year 1 Summary Report

July 23, 2010

# Introduction

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The Partnership for Food Protection Interactive Information Technology Work Group (IIT WG) was one of the work groups formed out of the “Gateway to Food Protection” National Meeting held in the summer of 2008 in St. Louis. The IIT WG convened its first face-to-face meeting in late May 2009 to establish goals and tasks to be accomplished for the August 2010 National Meeting. The work group participants created three main project groups to meet its goals: Systems Assessment, Data Elements, and Business Needs. What follows is a summary report from each of these three project groups is contained. These results are to be presented at the August 2010 50 State Workshop in Denver, CO.

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# Systems Assessment Team

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## Introduction

One of the first-year goals of the Partnership for Food Protection Integrated Information Technology Work Group was to determine what electronic (computer/web-based) systems are in place now for food safety and food regulatory purposes, what they do, how they are being used, and where there may be gaps or room for improvement. To meet that goal, the Systems Assessment Team (SAT) undertook two projects: a systems assessment and a gap assessment. For the first project, the SAT chose seven national systems for the assessment that related to inspections, recalls, laboratory information, and collaboration. An assessment tool of 33 questions was created to collect basic system information and to facilitate summarizing and comparing the systems. The systems were divided among the members of the SAT, who then identified a system expert to help complete the assessment. The assessments were combined into a single table and reviewed by the entire team.

The gap assessment project was initiated by the Business Needs team of the IIT WG. The Business Needs team conducted a survey of local, state, and federal agency food officials to identify the electronic tools and systems currently in use by their agency staff and to identify the types of information, tools and systems they need or want but do not have. The Business Needs team shared the results with the SAT to compare what survey respondents needed and wanted with the services provided by the assessed systems. Through this comparison, the SAT identified where needs matched existing systems and where there were gaps.

## Team Members

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## Project 1: Systems Assessment

To understand existing electronic systems that gather and store food safety and regulatory-related information

## Methods

1. Identified seven electronic systems to assess.
2. Assigned systems to team member “leads”.
3. System leads identified system experts from whom to obtain information about the system.
4. Created a list of assessment questions in the form of a systems assessment table.
5. Completed the systems assessment table during January - February 2010.

## Findings/Conclusions

Seven electronic systems were chosen to be assessed. These included systems in the areas of inspections, recalls, laboratory data, and collaboration.

### *Inspection Systems:*

1. eSAF: The Electronic State Access to FACTS (eSAF) is an FDA system. eSAF is a secure computer web based system designed for entering state inspectional data that is integrated with the FDA's online automated Field Accomplishments and Compliance Tracking Systems (FACTS). The FDA and States that do contract inspections for FDA have access to this system.

### *Recall Systems:*

2. North Carolina Recall System: The North Carolina Department of Agriculture & Consumer Services' Recall Effectiveness System is a web-based system for tracking the removal of recalled products and provides real-time situational awareness of a recall event. Any governmental regulatory official can request access to the system.
3. Recall Enterprise System (RES): The RES is a centralized database for all FDA recall activity designed to reduce the time it takes to collect, process, and track recall information. FDA has sole access to this system.
4. Reportable Food Registry (RFR): The Reportable Food Registry (RFR) is FDA's electronic portal for Industry to report when there is reasonable probability that an article of food will cause serious adverse health consequences. States and Locals can use this system to report adulterated foods, too.

### *Laboratory Systems:*

5. eLEXNET: FDA's Electronic Laboratory Exchange Network (eLEXNET) is an Internet-based data exchange system that allows Federal, State, and local laboratories to electronically share food safety sample and test data for various food-borne pathogens. Any governmental regulatory official can request access to eLEXNET although access to certain data is restricted to laboratory and other authorized personnel only.
6. PulseNet: PulseNet is a national network of public health and food regulatory agency laboratories coordinated by the Centers for Disease Control and Prevention (CDC). The network consists of state health departments, local health departments, and federal agencies (CDC, USDA/FSIS, FDA). PulseNet maintains a database of pulsed-field gel electrophoresis (PFGE) patterns of various pathogens and allows for a rapid comparison of patterns for outbreak cluster identification.

### *Collaboration Systems:*

7. FoodSHIELD: FoodSHIELD is a web-based system for communication, coordination, education, and training among the nation's food and agriculture sectors. This secure system allows public health and food regulatory officials at the local, state, and federal levels across the nation to work together by using tools such as document-sharing and hosting web meetings. FoodSHIELD is a product of the National Center for Food Protection and Defense at the University of Minnesota. Any governmental official can request access to the system.

A 33-question assessment tool was created in Microsoft Excel®. The tool was designed to identify how users access each system; what types of data are collected; how data is entered, viewed, saved, and exported; whether data can be searched and reports can be generated; what types of training or user guides are available; and other characteristics such as web accessibility, mapping/GIS functionality, associated costs, and interoperability with other electronic systems.

See the Appendix for results of the assessment:

- Table 1 contains the completed systems assessment tool for all seven systems. The assessment information was current as of March 1, 2010. Answers and characteristics of systems may have changed since the assessment was completed.
- Table 2 describes who can enter information into each of the system based on their affiliation: federal, state, and local officials; industry members; or the public. This information was current as of March 1, 2010; answers and characteristics of systems may have changed since the assessment was completed.
- Table 3 describes who can access or retrieve information once it has been put into each system based on their affiliation: federal, state, and local officials; industry members; or the public. This information was current as of March 1, 2010; answers and characteristics of systems may have changed since the assessment was completed.

## **Project 2: Gap Assessment Results**

To use the results of the Business Needs survey to identify how well the assessed systems meet the needs of those working in food safety and regulatory positions and where there are gaps.

### **Methods**

1. Obtained results of the survey from the Business Needs project team.
2. Identified the questions in the survey that pertain to the current state and what was desired or needed in the following areas: types of information collected, how that information is used, and how that information is shared; electronic systems used now and those desired; future interest in an integrated system or systems.
3. Assessed how well current systems meet the stated needs and identified gaps and recommendations.

### **Findings/Conclusions**

#### *Demographics and General Characteristics*

- The Business Needs survey had 108 respondents: 57 from Local agencies, 36 from State agencies, 12 from Federal agencies, and 3 from Other affiliation/no response.
- Almost all respondents said their agencies track some sort of inspection information electronically (93% locals, 96% states, 100% feds).
- Establishment data is the most common type of information that is tracked electronically (87% of respondents; 84% local, 90% state, 100% federal). Many locals are also tracking violation data and permit/license data (84%). Federal respondents are also tracking violation data and status of inspections (100%).
- The systems that are in place at the agencies are primarily not web-based: 43% of Local, 32% of State, and 25% of Federal respondents indicated their systems could be accessed via the Internet.
- Most of the systems are stand-alone and not connected to other electronic systems or databases either within the same agency or among other agencies. Only 27% of Local, 32% of State, and 25% of Federal respondents indicated their systems are linked to other systems *within* their organization. And 21% of Local, 3% of State, and 0% of Federal respondents indicated their systems are linked to other systems *outside* of their organization. This lack of connectivity may be because these systems were likely to have been built to meet specific program or internal agency needs, such as licensing and inspections. Costs, legal constraints, and data ownership issues were cited as obstacles to improving integration.

### *Current Use of Assessed Systems*

- The survey asked respondents about current use of five of the seven assessed systems (RES and the North Carolina Recall system were not included). A large proportion of the respondents were not using any of these five systems (43%). A higher percentage of Locals are not using any of the systems (62%) compared with States (28%) and Federals (0%). *Note:* there were only 5 Federal respondents who answered this question.
- Of those that are using the systems,
  - Locals are using PulseNet (8%) and FoodSHIELD (5%), but not eLEXNET, eSAF, or RFR (0%);
  - States are using FoodSHIELD (50%), eSAF (37%), PulseNet (31%), eLEXNET (28%), and RFR (19%); and
  - Federals are using RFR (60%), eSAF (40%), eLEXNET (20%), FoodSHIELD (20%), and PulseNet (20%).

### *Gap Assessment of Needs Compared to Assessed Systems*

#### What do they want to track?

When asked what respondents would need or want to track electronically, the most common response was Foodborne illness data (41%), followed by Photos (39%), Supply chain information (firm information one step back and one step forward) (38%), and Corrective actions (36%).

Do any of the seven assessed systems track this information?

- Foodborne illness data: No. PulseNet stores PFGE images (as .tif files) from isolates and demographic information, including those of human cases, but does not store other data such as symptom and exposure history. RFR tracks illnesses associated with a recalled product, but only yes/no; it is not intended to store foodborne illness information. There are likely systems that track foodborne illness data that were not included in this assessment (CDC's NORS or OutbreakNet)
- Photos: Yes. eLEXNET and FoodSHIELD have the ability to upload and store image files to collaborative web-based sharing spaces. However, it does not appear that the systems that collect laboratory, inspection, or recall information have the ability to store photo files that would be linked to that other information.
- Supply chain information: Yes, but only in the event of a recall. Both the RFR and the North Carolina Recall System collect where a firm received product from, if that firm is a distributor, and where that firm sent product.
- Corrective actions: Yes, but with limitations. eSAF collects inspection findings, objectionable conditions, and follow-up information in two text-based fields (Endorsement Text and Inspection Summary). Corrective actions can be included in these fields, but each of these fields is limited to 2000 characters.

#### What do they want in an electronic system?

Respondents indicated several types of reports they would like to be able to generate from an electronic inspection system: inspection summary statistics over time (76%), establishment inspection summary (72%), and foodborne illness statistics (72%).

Do any of the assessed systems offer summary reports?

- Four systems have the ability to generate summary reports: eLEXNET, FoodSHIELD, NC Recall System, and PulseNet

- Three systems, including the only inspection system we assessed, do not have the ability to generate summary reports: eSAF, RES, and RFR.

What characteristics of integrated web-based systems for food inspection programs would make respondents likely to use them?

Respondents indicated several characteristics they would like in an integrated web-based system:

- If it could meet our needs (49%)
- If it were easy to use (47%)
- If they were free (44%)

How do these characteristics compare to the assessed systems?

- Costs: All of the systems except PulseNet are **free** to the user. PulseNet has a cost for server and client applications. eLEXNET is free but does require staff time for initial set up of link to system.
- Usability: We did not assess usability directly, but did determine that all assessed systems have user guides and all except RES have some form -- or, in some cases, multiple forms -- of system training. Five of the systems -- RES, NC Recall, eLEXNET, PulseNet, and FoodSHIELD -- give the user the ability to request changes.
- Interoperability: Three systems -- RES, eLEXNET, and FoodSHIELD -- are currently interoperable with state and local systems; eSAF has proposed enhancements that would allow for state systems to interface to eSAF.

There is a need for delivering electronic tools. Only 10% said they currently have the systems or tools that they need (16% of Locals, 3% of States, and 0% of Federal). And 77% want on-line access to needed data from federal, state, and local agencies (75% of Locals, 79% of States, and 83% of Federal). However, a single universal system does not appear to be the answer: only 36% of respondents indicated a desire for a single universal electronic food protections system (37% of Locals, 34% of States, and 33% of Federal).

**Recommendations**

- Identify why more people are not using the existing systems and enable more people to use the existing systems.
- Continue to identify existing systems that are collecting food safety and regulatory-based information and understand how they meet needs of current users and could meet the needs of a larger audience.
- Encourage owners of existing systems to continue to make enhancements along the lines of data exchange and interoperability.
- Encourage the development of a system(or systems) that captures establishment and inspection history data that can be pre-populated and used remotely in the field . Since 84% indicate that a paper file of establishment data and inspection history is most often used when preparing for an inspection, this is perceived as a gap that an electronic system could improve upon.
- Provide a cooperative agreement /grant process for states/locals/others who have built systems on a smaller scale but are meeting an identified need to pilot them as a national system.
- Work towards interoperability of existing and newly-developed systems. Several state and local agencies have or are considering development of internal systems for inspections and other

information. Finding a mechanism to allow these systems to share information rather than converting to a new system appears to be highly desired.



# Data Elements Team

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## Introduction

In order to develop an integrated/interoperable food information system that links information such as laboratory, inspection, and recall data an evaluation of the data elements that are currently collected is crucial. Data elements that can be developed into web based forms usable by state and local jurisdictions are critical in developing an integrated food information system. In our evaluation we have focused our efforts on the development of a web-based form for recall audit checks, and we have conducted a comparison of currently used Good Manufacturing Practices (GMP) state inspection forms to identify elements commonly used among states. This evaluation could be used to make recommendations of critical minimum data elements to be collected and used for reporting into eSAF. These data fields should be optimized to minimize free text so that meaningful reports and trend analyses can be conducted. Both of these projects will help to standardize data elements collected by state and local jurisdictions, streamlining and bringing continuity to data collection in order to produce meaningful and reliable data.

## Team Members

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## Project 1

To provide FDA with state and local input on a web-based recall effectiveness form

## Methods

1. Reviewed the paper based Recall Audit Check Form 3177 currently used by FDA, states, and local jurisdictions.
2. Reviewed the web-based North Carolina Recall Effectiveness System.
3. Over numerous conference calls each data field currently on the Recall Audit Check Form 3177 was reviewed, additional fields were added, fields were deleted, and data fields that were free text were minimized.
4. A mock up of the web-based recall audit check form was sent to FDA.
5. Two additional conference calls were held with FDA to review the form that we had sent and to ensure that state and local needs were being met.

## Findings/Conclusion

- This form has now been submitted to FDA and forwarded to their contractors completing our role in this project.
- FDA and their contractors are in the process of developing this web-based form, and its integration into eSAF is planned.

- Report functionality has yet to be addressed and is not planned at this stage in the development of this form.
- Accessibility will be limited to FDA and the state entering recall audit checks. No regional or national sharing of recall audit check data is planned.

### **Recommendations**

- State and local input needs to be solicited and considered when planning the development of reporting functions in future builds of this form.
- Policies and procedures to enable regional and national sharing of recall audit check data should be developed.

### **Project 2**

To compare GMP state inspection forms to requirements for compliance with the Code of Federal Regulations Title 21: Food and Drugs, Part 110 Current Good Manufacturing Practice in Manufacturing, Packing, or Holding Human Food

### **Methods**

1. Obtained a copy of the inspection forms that were collected from the Business Needs Team.
2. Identified nine state GMP inspection forms and inspection data reported through eSAF for inclusion in our analysis.
3. Created a comparison document based on the 21 CFR Part 110 Current Good Manufacturing Practice in Manufacturing, Packing, or Holding Human Food.
4. Three forms (2 state forms and data reported through eSAF) that were narrative were only included in the analysis for establishment information and inspection information, Appendix I, table 1 and table 2.
5. For the remaining sections, seven inspection forms were included in the analysis.

### **Findings/Conclusions**

- The limited number of inspection forms reviewed for data elements is not representative of the forms used by all states and local jurisdictions.
- Data in sections of inspection reports that are narrative in form and do not address specific questions that relate to the federal regulations cannot be queried and analyzed.
- Most forms collect basic establishment information and inspection information (tables 1 and 2).
- The most uniformity among the various state forms was in the areas of management and personnel (table 3), sanitation operations (table 5), and sanitary facilities and controls (table 6).
- The greatest disparity or least commonality between the forms was in the area of processes and controls (table 8).

### **Recommendations**

- An expanded review of additional state and local GMP food inspection forms is warranted.
- The areas among the reviewed inspection forms that have the least commonality will need to be more extensively evaluated in order to achieve more uniformity for a universal inspection form.
- Other inspection forms for seed, feed, fertilizer, and BSE should be collected and reviewed.
- Once these reviews have been completed, a universal model inspection form should be developed.

- A pilot project should be undertaken to analyze the performance of the universal model inspection form.
- The paper based retail food establishment inspection form contained in the FDA retail food code should be modified and optimized to a web-based fillable form.

**Conclusion**

The development of the web-based Recall Effectiveness Form that will be integrated into eSAF will help standardize data collected during recall audit checks so that comprehensive reports and trend analyses can be generated. Data collected from the review of GMP food inspection forms will begin the process towards the development of a universal model inspection form that when integrated into eSAF will help to standardize data elements collected by state and local jurisdictions, streamlining and bringing continuity to data collection in order to produce meaningful and reliable data.

# Business Needs

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## **Introduction**

One of the first-year goals of the Partnership for Food Protection (PFP) Interactive Information Technology (IIT) Work Group was to better understand the types of information, systems and system functionality currently used by local, state, and federal agency food officials in their food inspections programs; and what types of information, systems and system functionality is needed and/or wanted to support an integrated food safety system. To meet that goal, the IIT Business Needs Team (BNT) undertook a project to conduct an IT business needs assessment, comparing current status with needs to conduct a gap analysis. BNT developed an online survey with questions intended to identify current status of local, state and federal programs and elicit responses of future needs for types of information, systems and system functionality respondents are looking for their food protection programs. The survey included 42 questions with pre-defined answers and was distributed to the Partnership for Food Protection members and grantees under the FDA's Rapid Response Team (RRT) grant for voluntary participation. Respondents were also asked if they would be willing to participate in follow up questions and share copies of their food inspection forms. The BNT analyzed the survey results and compared results across federal, state, local, health and/or agriculture agencies and summarized key findings, gaps and recommendations. The sampling appears inadvertently biased due to a high number of local health respondents and low number of federal respondents. The BNT also shared the data results with the IIT Work Group Systems Assessment Team (SAT) for use in their project and shared copies of food inspection field sampling forms with the IIT Work Group Data Team for use in their project.

## **Team Members**

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## **Survey Preparation and Distribution**

A 42 question on-line survey was developed utilizing Survey Monkey. The survey's primary focus was on the types of information, systems, and system functionality currently being used and needed for food safety program inspections at local, state, and federal agencies. Questions were also included to better understand how data is shared, and any obstacles to data sharing and interest in an integrated food safety system.

The survey questions were designed with pre-determined answers to ensure comparability across responses for analysis and interpretation. In addition, questions included an "Other" free text answer for respondents to share any additional relevant information. A copy of the on-line survey is attached in Appendix A. The survey questions were designed based on a generalized food safety inspection process framework provided in Appendix B.

The survey was made available on-line for 4 weeks using Survey Monkey, an online survey tool setup and hosted by Orange County CA Environmental Health, a Partnership for Food Protection (PFP) member.

All members of the Partnership for Food Protection (PFP) were contacted and invited to participate in the survey by coordinating communication with each of the PFP Work Group Chairs. Additionally all those contacted were asked to pass the survey along to other food safety officials they work with. An example of the letter that was used to distribute the survey is attached in Appendix C. In addition BNT collaborated with the PFP Work Planning Work Group to distribute the survey to their 5 pilot project cooperators; distributed the survey to the 9 RRT grantees; and distributed the survey to all the FDA representatives in the PFP.

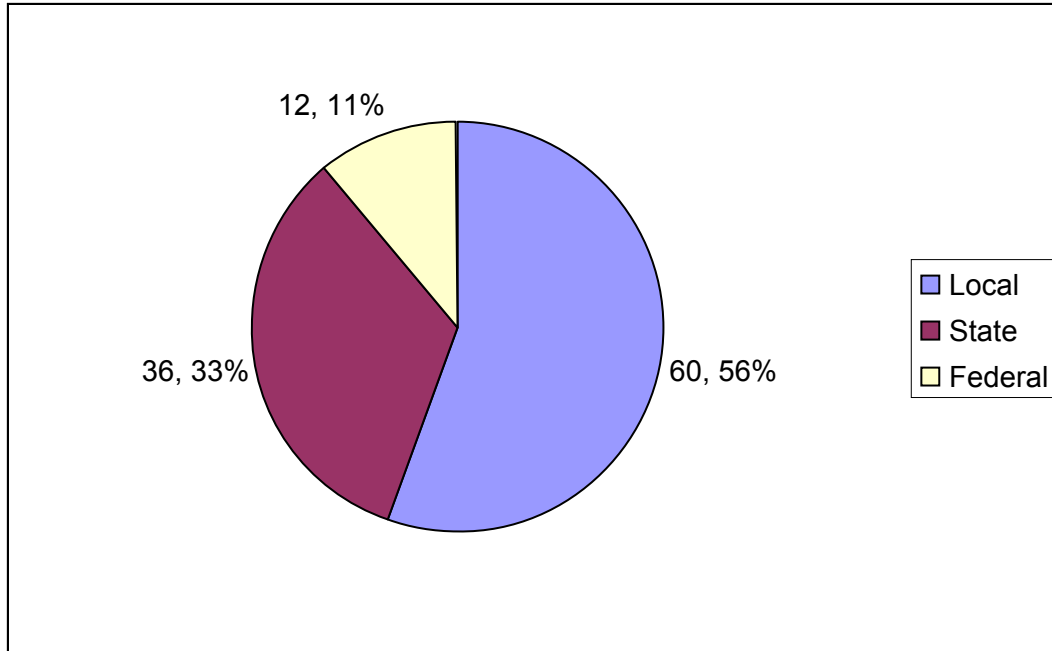
A limiting factor to the distribution of the survey came from FDA legal constraints on initiating time consuming broad sweeping information gathering activities that the PFP being an FDA partnership were subject to. This limited distribution to primarily the PFP members who in turn distributed the survey by word of mouth.

### **Survey Response**

The survey had 111 respondents of which 108 answered the survey. The respondents were asked in the survey to indicate their organization categorization (i.e. local, state, or federal (FDA, CDC, or USDA); and their organization affiliation (i.e. health or agriculture). Respondents were asked if they would be willing to participate in follow up discussions and/or to share copies of their field inspection forms. A summary listing of survey respondents is provided in Appendix D.

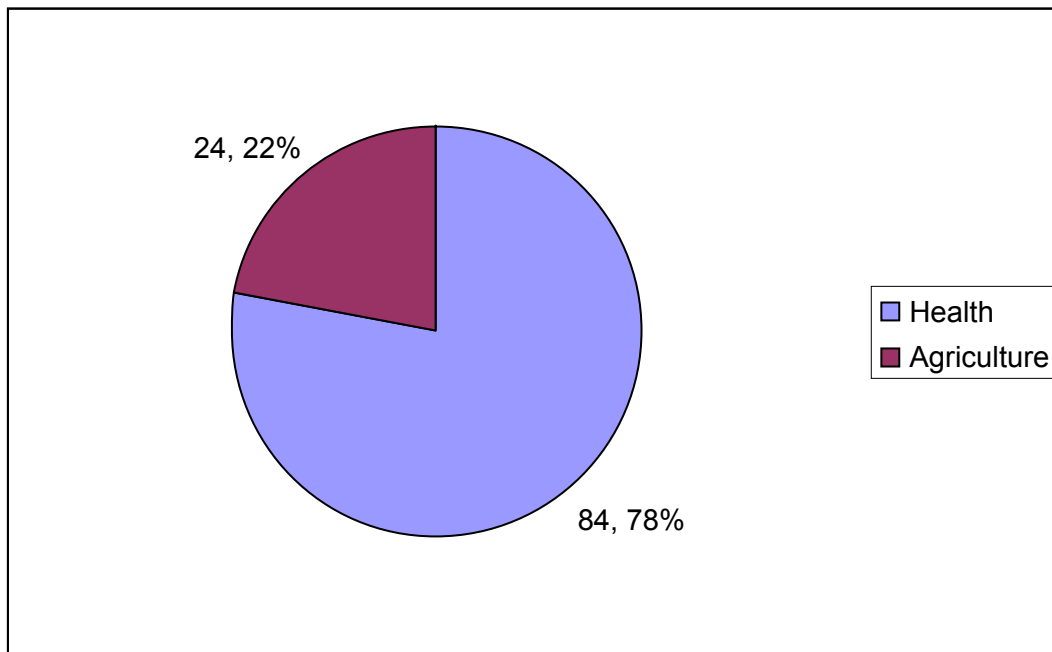
Based on the responses, the majority of respondents based on organization categorization (i.e. local, state, federal) were local with 56% or 60 total respondents followed by state with 33% or 36 respondents and then federal with 11% or 12 respondents. The 12 federal respondents were comprised of a total of FDA respondents (10); USDA respondents (2) and CDC respondents (0). The distribution of survey respondents by organization categorization is presented in Figure 1.

**Figure 1. Distribution of Survey Respondents by Organization Categorization**

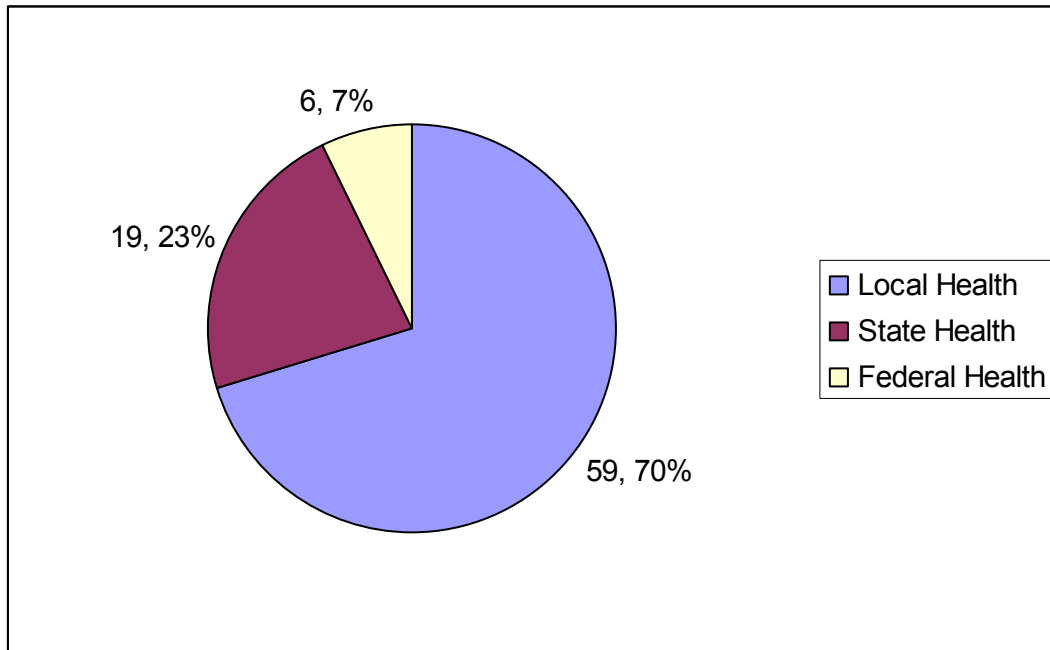


The majority of respondents based on organization affiliation (i.e. health or agriculture) were health with 78% or 84 total respondents then agriculture with 22% or 24 total respondents. The distribution of survey respondents by organization affiliation is presented in Figure 2. Figures 3 and 4 present the distribution of survey respondents by organization categorization for health organization and the distribution of survey respondents by organization categorization for agriculture organizations, respectively.

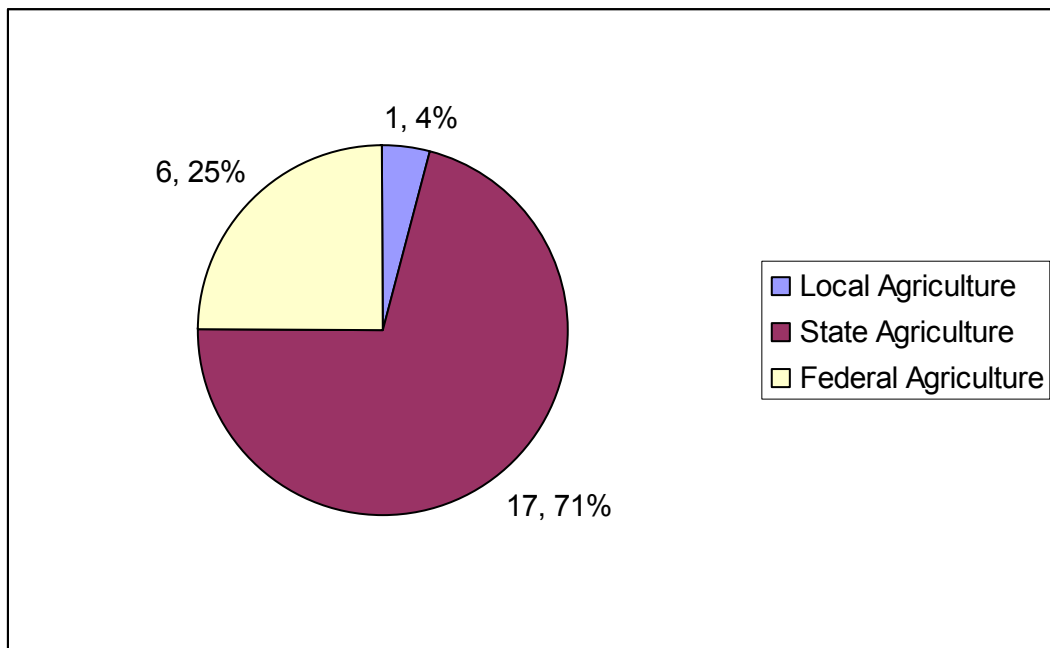
**Figure 2. Distribution of Survey Respondents by Organization Affiliation**



**Figure 3. Distribution of Health Related Respondents by Organization Categorization**



**Figure 4. Distribution of Agriculture Related Survey Respondents by Organization Categorization**



Of the 108 survey respondents, close to half indicated that they were willing to participate in follow up discussions and share copies of their field inspection forms, 44% or 48 total respondents and 53% or 57 total respondents, respectively.

## **Survey Data Results and Analysis**

Electronic data results from the survey were downloaded from Survey Monkey in excel format and reviewed, reformatted and response counts and percentages recalculated based on the data review. The raw data included response counts and percentages for each question response and all the write-in “Other” responses.

The data was verified and cleaned to remove any invalid survey responses (responses without any data results) and three responses were removed reducing the total number of responses from 111 to 108. The responses for organization categorization (i.e. local, state, federal) and organization affiliation (i.e. health or agriculture) were validated and any blanks or “Other” responses were updated to the appropriate organization categorization and/or organization affiliation answer from the pick list.

The original response counts and percentages were recalculated on the validated and cleaned data. Additional response counts and percentages were calculated based on the organization categorization and affiliation, creating counts and response percentages for “all”, “local”, “state”, “federal”, “health”, and “agriculture”. The counts and response percentages were derived based on the total number of responses for each question. The total number of responses for each question varied due to the fact that respondents were not required to answer each question.

A total response count and percentage for “Tablet Computer” and “Laptop Computer” was derived from the results on survey questions 12 and 14 because these are very similar technologies used in the field.

The details of the data validation, cleaning and re-calculations are presented in Appendix E. A copy of final master dataset is available in a separate document. Contact information is provided in Appendix F.

The following rules were applied to the validated and cleaned data results for the purpose of identifying trends, significant findings and drawing general conclusions from the data. A statistical based analysis was not performed on the survey results.

### **Rules Applied to the Data Results for Analysis**

1. The highest response percentage for each question was bolded
2. Any response percentage within 5% of the highest response percentage for each question was underlined
3. Any response percentage with a response percentage >50% was highlighted in yellow

The final master dataset with rules applied available in a separate document. Contact information is provided in Appendix F.

Electronic copies of the raw survey data results and final master data results are available upon request. Contact info is provided in Appendix F.

### **Summary of Findings**

The survey questions were split between team members who then documented detailed findings based on the final master data results with rules. Presented below is a summary of the significant findings organized by the key aspects of food safety programs and food inspections where information is collected and shared; and tools and systems are and can be used to track, analyze, share and report this information. In general, the findings presented below were based on the following survey response percentage breakdown.



“Most” – response percentages ranging from 50 -100%

“Some” – response percentages ranging from 20-50%

“Few” – response percentages ranging from 0-20%

**The summary of findings is organized by:**

- Food Inspection Triggers
- Food Inspection Assignment Scheduling and Preparation
- Conducting Food Inspections
- Analysis and Reporting of Inspection Program Information
- Risk-based Food Inspection Programs
- Data Sharing
- Information Systems, Tools and Functionality
- Types of Information Tracked Electronically
- Integrated Food Safety System

**Food Inspection Triggers** – Findings based on survey questions that were focused on looking at similarities and differences between what triggers inspections and specifically if and how complaints are received and tracked.

- Most inspections across local, state, federal, health and agriculture agencies are initiated by the following triggers. Most inspections for state agencies are also triggered by contract.
  - Complaints
  - Statute/Rule
  - Follow up to enforcement action
  - Foodborne illness outbreak
  - Licensing a new establishment
  - Request of new establishment
  - Inspector’s discretion
- Most inspections are triggered by complaints for state and federal agencies; by statute/rule for local agencies.
- Few inspections are triggered by grant requirements.
- Most respondents receive complaints by phone or email; most states also receive complaints by fax.
- Some respondents receive complaints by an on-line website.
- Most respondents currently track complaints electronically.

**Food Inspection Assignment, Scheduling and Preparation** – Findings based on survey questions that were focused on identifying how inspections are assigned and preparation work done prior to the inspection and seeing what types of information, systems and tools are used and needed.

- Most respondents use the following types of information to assign inspections to inspectors.
  - Date of last inspection
  - Complaint investigation
  - Previous inspection history
  - Geographical location of the establishment

- Most respondents use database inventories and computer generated assignment lists to assign inspections to inspectors; Most respondents would like electronic systems to automatically schedule and assign inspections to inspectors.
- Some respondents also use email and cell phones to provide assignments in the field.
- Most respondents prepare for inspections by:
  - Reading past inspection reports
  - Verifying basic establishment information (e.g. address, owner name, etc)
  - Reviewing establishment compliance history
  - Reviewing permit/license
  - Reviewing inspection report forms
- Some state and agriculture respondents and most federal respondents also review past sample results to prepare for an inspection.
- Most respondents use the following tools to prepare for and an inspection.
  - Paper files
  - Computer in the office
  - Computer (tablet or laptop) in the field

**Conducting Food Inspections** – Findings based on survey questions that were focused on identifying the types and formats of information collected and tracked from a food inspection including inspections with sampling. In addition, tools, systems and system functionality currently used vs. what is wanted and/or needed.

- Most local, federal and health agency inspections and some state agency inspections are conducted according to a mandated frequency.
- Most respondents are using the following tools when conducting food inspections.
  - Cameras
  - Computers (e.g. laptop or tablet PC)
  - Cell Phones
  - Printers
- Most respondents are still using paper in the field as opposed to electronic inspection tools and systems, but would like systems that create electronic field inspection forms.
- Most would like online access to establishment inspection and compliance histories in the field.
- Most state, federal and agriculture respondents collect samples during inspections; some local respondents do.
- Most federal and agriculture respondents track field samples and field sample results; Some state respondents and few local or health respondents do.
- Most samples are tracked on paper forms with the following standard information; most sample information is transferred to laboratories on paper.
  - Establishment Information
  - Description of sample
  - Reason for taking sample
  - Immediate test results (e.g. temperature, pH, etc)
- Using Bar coding technology in the field for data collection and system recalls was mentioned as an “other” response.

**Analysis and Reporting of Inspection Program Information** – Findings based on survey questions that were focused on identifying the types of analysis and reporting commonly being done in food safety

programs and what types of reporting they would like to be done electronically and how reports are currently made available.

- Most respondents use data analysis for:
  - Assessing inspection program effectiveness
  - Manpower planning
- Most state respondents also use data analysis for:
  - Identifying enforcement action needed
  - Setting Policy and Procedures
  - Assigning risk
- Most federal and agriculture respondents also use data analysis for:
  - Spotting trends
- Most respondents would like electronic systems that provide data analysis tools.
- Most respondents are currently generating the following reports from an electronic system.
  - Reports that track when inspections due
  - Reports that summarize establishment inspection information
  - Reports that summarize inspection statistics over time
- Most respondents would like on-line query-based reporting that can also be scheduled.
- Most respondents would like to generate the following reports electronically.
  - Reports that summarize inspection statistics over time
  - Reports that summarize establishment inspection information
  - Reports of foodborne illness statistics
  - Reports that track when inspections due
  - Reports of complaint statistics
  - Reports on establishments complaint history
  - Reports that list establishments that need a particular service
- Some respondents would like to generate the following reports electronically.
  - Reports that indicate inspection assignments
  - Reports of field sample data results
- Providing information for administrative and legislative decision making in addition to providing information to consumers was mentioned as an “other” response.

**Risk-based Food Inspection Programs** – Findings based on a single survey question that focused on how risk assessment has been implemented in food safety programs currently.

- Most respondents want to track information to assess risk electronically.
- Most respondents take a risk-based approach to food safety.
- Most local, state, health and agriculture respondents; and some federal respondents are currently using inspections data to determine risk levels for potential foodborne illness outbreak.
- Most local, federal and health respondents; and some state respondents are currently using risk assessment data to continually improve inspection procedures.
- Few respondents are currently using a mathematical risk model to assess risk.

**Data Sharing** – Findings based on survey questions that were focused on identifying if, how and who data is being shared between local, state, and federal food safety agencies; and issues and barriers to access to information needed

- Most local agencies share info with state agencies; State and agricultural agencies share with federal agencies.
- Most local respondents do not use federal agency information.
- Most local agencies are required to and do share information with state agencies but share less with federal or other local agencies.
- Most state agencies want access to federal information; Few local agencies want access to federal information.
- Most state respondents and some agriculture respondents would like access to federal information that they do not currently have access to.
- Most local respondents indicated that they do not currently access any federal systems, but those that do use FoodSafety.org (~20%).
- Some state respondents indicated that they do currently access one or more of the following federal systems.
  - eLEXNET
  - eSAF
  - PulseNet
  - FoodSHIELD
  - FoodSafety.org
  - Reportable Food Registry (RFR)
  - CDC's National Outbreak Reporting System (NORS)
  - CDC's Outbreak Net (<http://cdc.gov/foodborneoutbreaks>)

**Information Systems, Tools and Functionality** – Findings based on survey questions that were focused on identifying if and types of information management systems, tools and functionality currently being used and what is wanted and/or needed. This information was shared with the Systems Assessment Team for use in their System Assessment and Gap Assessment projects where they looked at system and functionality needs against a selection of existing federal systems.

- Most respondents have some form of electronic systems and/or tools in place, but also indicated that they want an electronic inspection system.
- Most respondents do have an electronic system but only some respondents have electronic reporting.
- Most respondents want systems that not only require data input, but can get information out.
- Most state, federal and agriculture respondents; and some local respondents use custom built systems.
- Some local, state and health respondents, and few (0%) federal or agriculture respondents use commercially purchased systems; local respondents use more commercially purchased systems than other respondents including 9 systems specifically designed for inspection management.
- Few respondents reported having a LIMS or electronic access to LIMS.
- Nearly all (>90%) respondents track inspection information electronically yet only some have an electronic inspection system in place.
- Most respondents currently have functionality in their systems to track information over time; some respondents currently have the following features/functionality.
  - Provides inspection setup and tracking
  - Provides role-based access for multiple users (*highest response for state and agriculture respondents*)

- Creates electronic field inspection forms
- Has search capability
- Exports data into electronic formats
- Provides access to establishment and compliance history in field
- Provides user query based reporting
- Provides inspection scheduling and assignment
- Provides canned reporting
- Provides data analysis tools
- Links to other systems
- Few respondents currently have the following features/functionality in their systems.
  - Creates pre-made lab sample labels
  - Scans documents in the field
  - Data syncs with field sampling devices
  - Provides scheduled reporting
  - Incorporates GIS/Mapping
  - Maintains contact lists and automatic notifications
- Most respondents would like the following features/functions in their systems.
  - Provides access to establishment and compliance history in the field (*highest response for local and health respondents*)
  - Maintains contact lists and automatic notifications
  - Tracks information over time
  - Creates electronic field inspection forms
  - Search capability (*highest response for state respondents*)
  - Provides inspection scheduling and assignment
  - Provides inspection setup and tracking
  - Incorporates GIS/Mapping (*highest response for federal and agriculture respondents*)
  - Provides electronic signature in the field
  - Provides data analysis tools
  - Exports data into electronic formats
  - Provides user query-based reporting
  - Provides scheduled reporting
  - Provides role-based access for multiple users
  - Prints labels and forms in the field
  - Scans documents in the field
- The following features/functions were mentioned by respondents as “Other” responses.
  - Ability to assign recall audits
  - Bar code scanning system for recalls
  - On-line complaint logging
  - Bar code for inputting info

**Types of Information Tracked Electronically** – Findings based on survey questions that were focused on identifying the types of information currently being tracked electronically by local, state, federal, health and agriculture food safety agencies and what types of information they would like to and/or need to track electronically.

- Most respondents currently track the following information electronically.
  - Establishment Data (*highest response for local, state, federal, health and agriculture respondents*)

- Violation Data
- Permit License Data
- Complaints Data
- Status of Inspections
- Inspection field forms as Data
- Enforcement Actions as Data
- Corrective Actions as Data
- Few respondents currently track the following information electronically.
  - Establishments that food travels to before and after inspected establishment
  - Evidence of food traceability
  - Points of Contamination at the establishment
  - Food/Food Sectors Data
  - Inspection field forms as scanned documents
  - Enforcement actions as scanned documents
  - Permit/license as scanned documents
  - Field samples
- Some respondent would like to track the following types of information electronically that they do not currently track.
  - Foodborne Illness (*highest response for state and health respondents*)
  - Photos (*highest response for local and agriculture respondents*)
  - Establishments that food travels to before and after inspected establishment
  - Corrective actions
  - Communications and notifications
  - Points of contamination at the food establishment
  - Information to assess risk
  - Evidence of food traceability (*highest response for federal respondents*)
  - Enforcement actions as data
  - Inspection field forms as scanned documents
  - Enforcement actions as scanned documents
  - Field sample results
  - Inspection field forms as data
  - Violation data
  - Permit/license as scanned documents
- Few respondents would like to track the following types of information electronically that they do not currently track.
  - Establishment data
  - Permit/License data
  - Food/Food Sector Data
  - Status of Inspections
  - Complaints data

**Integrated Food Safety System** – Findings based on survey questions that were focused on identifying if local, state, and federal agencies would like an electronic integrated inspection system; what they would need to use one and any foreseen constraints to implementing one.

- Most respondents would use federal integrated web-based systems and information management tools.

- Most states and some local respondents want a free, web-based, easy to use, customizable integrated inspection system that provides access to the information that they need.
- Most respondents agree on the following obstacles to implementing an integrated food safety system.
  - Cost of developing and implementing technologies (*highest response for local, state and health respondents*)
  - Legal/jurisdiction issues (*highest response for federal respondents*)
  - Data ownership/sharing issues (*highest response for federal and agriculture respondents*)
  - Funding mechanism constraint issues
  - Resource/staffing issues

**General Findings** – Findings that are general to the entire survey and do not pertain to a single inspection category.

- Few overall federal respondents (12) in comparison to local (60) and state (36) and may not be completely representative of federal food inspections.
- The sampling appears to be inadvertently biased due to a high number of health respondents and very low number of federal respondents.
- In general, there appears to be a correlation between local and health responses and state and agriculture responses; most locals indicated themselves as health related and most state indicated themselves as agriculture.

### **Conclusions**

The survey confirmed that respondents (local, state, federal) show interest in integrated systems and information. Though they do not want to build a single universal integrated system, they would like one-stop shopping to access the integrated local, state and federal information. In addition, respondents were generally in agreement on the many obstacles to integrating systems and information. Further analysis is needed to understand the specifics of the obstacles.

Survey responses in general were similar between local, state, federal, health and agriculture respondents, however when there were differences, responses would be similar for local and health respondents in comparison to responses from state and agriculture respondents. This may be in part because a majority of local respondents said they were health related and a majority of state respondents said they were agriculture related.

Most survey respondents are already using some type of electronic systems and tools for managing their food safety programs and inspection information; and those that aren't would like to implement electronic food inspection systems and tools. Further analysis is needed to better understand what types of electronic systems and tools are being used and feasibility of integration.

Some respondents are using electronic tools for inspection assignment and scheduling but most indicated that they would like electronic systems and tools for inspection assignment, scheduling and for managing day-to-day activities and manpower planning. Further analysis is needed to better understand the specific needs.

Responses involving data sharing showed that most local agencies currently share information with State agencies, but not federal agencies. Local agency respondents did not indicate a need or desire to access state nor federal agency information. However, state agencies indicated a desire for access to federal agency information, and federal agency respondents indicated a desire for access to both state and local agency information.

Most respondents are doing programmatic and inspection based analysis and reporting with some currently using electronic tools for reporting. Most reports are available on paper in the agency or establishment office. Most respondents would like enhanced, on-line query-based reporting.

A significant amount of paper is still being used when conducting inspections and collecting samples; reviewing compliance histories; and reporting. Some respondents have implemented electronic systems and tools that minimize paper usage. Further analysis is needed to see if there are opportunities in an integrated food safety system to minimize paper usage.

Most respondents do currently use electronic tools in the field in some capacity and are interested in on-line/wireless technologies for data transfer between field and office. Respondents would like access to compliance histories and other information while in the field. In addition, bar coding technology was suggested for data capture. Further analysis is needed to understand the specific needs and opportunities for enhance field data collection systems and tools.

Types of information most respondents currently track electronically and/or those types that respondents do not track but would like to track are listed below for consideration in an integrated food safety system. Further Analysis is needed to understand the data elements of these information types; and the feasibility of including in an integrated electronic food safety system.

**Information Types:**

Foodborne illness	Status of Inspections	Inspection field forms as data or scanned documents
Photos	Complaints	Establishment Information
Establishments that food travels to before and after inspected establishment	Information to assess risk	Field sample results
Corrective actions	Evidence of food traceability	Violation Data
Communications and notifications	Enforcement actions	Permit License Data
Points of contamination at food establishment		

Types of system functionality respondents want in an electronic inspection system and for consideration in an integrated food safety system are listed below. Further analysis is needed to understand the specifics of these functions and feasibility of including them in an integrated food safety system.



**System Features and Functionality:**

Provide access to establishment and compliance history in the field	Provides inspection setup and tracking	Provides user query-based reporting
Maintain contact lists and automatic notifications	Incorporates GIS/Mapping	Provides scheduled reporting
Tracks information over time	provides electronic signature in the field	Provides role-based access for multiple users
Creates electronic field inspections forms	Provides data analysis tools	Prints labels and forms in the field
Search capability	Exports data into electronic formats	Scans documents in the field
Provides inspection scheduling and assignment		

**Recommendations**

- Move forward in planning and development of an integrated food safety system.
- Assess federal systems as a starting point for or as components in an integrated food safety system.
- Refine and clarify the obstacles to building an integrated food safety system and look at new technologies that can help overcome the barriers.
- Continue efforts to identify operational daily management needs (e.g. workload scheduling; manpower planning; paper reduction, etc) to incorporate management tools into an integrated food safety system.
- Identify data elements on food inspection forms that are common to all food safety agencies for incorporation in an integrated food safety system.
- Clarify discrepancies in data needs and sharing between federal, state and local agencies and how that relates with the overall obstacles in building an integrated food safety system.
- Refine and clarify the specific data elements and system features/functions that are wanted in an integrated food safety system and feasibility of integrating existing systems.
- Continue efforts to identify IT business needs and obstacles in other areas of food safety including outbreaks, recalls, traceability, risk-based efforts for inclusion in an integrated food safety system.
- Obtain increased involvement from federal agencies for assistance in future information gathering and planning efforts; and for technical support.

# APPENDICES

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# Systems Assessment Project Appendices

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**Table 1: Completed Systems Assessment Tool (March 1, 2010)**

Question	eSAF	RFR	RES	NC Recall	eLEXNET	PulseNet	FoodSHIELD
1. Web-based	Yes – Web-based w/ Permissions	Yes, <a href="http://rfr.fda.gov">http://rfr.fda.gov</a>	Yes	Yes	Yes	Yes - client/server configuration	Yes
2. Off-line capability	No	No	No	No	N	Yes - client configuration	Capable
3. System training	Yes	Yes	No	Yes	Yes	Yes	Yes
a) If yes, describe	State & District Investigations Personnel Training – Classroom; eSAF helpdesk: facts_help@bah.com / tel # 301-816-2210	Online documentation with detailed information on how to answer each question.		Training document (MS Word)	On-line training module, Webinars, Training Documents	on-site	Webinars, Online Materials
4. User guide	Yes - eSAF Training Manual w/ Course CS124	Yes	Yes	Training document (MS Word)	Yes	Yes - PulseNet training manual	Avail Spring 2010
5. System Owner	FDA	FDA	FDA	NC Dept. of Agriculture, Food & Drug Protection Division	FDA	CDC	NCFPD
6. Are there proposed enhancements?	Yes* (description of enhancements at the end of this table)	No	Yes	Yes	Yes	Yes	Yes
a) If yes, will there be data migration after enhancements?	No	N/A		No (Unnecessary)	No (Unnecessary)	Yes	Yes
7. User customization of skin/interface	No	No	No	No (Yes, in proposed changes)	Yes	Yes	No - Avail Spring 2010
8. Cost - license fees	No	No	No	No	No	Yes	No
a) If yes, describe	N/A	N/A				Cost for server and client applications	
9. Cost to integrate with state/local systems	No	No	No	No	No (requires staff time for set up)	No	No
a) If yes, describe	N/A	N/A					
10. Mandatory use?	No	No	No	No	No	Yes	No

Question	eSAF	RFR	RES	NC Recall	eLEXNET	PulseNet	FoodSHIELD
a) If yes, for who?	States Participating in Contract Work	N/A			FERN users required to use	In accordance with state regulations	
b) If yes, under what act/law?	By agreement: State-FDA Contracted Inspection Work	N/A				In accordance with state regulations	
11. Compatibility with both PC and Mac?	Yes	Yes	Yes	Yes (Browser-based)	Yes	No	Yes
12. Mapping – GIS	Yes	No	No	No (Not directly supported but capability exists)	Yes	No	No - Avail Spring 2010
a) If yes, describe	GPS coordinates field available to identify firm locations	N/A			Arc-IMS-Upgrading in FY11		
13. Interoperability with state/local systems	No (Proposed Enhancement would allow for State System Interface to eSAF) - Pilot States	No	Yes	No	Yes	No	Yes
14. System notifications	Yes	No	Yes	No	Yes	No	Yes
a) If yes, describe	Notification Triggers; Activities/Events will trigger an e-mail to be sent to the appropriate recipient	N/A	Activities/Action will trigger an e-mail to be sent to the appropriate recipient		Scheduled reports, Portal activity and content notifications, subscription and notify other users		Core Notifications, User generated Notifications, More
15. 508 compliant	No	Yes		No (Exempt)	Yes accessibility features	No	Trending Yes, Final Tests May 2010
16. Collaborative space	No	No	No	No	Yes	Yes	Yes
a) If yes, describe	N/A	N/A			Communities and Sub-communities, User Generated Projects, Announcements, Calendars, Document Sharing, Discussions and Tasks	Separate web-based system/application	Workgroups and Webinars

Question	eSAF	RFR	RES	NC Recall	eLEXNET	PulseNet	FoodSHIELD
17. Import capability - can import raw data from external file	No (Proposed Enhancement would allow for State System Interface to eSAF) - Pilot States for non contracted state inspections.	No	No	No	Yes	Yes	Yes
a) If yes, which formats?	N/A	N/A			XML	Excel	PDF, MDB, XLS, CSV, TDF, More
18. Export capability - can export raw data to downloadable file	No (Proposed Enhancement would allow for State System Interface to eSAF) - Pilot States for non contracted state inspections.	No	No	Yes	Yes	Yes	Yes
a) If yes, which formats?	N/A	N/A		Excel (Proposed enhancements add PDF)	Excel, PDF, CSV	Text, XML	PDF, MDB, XLS, CSV, TDF, More
19. Timeliness of data publication - elapsed time between data submission and data publication in system	State inspection results require review and acceptance prior to being uploaded into FACTS	Data is entered into the system and the FDA receives an email to follow up on the issue.		Immediate	Range: Immediate-24 hours (nightly transmission of automated data exchange)	Real-time yet? (Near real-time)	Immediate, dependent upon workflow rules
20. Enter data one place (auto populate)	Yes	No	Yes - limited	Yes - Limited data	Yes	No	Yes
a) If yes, describe	Some fields for creating assignments based on FEI #	N/A		Non-issue currently (Will be enhanced in future updates)	Some characteristics are auto-populated-lab data exchange records and laboratory/user information		
21. Human data entry, System data entry, or both?	Human	Human only	Human	Human	Both	Human	Both
22. Length of time to complete human data entry of 1 record	Dependent on the scope of inspection work: Sanitation, LACF>15 min, Seafood HACCP / BSE >60 min	Up to 37 minutes based off the time estimates located within the documentation.	N/A	<10 minutes	30-60 minutes	<10 minutes	Less than 30 seconds?

Question	eSAF	RFR	RES	NC Recall	eLEXNET	PulseNet	FoodSHIELD
a) Ability to accept multiple submissions at once (batch submissions)	No	No	No	No	No	Y (import)	Y
23. Data validity checks	Yes	Unknown	Yes	N (Currently only manual checks; there are proposed enhancements to this)	Y	Y	Y
a) If yes, describe	Certain Fields as indicated in eSAF data elements and definitions (eSAF notes)	Limited, not sure if the food facility registration number is all other fields no.	Limited- certain data elements have applied business rules		Validation rules built into the data entry	Users are proficiency-tested annually	Dependant on workflow rules; general security/user validation
24. Ability to upload and store files	No	No	No	No	Y	Y	Y
a) If yes, what file types?	N/A	N/A			All Text, Binary, Image	Tiff images (.tiff) and demographic information (.def)	All Text, Binary, Image
25. Ability to search the system	Yes	No	Yes	No (Other than by exporting data)	Y	Y	Y
26. Open source vs. off the shelf vs. custom built	Custom built	Custom build by FDA	custom built	Custom built	Combination	Off the shelf and Customized	Mix of Off Shelf, Open Source, Custom Code
27. Enhanceability	Yes	No	Yes	Yes	Yes	Yes	Yes
a) If yes, describe the process for making enhancements	FDA Approval / Project Officer	N/A		Enhancement requests should go through Wendy Campbell ( Wendy.Campbell@nca.gr.gov )	Regular enhancement releases, minor and major, based on user feedback and change control processes.	PulseNet management approval	Change Management Procedures
28. User ability to request changes	No	No	Yes	Yes (See above)	User feedback collected via helpdesk and communities	Yes	Yes
29. Multi-lingual	No	No	No	No	No	No	Avail Spanish Summer 2010
30. Does it track inspection data?	Yes	No	No	No	No	No	No

Question	eSAF	RFR	RES	NC Recall	eLEXNET	PulseNet	FoodSHIELD
a) If yes, attach data dictionary (list of fields and field descriptions)	See attached ESAF Data elements and definitions	N/A					N
31. Does it track recall data?	No	No	Yes	Yes	No	No	Yes
a) If yes, attach data dictionary (list of fields and field descriptions)	N/A	N/A		See "NC Recall notes" worksheet			Federal Follows FDA 3177, States gather that base plus custom per state
32. Does it track laboratory data?	Yes - Samples Collected during Inspection (not results)	No	No	No	Yes	Yes	Yes
a) If yes, attach data dictionary (list of fields and field descriptions)	See attached ESAF Data elements and definitions	N/A			Attached	PFGE patterns	Depends on which LabDIR: FoodSHIELD or FERN
33. Ability to generate reports	Yes - Build a Firm List / Search Firms by State	No	No	Yes	Yes	Yes (customized scripts)	Yes
a) Summary reports?	No	No	No	Yes	Yes	Yes (customized scripts)	Yes
b) Ad hoc reports?	No	No	No	No	Yes	No	Yes
c) Trend summaries?	No	No	No	No	No	Yes (customized scripts)	Yes
d) Automatic/scheduled reporting?	No	No	No	No	Y	N	Yes
i. If yes, what delivery method	N/A	N/A			Email or User "My Reports" section		Email, RSS
b) Ability to download reports	No	No	No	Yes	Yes	Yes	Yes
i. If yes, describe formats	N/A	N/A		Excel	Excel, PDF	Text	PDF, Word, Excel, PPT

\* **eSAF enhancements:** V3.400 State Systems interface to eSAF (Ref doc. State Systems Interface to eSAF – High Level Design dated September 29, 2008 - (Pilot States) Fully integrate with MARCS (Mission Accomplishment and Regulatory Compliance Services) Integrator; Fully integrate with FMS (Firm Management Services) - Helps states ID high risk establishments and to obtain information about past inspections and violations for firms within their jurisdiction. Develop eSAF to record inspection results on hand held device



**Table 2: System Access: Who can enter information into the system?**

For each of the seven systems, the SAT determined whether federal, state, and local officials; industry members; and the public were granted access to the system to enter information.

WHO CAN ENTER DATA:	SYSTEM:						
	eSAF	NC Recall	RES	RFR	eLEXNET	PulseNet	FoodSHIELD
<b>Federal</b>	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Limitations?	Role based: District Data Entry Role based: State Contract Monitor for the District	None	None	None – not intended for Federal data input	Participating Laboratories – Role Based	Participating Laboratories – Role Based	Unlimited access to main tools. Further access is based on roles and security parameters
<b>State</b>	Yes	Yes	No	Yes	Yes	Yes	Yes
Limitations?	Role based: State Data Entry Role based: State Reviewer	None	--	None -- Not Required	Participating Laboratories – Role Based	Participating Laboratories – Role Based	Unlimited access to main tools. Further access is based on roles and security parameters
<b>Local</b>	Yes	Yes	No	Yes	Yes	Yes	Yes
Limitations?	Role based: Local Data Entry Role based: Local Reviewer	None	--	None -- Not Required	Participating Laboratories – Role Based	Participating Laboratories – Role Based	Unlimited access to main tools. Further access is based on roles and security parameters
<b>Industry</b>	No	No	No	Yes	No	No	Yes
Limitations?	--	--	--	None	--	--	Workgroup access only (by invitation)
<b>Public</b>	No	No	No	Yes	No	No	No
Limitations?	--	--	--	None – not intended for Public data input	--	--	--

**Table 3: System Access: Who can retrieve information from the system?**

For each of the seven systems, the SAT determined whether federal, state, and local officials; Industry members; and the public were granted access to the system to see, search, and retrieve information that has been entered.

WHO CAN RETRIEVE DATA:	SYSTEM:						
	eSAF	NC Recall	RES	RFR	eLEXNET	PulseNet	FoodSHIELD
<b>Federal</b>	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Limitations?	Access to FACTS	Access to information controlled by person creating recall event	None	None	All Users (Some Data Restricted based on Role)	All Users (Some Data Restricted based on Role)	Unlimited access to main tools. Special Limitations exist through each security level
<b>State</b>	Yes	Yes	No	Yes	Yes	Yes	Yes
Limitations?	Only State Reviewer for information provided in eSAF within State only	Access to information controlled by person creating recall event	--	No Access	All Users (Some Data Restricted based on Role)	All Users (Some Data Restricted based on Role)	Unlimited access to main tools. Special Limitations exist through each security level
<b>Local</b>	Yes	Yes	No	Yes	Yes	Yes	Yes
Limitations?	Only Local Reviewer for information provided in eSAF within Locality only	Access to information controlled by person creating recall event	--	No Access	All Users (Some Data Restricted based on Role)	All Users (Some Data Restricted based on Role)	Unlimited access to main tools. Special Limitations exist through each security level
<b>Industry</b>	No	No	No	No	No	No	Yes
Limitations?	--	--	--	--	--	--	Workgroup access only (by invitation)
<b>Public</b>	No	No	No	No	No	No	No
Limitations?	--	--	--	--	--	--	--

# Data Elements Project Appendices

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**Table 1 Firm Information (n=10)**

Variable Name	# of Forms with Field	% of Forms with Field
Firm Name	10	100
Address	7	70
Firm ID	9	90
Product Type	6	60
Distribution	3	30
Operating Hours	4	40
Number of employees	4	40
Contact person/title	7	70
Contact Person Phone	8	80
Establishment Status	4	40

**Table 2 Inspection Information (n=10)**

Variable Name	# of Forms with Field	% of Forms with Field
Inspector Name	8	80
Inspector Number	1	10
Date of Inspection	10	100
Time Record (hrs)	7	70
Reason for Visit	7	70

**Table 3 Management and Personnel, Title 21 CFR 110.10 (n=7)**

Category Name	Variable Name	# with Field	% with Field
<b>Disease Control</b>	Employee health restrictions and exclusion policies are in place	5	71
	Physical evidence of employees with infections, open sores, lesions	4	57
<b>Cleanliness</b>	Outer garments worn	4	57
	Adequate personal cleanliness	6	86
	Proper handwashing	7	100
	Jewelry removed or covered	4	57
	Proper glove use	3	43
	Proper hair restraints	5	71
	Proper storage of personal belongings	3	43
	Eating, drinking, tobacco use in approved areas	5	71
	Other types of personal contamination avoided	1	14
<b>Education/Training</b>	Supervisors have the necessary education and/or experience	2	29
	Personnel trained in proper food handling practices	2	29
<b>Supervision</b>	Supervisor assures compliance	3	43

**Table 4 Plant and Grounds, Title 21 CFR 110.20 (n=7)**

<b>Category Name</b>	<b>Variable Name</b>	<b># with Field</b>	<b>% with Field</b>
<b>Grounds</b>	Properly maintaining grounds and storing equipment to ensure the premises free of harborage for pests	5	71
	Roads, yards, and parking lots are maintained	4	57
	Adequate drainage is present	2	29
	Adequate waste treatment and disposal is present	2	29
<b>Plant Construction and Design</b>	Sufficient space for equipment, storage of materials, and production operations	4	57
	Separation of operations to reduce potential for contamination	3	43
	Food in outdoor bulk fermentation vessels is protected	0	0
	Floors, walls, and ceilings are easily cleanable and kept clean in good repair	5	71
	Drip and condensate from fixtures, ducts, and pipes does not contaminate food, food contact surfaces	6	86
	Adequate space is provided in aisles and working areas	0	0
	Adequate lighting in all areas	5	71
	Food products and processing areas protected against broken glass	5	71
	Adequate ventilation	4	57
	Protection against pests	4	57

**Table 5 Sanitary Operations, Title 21 CFR 110.35**

<b>Category Name</b>	<b>Variable Name</b>	<b># with Field</b>	<b>% with Field</b>
<b>General Maintenance</b>	Facility kept clean and in good physical repair	4	57
	Equipment and utensils are cleaned and sanitized	6	86
<b>Storage of Cleaners and other toxic material</b>	Cleaning and sanitizing compounds used are safe and adequate	5	71
	Cleaning, sanitizing, and pesticide compounds are labeled, held, and stored properly	6	86
<b>Pest Control</b>	Processing areas are free of insects, rodents, and other pests	7	100
<b>Sanitation of Food Contact Surfaces</b>	Food-contact surfaces for low-moisture foods shall be in a dry, sanitary condition at the time of use.	6	86
	In wet processing, all food-contact surfaces shall be cleaned and sanitized before use and as necessary	6	86
	Non food contact surfaces shall be cleaned as necessary	7	100
	Single-use items are stored, used, and disposed in a manner to prevent contamination	7	100
	Sanitizing agents shall be adequate and safe	6	86
<b>Storage and Handling of cleaned equipment and utensils</b>	Cleaned and sanitized equipment and utensils are stored to protect from contamination	7	78

**Table 6 Sanitary Facilities and Controls, Title 21 CFR 110.37**

<b>Category Name</b>	<b>Variable Name</b>	<b># with Field</b>	<b>% with Field</b>
<b>Water Supply</b>	Water supply derived from an approved source, hot and cold, under pressure, and of adequate quality	6	86
<b>Plumbing</b>	Adequate to carry sufficient quantities of water throughout the facility	6	86
	Adequate to convey sewage and liquid waste from the facility	6	86
	Adequate floor drainage	3	43
	Backflow prevention devices to prevent cross connections and back siphonages	5	71
<b>Sewage Disposal</b>	Sewage disposal system is adequate	5	71
<b>Toilet Facilities</b>	Toilet facilities are maintained in a sanitary condition	5	71
	Toilet facilities are in good repair	5	71
	Toilet facilities have self closing doors if they open in a processing area	3	43
<b>Handwashing Facilities</b>	Adequate numbers of handwashing facilities are provided	5	71
	Soap or other hand sanitizing agents are provided	5	71
	Paper towels or other drying devices are provided	5	71
	Devices to prevent recontamination of clean, sanitized hands are available	2	43
	Signs directing proper handwashing are displayed	2	43
<b>Rubbish and Offal Disposal</b>	Garbage and refuse containers constructed and maintained	4	57
	All refuse is properly stored and disposed of to prevent pest contamination	5	71

**Table 7 Equipment and Utensils, Title 21 CFR 110.40**

Category Name	Variable Name	# with Field	% with Field
Equipment and Utensils	Equipment and utensils constructed of easily cleanable materials and suitable for their intended use	4	57
	Equipment designed to prevent contamination with lubricants, fuel, metal fragments, contaminated water, or any other contaminants	3	43
	Seams on food-contact surfaces shall be smoothly bonded or maintained so as to minimize accumulation of food particles, dirt, and organic matter	2	29
	Manufacturing systems constructed to be maintained in a sanitary condition	0	0
	Freezer and cold storage compartments fitted with a temperature measuring device with an automatic controlling device or alarm	5	71
	Instruments that measures temperatures, pH, acidity, water activity, or other conditions are accurate, maintained, and adequate in number	2	29
	Compressed air or other gasses introduced into food or used to clean surfaces or equipment not contain unlawful indirect food additives	0	0

**Table 8 Processes and Controls, Title 21 CFR 110.80**

Category Name	Variable Name	# with Field	% with Field
	Responsibility for plant sanitation is specifically assigned to one or more competent individuals	2	29
<b>Raw Materials and Ingredients</b>	Raw materials and other ingredients inspected, segregated, and stored to prevent contamination	4	57
	Raw materials and other ingredients shall not contain levels of microorganisms that would cause disease in humans else they should be pasteurized or treated	3	43
	Raw materials and other ingredients susceptible to contamination with aflatoxin or other natural toxins shall comply with current Food and Drug Administration regulations	3	43
	Raw materials and rework susceptible to contamination with pests, undesirable microorganisms, or extraneous material shall comply with applicable Food and Drug Administration regulations	2	29
	Raw materials and rework held in bulk in containers designed and constructed to protect against contamination and held at appropriate temperature and relative humidity. Reworked materials should be identified.	1	14
	Frozen raw materials shall be kept frozen and thawed prior to use in a manner to protect against contamination	5	71
	Raw materials are stored to protect against contamination.	4	57
<b>Manufacturing Operations</b>	Equipment, utensils, and food containers are cleaned and sanitized.	4	57
	All food manufacturing is conducted under conditions that minimize the growth of		



	microorganisms	1	14
	Food that can support the growth of microorganisms shall be held in a manner to prevent adulteration by keeping refrigerated foods $\leq 45F$ , frozen foods kept frozen, and hot foods $\geq 140F$	6	86
	Measures taken to destroy or prevent the growth of microorganisms	3	43
	Work-in-process shall be handled in a manner that protects against contamination	0	0
	Adequate measures to protect finished food from contamination by raw materials, ingredients, or refuse	4	57
	Equipment, utensils, and food containers used to convey, hold, or store food shall be constructed, handled, and maintained in a manner that protects against contamination.	2	29
	Effective measures taken to protect against the inclusion of metal or other extraneous materials in food.	2	29
	Food, raw materials, and other ingredients that are adulterated shall be disposed of in a manner to protect against the contamination of other food	3	43
	Mechanical manufacturing steps shall be performed to protect against contamination	1	14
	Heat blanching should be effected by heating the food to the required temperature, holding it at this temperature for the required time, and then either rapidly cooling or passing to subsequent manufacturing steps	1	14
	Batters, breading, sauces, gravies, dressings, and other similar preparations shall be treated or maintained in a manner to protect against contamination	2	29
	Filling, assembling, packaging, and other operations shall be performed in a way that food is protected against contamination	2	29

	Foods that rely on control of $a_w$ to prevent the growth of microorganisms shall be processed to and maintained at a safe moisture level.	0	0
	Foods that rely on control of pH to prevent the growth of microorganisms shall be processed to and maintained at a pH of 4.6 or below.	1	14
	When ice is used in contact with food it shall be made of water that is safe and of adequate sanitary quality.	4	57
	Food manufacturing areas and equipment used for manufacturing human food should not be used to manufacture nonhuman food-grade animal feed or inedible products	0	0

**Table 9 Warehousing and Distribution, Title 21 CFR 110.93**

Category Name	Variable Name	# with Field	% with Field
	Storage and transportation of finished food shall be under conditions that will protect food against physical, chemical, and microbial contamination as well as the deterioration of the food and the container	6	86

# Business Needs Project Appendices

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## APPENDIX A – Copy of IT Business Needs On-line Survey

Partnership for Food Protection

IIT Workgroup – IT Business Needs Survey Questions for Inspections



### Introduction

This is a survey from the Partnership for Food Protection's IT Work Group.

The Purpose of this survey is to gather feedback to better understand the types of information that states track and use during all steps of a food inspection; the kinds of systems, tools and functions in place to track, analyze, share and report inspection and sampling information; and any ideas on what kinds of information, systems and/or electronic tools are wanted/needed that would improve inspection/investigation operations.

The information obtained from this questionnaire will be compiled and presented at the next 50 state meeting of the Partnership for Food Protection in August 2010 and help provide recommendations on information systems needed for an integrated food safety system. In addition, the information gathered will be made available to survey participants upon request.

This survey is meant to look across all types of inspections and we would like you to complete this survey from the perspective of the elements that you are most commonly concerned with.

Special thanks to Orange County Environmental Health, a Partnership member, for hosting this survey.

This is primarily a multiple choice survey. Where questions ask for a single answer, please select the one that best applies to your organization. Other questions ask you to "Check all that apply", in which case please select as many options as apply to your organization. In addition, many questions include an "Other" category. When you select this "Other" option, please specify what you mean in the space provided.

Please tell us a little about your organization. Your information will not be shared with anyone and all data will be reported only in grouped form.

**1. What is the name of your organization?:**

**2. What is the affiliation of your Organization?:**

- a. Agriculture related
- b. Health related
- c. Other (please specify)

**3. How do you categorize your Organization?:**

- a. FDA
- b. USDA
- c. CDC
- d. State
- e. Local
- f. Other (please specify)

**4. What is your role in your Organization?:**

- a. Food Inspection Program Manager/Director
- b. Food Inspection Program Employee
- c. Food Inspection Program Information Manager
- d. Food Inspection Program contractor
- e. Laboratory Manager
- f. Organization IT Staff
- g. Other (please specify)

**Pre-Inspection**

**5. What triggers an inspection by your Food Inspection Program? Check all that apply:**

- a. A complaint
- b. Statute/rule (mandated frequency)
- c. Grant requirement
- d. Contract
- e. Request of establishment
- f. Foodborne illness outbreak
- g. Follow up to enforcement action
- h. Inspector's discretion
- i. Licensing a new establishment
- j. Other (please specify)

**6. What information do you use to assign an inspection? Check all that apply:**

- a. Geographic location of the facility
- b. Complaint investigation
- c. Date of the last inspection
- d. Previous inspection history
- e. Type of food
- f. Grant requirement
- g. Contract work
- h. Regulations
- i. Other (please specify)

**7. What kind of tools are you *currently using* to assign inspections to staff? Check all that apply:**

- a. Not currently using any tools
- b. Email to receive assignments in the field
- c. Computer generated assignment list
- d. Database of inventory that is available to the inspector
- e. Cell phones to contact the inspector and provide assignments
- f. Other (please specify)

**8. What kind of tools *would you like to use* to assign inspections to staff, even if you are already using some? Check all that apply:**

- a. Email to receive assignments in the field
- b. Computer generated assignment list
- c. Database of inventory that is available to the inspector
- d. Cell phones to contact the inspector and provide assignments
- e. Other (please specify)

**9. Which of the following does your Food Inspection Program use to assess food safety risk? Check all that apply:**

- a. We currently do not take a risk-based approach to food safety
- b. We consider failed samples (high bacterial or chemical contaminant levels) to indicate higher risk at a food supplier
- c. We consider hazard analysis as part of our routine sampling
- d. We use risk assessment data to continually improve inspection procedures
- e. We follow a standard hazard analysis procedure when taking samples
- f. We use sample data to determine levels of risk associated with the potential for foodborne illness outbreak
- g. We use sample data to determine risk levels at the establishment from where the sample was taken
- h. We consider a failed inspection to indicate higher risk at a food establishment
- i. We use inspection data to determine levels of risk associated with the potential for foodborne illness outbreak
- j. We use inspection data to determine risk levels at the food establishment from whom the sample is taken
- k. We use risk assessment to drive corrective action based on inspection data
- l. We use a mathematical risk model
- m. Other (please specify)

**10. How do inspectors know when a facility is due for an inspection? Check all that apply:**

- a. Inspections are conducted according to a mandated frequency
- b. Electronic database/system
- c. Log book with a list of assigned facilities and hardcopy files
- d. Facilities are inspected as assigned by the supervisor
- e. Other (please specify)

### **Inspection Process**

**11. If you do inspections based on complaints, how do you receive complaints? Check all that apply:**

- a. Phone
- b. E-mail
- c. Fax
- d. On-line web site
- e. Other (please specify)

**12. When preparing for an inspection, what tools do you use? Check all that apply:**

- a. Paper file
- b. Tablet computer in the field
- c. Laptop computer in the field
- d. Handheld device in the field
- e. Computer in the office
- f. Other (please specify)

**13. Which of the following do you do in advance of an inspection? Check all that apply:**

- a. Read past inspection reports
- b. Review establishment compliance history
- c. Review permit/license
- d. Review past sample results
- e. Review inspection report forms
- f. Verify basic establishment information (i.e. Address, owner name, etc)
- g. Other (please specify)

**14. What electronic tools to you currently use when conducting inspections? Check all that apply:**

- a. Tablet computers
- b. Laptop computers
- c. Handheld devices (i.e. blackberry or PDA)
- d. Cell phones
- e. GPS
- f. GIS maps
- g. Printers
- h. Electronic signatures
- i. Bar code readers
- j. Cameras
- k. Scanners
- l. Wireless access cards
- m. Do not use electronic tools
- n. Other (please specify)

### **Sampling**

**15. What kinds of samples do you collect during an inspection? Check all that apply:**

- a. No samples collected (Skip to question 19)
- b. Samples for laboratory analyses
- c. Immediate analysis, (i.e. Temperatures, pH)
- d. Retain sample (for possible future analysis)
- e. Example of product
- f. Other (please specify)

**16. What tools do you use for collecting information about the samples you collect. Check all that apply:**

- a. No information collecting tools are used when collecting samples
- b. Sample forms and labels
- c. Bar code labels and bar code scanners
- d. Laptop or Tablet computer
- e. Handheld device
- f. Other (please specify)

**17. What kinds of sample information do you document when you collect samples? Check all that apply:**

- a. Establishment information
- b. Manufacturer information
- c. Description of the sample
- d. Reason for sample taken
- e. Foodborne illness symptoms

- f. Immediate test results (i.e. Temperatures, pH)
- g. Other (please specify)

**18. How do you provide sample information to the lab(s)? Check all that apply:**

- a. Hand written form
- b. Electronic form sent via email
- c. By phone
- d. Fax
- e. Electronic form which is tied to a LIMS (Laboratory Information Management System)
- f. Our own electronic system that is linked to a LIMS
- g. Our own electronic system that the Lab accesses
- h. Other (please specify)

**Database**

**19. Which of the following characteristics describe the electronic system(s) you have in place to track inspection information. Check all that apply:**

- a. We do not have any electronic systems in place in our food inspection program (skip to question 22)
- b. System is custom built
- c. System is commercially purchased
- d. System is web-based
- e. System is configurable/customizable
- f. System is accessible to users outside our organizations
- g. System is linked to other systems within our organization
- h. System is linked to other systems outside our organization
- i. System allows for multiple users
- j. IT staff install and maintain our system
- k. We install and maintain our system ourselves
- l. IT staff install our system and we maintain it
- m. Other, please describe.

**20. If you currently have a commercially purchased electronic inspection or LIMS system implemented in your food inspection program, please provide the name, version and the vendor you purchased it from below.**

- a. We do not currently have a commercially purchased electronic inspection system
- b. Inspection:
- c. Laboratory LIMS:

**21. Please indicate the inspection information that you *currently track* electronically. Check all that apply:**

- a. We do not track any inspection information electronically
- b. Violation data
- c. Foodborne illness data
- d. Establishment data (i.e. contact info, owner, address, etc)
- e. Permit/License as scanned docs
- f. Permit/License data
- g. Complaints data
- h. Foods/food sectors data
- i. Status of inspections
- j. Inspection field forms as scanned documents
- k. Inspection field forms as data
- l. Enforcement actions as scanned docs as scanned docs



- m. Enforcement actions as data
- n. Field samples
- o. Field sample results
- p. Evidence of food traceability data
- q. Points of contamination at the food establishment
- r. Corrective actions
- s. Communications and notifications
- t. Photos
- u. Establishments that the food travels to before or after the inspected establishment
- v. Information to assess risks
- w. Other (please specify)

**22. Please indicate the inspection information that you *currently don't track* electronically that you would like to if you could. Check all that apply:**

- a. We don't want to track any inspection information electronically
- b. Violation data
- c. Food borne illness data
- d. Establishment data (i.e. contact info, owner, address, etc)
- e. Permit/License as scanned docs
- f. Permit/License data
- g. Complaints data
- h. Foods/food sectors data
- i. Status of inspections
- j. Inspection field forms as scanned documents
- k. Inspection field forms as data
- l. Enforcement actions as scanned docs as scanned docs
- m. Enforcement actions as data
- n. Field samples
- o. Field sample results
- p. Evidence of food traceability data
- q. Points of contamination at the food establishment
- r. Corrective actions
- s. Communications and notifications
- t. Photos
- u. Establishments that the food travels to before or after the inspected establishment
- v. Information to assess risks
- w. Other (please specify)

**23. If you *currently have* an electronic inspection system in place, please indicate the functionality that you currently have/use. Check all that apply:**

- a. We do not have an electronic inspection system
- b. Provides inspection setup and tracking
- c. Provides inspection scheduling and assignment
- d. Maintains contact lists and automated notifications
- e. Provides role-based access and allows multiple users to access the system
- f. Tracks information over time
- g. Data syncs with field sampling devices
- h. Creates pre-made lab sample labels
- i. Creates electronic field inspection forms
- j. Provides access to establishment inspection/compliance history in field
- k. Prints labels and forms in the field
- l. Provides electronic signature in the field
- m. Scans documents in the field

- n. Provides user query based reporting
- o. Provides scheduled reporting
- p. Provides canned reporting
- q. Provide data analysis tools (i.e. summary stats)
- r. Incorporates GIS/mapping
- s. Exports data into electronic formats (i.e. text, excel, etc)
- t. Search capability
- u. Links to other systems
- v. Other (please specify)

**24. Whether you have an electronic inspection system or not, indicate the functionality *you want* from an electronic inspection system. Check all that apply:**

- a. We do not want an electronic inspection system
- b. Provides inspection setup and tracking
- c. Provides inspection scheduling and assignment
- d. Maintains contact lists and automated notifications
- e. Provides role-based access and allows multiple users to access the system
- f. Tracks information over time
- g. Data syncs with field sampling devices
- h. Creates pre-made lab sample labels
- i. Creates electronic field inspection forms
- j. Provides access to establishment inspection/compliance history in field
- k. Prints labels and forms in the field
- l. Provides electronic signature in the field
- m. Scans documents in the field
- n. Provides user query based reporting
- o. Provides scheduled reporting
- p. Provides canned reporting
- q. Provides data analysis tools (i.e. summary stats)
- r. Incorporates GIS/mapping
- s. Exports data into electronic formats (i.e. txt, excel, etc.)
- t. Search capability
- u. Links to other systems
- v. Other (please specify)

**Data Analysis**

**25. How is data analysis used in your food protection program? Check all that apply:**

- a. We do not do any data analyses
- b. Spot trends
- c. Set policy/procedures
- d. Establish fees
- e. Assess inspection program effectiveness
- f. Assign risk
- g. Identify enforcement action need
- h. Manpower planning
- i. Other (please specify)

**26. Please indicate the types of reports you *currently generate* from an electronic inspection system. Check all that apply:**

- a. We don't generate reports from an electronic inspection system as part of our Inspection Program
- b. Reports that track when inspections are due

- c. Reports that indicate inspection assignments
- d. Reports that produce inspection summary statistics over time
- e. Reports summarizing establishment inspections information
- f. Reports of an establishment's compliance history
- g. Reports of complaint statistics
- h. Reports of foodborne illness statistics
- i. Reports of field sample data results
- j. Reports that provide a list of all facilities that have yet to receive a particular service
- k. Other types of reports (please specify)

**27. Please indicate the types of reports *you would like to be able to generate* from an electronic inspection system. Check all that apply:**

- a. We don't want to generate reports from and electronic inspection system as part of our Inspection Program
- b. Reports that track when inspections are due
- c. Reports that indicate inspection assignments
- d. Reports that produce inspection summary statistics over time
- e. Reports summarizing establishment inspections information
- f. Reports of an establishment's compliance history
- g. Reports of complaint statistics
- h. Reports of foodborne illness statistics
- i. Reports of field sample data results
- j. Reports that provide a list of all facilities that have yet to receive a particular service
- k. Other types of reports (please specify)

**Data Sharing**

**28. How do you make inspection reports available? Check all that apply:**

- a. Paper copy available on file at program office
- b. Paper copy available at the facility
- c. Posted on a web site as a static report
- d. By query on web site
- e. Posted in window as seal/grade/score
- f. Not made available to others
- g. Other (please specify)

**29. Do you share information/data with other agencies? If so, which agencies? Check all that apply:**

- a. No, we don't share data (skip to question 33)
- b. Yes, we share with Federal agencies (FDA, CDC, USDA)
- c. Yes, we share with other State Departments of Public Health
- d. Yes, we share with local agencies and departments
- e. Yes, we share with some other entity (please specify)

**30. If your organization and the Federal Agencies are sharing Food Inspection information/data, please check all that apply:**

- a. We are required to provide information to Federal Agencies
- b. We do not utilize Federal Agency information/data
- c. We currently have access to all the information that we want/need from the Federal Agencies
- d. We want/need access to information from the Federal Agencies that we don't currently have
- e. It's currently difficult to find the information from Federal Agencies that we need

- f. We'd like one-stop shopping access to all the information we need from Federal Agencies
- g. We'd like electronic on-line access to the information from Federal Agencies
- h. Other (please Specify)

**31. If your organization and State Department(s) of Public Health are sharing Food Inspection information/data, please check all that apply:**

- a. We are required to provide information with State Department(s) of Public Health
- b. We do not utilize State Departments of Public Health information/data
- c. We currently have access to all the information that we want/need from the State Department(s) of Public Health
- d. We want/need access to information from the State Department(s) of Public Health that we don't currently have
- e. It's currently difficult to find the information from State Department(s) of Public Health that we need
- f. We'd like one-stop shopping access to all the information we need from State Department(s) of Public Health
- g. We'd like electronic on-line access to the information from State Department(s) of Public Health
- h. Other (please Specify)

**32. If your organization and local agencies and departments share Food Inspection information/data, please check all that apply?**

- a. We are required to provide information with local agencies and departments
- b. We do not utilize local agencies and departments' information/data
- c. We currently have access to all the information that we want/need from the local agencies and departments
- d. We want/need access to information from the local agencies and departments that we don't currently have
- e. It's currently difficult to find the information from local agencies and departments that we need
- f. We'd like one-stop shopping access to all the information we need from local agencies and departments
- g. We'd like electronic on-line access to the information from local agencies and departments
- h. Other (please Specify)

**33. What *federal systems* does your food inspection program currently access to get information? Check all that apply:**

- a. We don't access any federal systems
- b. eLEXNET
- c. eSAF
- d. Pulsenet
- e. Foodshield
- f. Foodsafety.org
- g. Reportable Food Registry (RFR)
- h. CDC's National Foodborne Outbreak system(NORS)
- i. CDC's Outbreak Net <http://wwwn.cdc.gov/foodborneoutbreaks>
- j. Other (please specify)

**34. What *federal systems* does your food inspection program currently provide information to? Check all that apply:**

- a. We do not provide any information to federal systems

- b. eLEXNET
- c. eSAF
- d. Pulsenet
- e. Foodshield
- f. Foodsafety.org
- g. Reportable Food Registry (RFR)
- h. CDC's Food borne Outbreak system (NORS) <http://wwwn.cdc.gov/foodborneoutbreaks>
- i. Other (please specify)

### **Program Improvement**

**35. If you don't currently use an electronic inspection system, do you want to implement an electronic system in your program?**

- a. My program currently uses an electronic inspection system
- b. Yes, We'd like to implement one
- c. No, We have no interest in implementing one
- d. Other (please specify)

**36. What information management tool would be most helpful to you?**

- a. Computer database of your inspection inventory
- b. Method of tracking violations by a specific code
- c. Automated inspection/complaint assignment
- d. Electronic inspection system
- e. Other (please specify)

**37. If the Federal Agencies (FDA, USDA, and CDC) were to offer integrated web-based systems and information management tools for Food Inspection Programs, would you use them? Check all that apply:**

- a. No, we already have the systems/tools that we need
- b. Yes, we definitely would if they were easy to use
- c. Yes, we definitely would if they could meet our needs
- d. Yes, we definitely would if we were involved in the design and development of them
- e. Yes, we definitely would if they were free
- f. We might consider
- g. Other (please specify)

**38. Please select any electronic systems, tools and/or technologies that you think make Food Protection Programs more efficient and/or effective.**

- a. Linking electronic food protection systems across federal, state and local agencies
- b. On-line access to needed data from federal, state and local agencies
- c. Single universal electronic food protection system
- d. One-stop shopping to access/share information between Federal State and Local
- e. Other (please specify)

**39. Please identify the obstacles you see in improving integration between federal, state and local electronic food protection electronic systems? Check all that apply:**

- a. Legal/jurisdiction issues
- b. Data ownership/sharing issues
- c. Costs of developing and implementing technologies
- d. Funding mechanism constraint issues
- e. Resource/staffing issues
- f. Software license issues
- g. Technology constraints
- h. Other (please specify)

**40. Are you willing to be contacted for follow-up discussion? Please provide the following information.**

1. Yes
2. No

**41. If you are willing to share copies of your inspection forms**

- a. Yes
- b. No

**42. If you are willing to be contacted and/or share your inspection forms, please provide the following information**

- a. Name
- b. Contact Information
- c. Best times to reach you

## APPENDIX B – Inspection Process Framework Used to Develop Survey Questions

<b>Food Inspection Process</b>	<b>Survey Questions</b>
Initiate Inspection	Q5 - What triggers an inspection by your Food Inspection Program? Q11 - If you do inspections based on complaints, how do you receive complaints?
Assign Inspector	Q6 - What information do you use to assign an inspection? Q7 - What kind of tools are you currently using to assign inspections to staff? Q8 - What kind of tools would you like to use to assign inspections to staff, even if you are already using some? Q10 - How do inspectors know when a facility is due for an inspection?
Prepare/Setup for Inspection with Sampling	Q12 - When preparing for an inspection, what tools do you use? Q13 - Which of the following do you do in advance of an inspection
Inspect Establishment	Q14 - What electronic tools to you currently use when conducting inspections?
Collect Samples	Q15 - What kinds of samples do you collect during an inspection? Q16 - What tools do you use for collecting information about the samples you collect? Q17 - What kinds of sample information do you document when you collect samples?
Provide samples to Lab(s)	Q18 - How do you provide sample information to the lab(s)?
Track Inspection and Inspection Information	Q19 - Which of the following characteristics describe the electronic system(s) you have in place to track inspection information. Q20 - If you currently have a commercially purchased electronic inspection or LIMS system implemented in your food inspection program, please provide the name, version and the vendor you purchased it from below. Q21 - Please indicate the inspection information that you currently track electronically. Q22 - Please indicate the inspection information that you currently don't track electronically that you would like to if you could. Q23 - If you currently have an electronic inspection system in place, please indicate the functionality that you currently have/use. Q35 - If you don't currently use an electronic inspection system, do you want to implement an electronic system in your program? Q36 - What information management tool would be most helpful to you?
Evaluate and Determine if Action Needed	No specific questions
Access to Sample Results Data	No specific questions
Notify Establishment of Action	No specific questions
Corrective Action Follow-up	No specific questions
Inspection Data Analysis	Q25 - How is data analysis used in your food protection program?

Reporting on Inspection(s)	<p>Q26 -Please indicate the types of reports you currently generate from an electronic inspection system.</p> <p>Q27 - Please indicate the types of reports you would like to be able to generate from an electronic inspection system.</p> <p>Q28 - How do you make inspection reports available?</p>
Data Sharing	<p>Q29 - Do you share information/data with other agencies? If so, which agencies?Q30 - If your organization and the Federal Agencies are sharing Food Inspection information/data, please check all that apply:Q31 - If your organization and State Department(s) of Public Health are sharing Food Inspection information/data, please check all that apply:Q32 - If your organization and local agencies and departments share Food Inspection information/data, please check all that apply:Q33 - What federal systems does your food inspection program currently access to get information?Q34 - What federal systems does your food inspection program currently provide information to?</p>
Assessing Risk	<p>Q9 - Which of the following does your Food Inspection Program use to assess food safety risk?</p>
Survey Respondent Information	<p>Q1 - What is the name of your organization?  Q2 - What is the affiliation of your organization?  Q3 - How do you categorize your organization?  Q4 - What is your primary role in your organization?</p>
Integrated Food Safety System	<p>Q37 - If the Federal Agencies (FDA, USDA, and CDC) were to offer integrated web-based systems and information management tools for Food Inspection Programs, would you use them?  Q38 - Please select any electronic systems, tools and/or technologies that you think make Food Protection Programs more efficient and/or effective.  Q39 - Please identify the obstacles you see in improving integration between federal, state and local electronic food protection electronic systems?</p>



## APPENDIX C – Example of Letter for Survey Distribution



**To:** Partnership for Food Protection Members

**From:** Interactive Information Technology Workgroup (IT WG)

**Date:** February 22<sup>nd</sup>, 2010

**Subject:** IT Business Needs Survey Volunteers

The Partnership for Food Protection's Interactive Information Technology Workgroup (IT WG) is looking for volunteers from the partnership willing to participate in an information gathering effort and take a short on-line survey.

The purpose of this effort and survey is to gather information to better understand the types of information that states track and use during all steps of a food inspection; the kinds of systems, tools and functions in place to track, analyze, share and report inspection and sampling information; and any ideas on what kinds of information, systems and/or electronic tools are wanted/needed that would improve inspection / investigation operations.

**The survey will be available on-line and accessible via this link**

**<http://www.surveymonkey.com/s/NC5H2NK> from February 22<sup>nd</sup>, 2010 through March 23<sup>rd</sup>, 2010.**

The IT WG is asking willing participants to forward this survey link to other entities in your state-wide working partnerships that may be able and want to add their input, because it's recognized that a State's food inspections may be accomplished across Federal, State, and Local entities.

In addition, the IT WG is looking for volunteers to participate in some follow up questions to the survey by phone. If you are interested please be sure to provide contact information at the end of the survey.

The information obtained by the IT WG from this effort will be presented at the next 50 state meeting in August 2010 and help provide recommendations on information systems needed for an integrated food safety system.

If you have questions about this effort or while taking the survey, please contact:

Thanks for your participation!

## APPENDIX D- Summary Listing of Survey Respondents

RespondentID	Organization	Organization Categorization	Organization Affiliation	Responder Role in Organization	Willing for Follow Up discussion	Willing to share Copies of Field Inspection forms
999693765	Center for Veterinary Medicine, Division of Surveillance	FDA	Agriculture related	Veterinary epidemiologist	No	No
998652687	FDA's Center for Veterinary Medicine - Division of Animal Feeds	FDA	Agriculture related	Animal feed reviewer, biotech plant coordinator, food safety initiative coordinator for CVM		
1005085105	Center for Veterinary Medicine	FDA	Agriculture related	Food Inspection Program Manager/Director	Yes	Yes
1003547766	FDA Center for Veterinary Medicine, Division of Compliance	FDA	Agriculture related	Food Inspection Program Manager/Director	Yes	Yes
998544940	U.S. Food and Drug Administration	FDA	Health related	Resource Management		
998389814	FDA Office of Crisis Management	FDA	Health related	Emergency and Crisis Management		
997217169	FDA	FDA	Health related	Food Inspection Program Employee		
995957241	U.S. Food and Drug Administration	FDA	Health related	Food Inspection Program Manager/Director	Yes	Yes
1003128976	CFSAN Office of Compliance	FDA	Health related	Program Analyst		
1000824661	FDA CVM OSC Division of Surveillance	FDA	Health related	Veterinary Medical Officer, Division of Surveillance, I look at food related adverse events (among other things).	Yes	
986277699	Rock County Health department	Local	Agriculture related	Food Inspection Program Manager/Director	Yes	Yes
999605032	Panhandle Health District 1	Local	Health related	Food Inspection Program Coordinator and inspector	Yes	Yes
999522949	Eastern Idaho Public Health District	Local	Health related	Health Director	Yes	Yes
997440557	South Central Public Health District	Local	Health related	Food Inspection Program Manager/Director	Yes	Yes
995957014	Central District Health Department (Idaho)	Local	Health related	Food Inspection Program Manager/Director	Yes	Yes
991641226	County of Santa Clara Department of Environmental Health	Local	Health related	Food Inspection Program Manager/Director	No	Yes
989367035	Milwaukee Health Dept.	Local	Health related	Food Inspection Program Manager/Director	Yes	Yes
988920011	City of Oshkosh Health Services Division	Local	Health related	Food Inspection Program Employee	No	Yes
988675340	Cabarrus Health Alliance	Local	Health related	Food Inspection Program Employee		
988222136	Hyde County Health Department	Local	Health related	Food Inspection Program Employee	No	No
987642806	Union County NC Health Department	Local	Health related	Food Inspection Program Manager/Director	Yes	Yes
987466824	Sauk County Health Department	Local	Health related	Food Inspection Program Employee	No	Yes

987371701	Bayfield County Health Department	Local	Health related	Food Inspection Program Manager/Director	No	No
987366739	Sauk County Health Dept. Environmental Div.	Local	Health related			
987252212	La Crosse County health Department	Local	Health related	Food Inspection Program Manager/Director	No	No
987177058	Polk County Health Dept	Local	Health related	Food Inspection Program Manager/Director	Yes	Yes
987159701	Winnebago County Health Department	Local	Health related	Food Inspection Program Employee	Yes	Yes
987048571	Pitt County Environmental Health	Local	Health related	Food Inspection Program Employee		
987003254	Outagamie County Public Health Division	Local	Health related	Food Inspection Program Employee	Yes	Yes
986619990	Union County NC Health Department	Local	Health related	Food Inspection Program Manager/Director		
986539379	Alexandria (VA) Health Department	Local	Health related	Food Inspection Program Manager/Director	Yes	Yes
986442178	TAYLOR COUNTY HEALTH DEPARTMENT	Local	Health related	Food Inspection Program contractor	No	Yes
986389002	Marathon County Health Department	Local	Health related	Food Inspection Program Manager/Director	No	No
986348427	City of Menasha Health Department	Local	Health related	Food Inspection Program Manager/Director	Yes	Yes
986305346	Appleton Health Department, Appleton, WI	Local	Health related	Food Inspection Program Manager/Director	No	No
986301825	Wood County Health Department	Local	Health related	Food Inspection Program Manager/Director	Yes	Yes
986274613	Environmental Health Consortium Cudahy, St. Francis & South Milwaukee	Local	Health related	Food Inspection Program Manager/Director		
986272914		Local	Health related	Food Inspection Program Manager/Director		
986271251	Waukesha County Environmental Health Division	Local	Health related	Food Inspection Program Manager/Director	Yes	Yes
986261324	City of De Pere Health Dept.	Local	Health related	Food Inspection Program Manager/Director	No	No
986258119	Kenosha County Division of Health	Local	Health related	Food Inspection Program Manager/Director	No	Yes
986254302	brown county health dept.	Local	Health related	Food Inspection Program Manager/Director	No	Yes
986254097	Eau Claire City-County Health Department	Local	Health related	Food Inspection Program Manager/Director	Yes	Yes
984840982	Buncombe County Department of Health	Local	Health related	Food Inspection Program Employee		
984818924	Craven County Health Department	Local	Health related	Food Inspection Program Manager/Director	Yes	Yes
984733087	Alamance County Health Department	Local	Health related	Environmental Health Program Specialist/Public Health Preparedness Coordinator	No	No
984685832	Durham county Health Department	Local	Health related	Food Inspection Program Manager/Director	Yes	Yes
984616118	Orange County, NC Environmental Health	Local	Health related	Food Inspection Program Manager/Director	Yes	Yes
984609938	Gaston County Environmental Health	Local	Health related	Food Inspection Program Employee		
984595782	Richmond County Health Department	Local	Health related	Food Inspection Program Employee	No	No
984583656	Wayne County Health Department	Local	Health related	Food Inspection Program	No	No

				Manager/Director		
983592471	Wake County	Local	Health related	Food Inspection Program Employee	No	No
983288441	Transylvania County Department of Public Health	Local	Health related	Food Inspection Program Employee		
983209398	New Hanover Co Health Dept Environmental Health Services Div	Local	Health related	Food Inspection Program Manager/Director	Yes	Yes
983147281	NEW HANOVER COUNTY HEALTH DEPARTMENT	Local	Health related	Food Inspection Program Manager/Director	Yes	Yes
983086783	Wilson County Environmental Health	Local	Health related	Administrative Assistant		
983026746	Randolph County Health Department	Local	Health related	Food Inspection Program Employee		
983025037	Burke County Environmental Health	Local	Health related	Food Inspection Program Employee		
982940547	Cherokee County Environmental Health	Local	Health related	Food Inspection Program Employee		
982938895	Madison County Environmental Health	Local	Health related	Food Inspection Program Employee	No	Yes
982903577	Chatham County Public Health Department	Local	Health related	Food Inspection Program Manager/Director		
982875501	Health Department	Local	Health related	Food Inspection Program Employee	No	No
982871871	Pender County Health Department	Local	Health related	Food Inspection Program Employee	Yes	Yes
982871494	Lincoln County Environmental Health	Local	Health related	Food Inspection Program Manager/Director		
982864573	Harnett County	Local	Health related	Food Inspection Program Manager/Director	No	Yes
982863708	Richmond County Health Dept.	Local	Health related	Food Inspection Program Manager/Director	Yes	Yes
981106260	Health Department	Local	Health related	Environmental Health Specialist	No	No
981064204	Waukesha County	Local	Health related	Food Inspection Program Employee	No	Yes
980057318	Maricopa County Environmental Services	Local	Health related	Food Inspection Program Manager/Director		
979372353	Lincoln-Lancaster County Health Department	Local	Health related	Manager of the entire Environmental Health Division (Air, Water, Waste, Food, Child Care, etc.)	Yes	Yes
987294482	Florida Department of Agriculture and Consumer Service	State	Agriculture related	Program Director for food inspections and food laboratories	Yes	Yes
986281656	Oregon Department of Agriculture	State	Agriculture related	Laboratory Manager	No	No
986022342	VA Dept of Agriculture & Consumer Services	State	Agriculture related	Food Inspection Program Manager/Director	Yes	Yes
985128535	Oregon Department Of Agriculture AHID/Feed	State	Agriculture related	Feed Program Specialist	No	No
985059635	Minnesota Department of Agriculture	State	Agriculture related	Food Inspection Program Manager/Director	Yes	Yes
983233724	Wisconsin Department of Agriculture, Trade and Consumer Protection	State	Agriculture related	Animal Feed Program Manager		
982975795	Hawaii State Department of Agriculture, Quality Assurance Division	State	Agriculture related	Food Inspection Program Manager/Director	Yes	Yes
981932662	Florida Department of Agriculture and Consumer Services	State	Agriculture related	Food Inspection Program Manager/Director	Yes	Yes
981383324	Hawaii Dept of Agriculture	State	Agriculture related	Food Inspection Program Manager/Director	No	No
980308788	UH Farm Food Safety Program	State	Agriculture related	Educational Media Specialist		

980032288	New York State Department of Agriculture & Markets - Division of Food Safety & Inspection	State	Agriculture related	Food Inspection Program Manager/Director	Yes	Yes
979983787	Hawaii Department of Agriculture	State	Agriculture related	Food Inspection Program Employee	No	No
979878389	College of Tropical Agriculture and Human Resources - University of Hawaii at Manoa	State	Agriculture related	On-farm food safety coach (we prepare farmers for their 3rd party audits)	Yes	
978948596	New Mexico Department of Agriculture	State	Agriculture related	Feed Inspection Program Manager/Director	Yes	Yes
978945372	North Carolina Department of Agriculture and Consumer Services	State	Agriculture related	Food Inspection Program Manager/Director	Yes	Yes
978944101	Tennessee Dept of Agriculture (Feed)	State	Agriculture related	Feed Program Administrator	Yes	Yes
978906536	Michigan Department of Agriculture	State	Agriculture related	Food Inspection Program Employee	Yes	Yes
995880487	Idaho Department of Health and Welfare	State	Health related	Food Inspection Program Manager/Director		
995768212	MA Food Protection Program	State	Health related	Food Inspection Program Employee	Yes	Yes
993683114	Colorado Department of Public Health and Environment	State	Health related	Food Inspection Program Manager/Director	No	Yes
988715646	SC Department of Health and Environmental Control	State	Health related	Food Inspection Program Manager/Director	Yes	Yes
987857942	Sanitation Branch	State	Health related	Food Inspection Program Employee	No	No
986624578	Hawaii State Department of Health	State	Health related	Food Safety Educator	Yes	Yes
986562218	Minnesota Dept of Agriculture	State	Health related	Food Inspection Program Manager/Director		
986285555	California Department of Public Health, Food and Drug Branch	State	Health related	Food Inspection Program Manager/Director	Yes	Yes
986128404	Virginia Department of Health	State	Health related	Food Inspection Program Manager/Director	Yes	Yes
984967775	Hawaii State Department of Health, Food & Drug Branch	State	Health related	Food Inspection Program Employee	No	No
984616089	Florida DBPR - Division of Hotels and Restaurants	State	Health related	Food Inspection Program Manager/Director	Yes	Yes
984596052	new hanover county health dept.	State	Health related	Food Inspection Program Employee	No	No
983310190	Alamance County Health Department Environmental Health Section	State	Health related	Food Inspection Program Employee	Yes	Yes
982804366	NC Division of Environmental Health	State	Health related	Food Inspection Program Manager/Director		
980742048	state of wisconsin, department of health services	State	Health related	Food Inspection Program Employee	No	No
979097739	Texas Department of State Health Services	State	Health related	Food, Drug, Environmental and Radiation Program Director	Yes	Yes
978914422	Oklahoma State Department of Health	State	Health related	Food Inspection Program Manager/Director	Yes	Yes
978818112	Mississippi State Department of Health	State	Health related	Food Inspection Program Manager/Director	Yes	Yes
975815943	Division of Food Safety	State	Health related	Food Inspection Program Employee	No	No
994125505	Hawaii Organic Farmers Ass'n	USDA	Agriculture related	Administrative - coordinator of certification program activities	No	Yes
991637801	MT Dept of Livestock	USDA	Agriculture related	Assistant State Veterinarian		

## APPENDIX E – Data Validation and Cleaning

The survey results were downloaded from Survey Monkey in Excel format. The results consisted of 2 files:

- Sheet1.xls
- Sheet2.xls

The Data Validation and Cleaning Included:

1. Verification of all responses and removal of responses where no questions were answered
2. Verification of respondent's organizational categorization and affiliation and update blanks and "other" responses where appropriate
3. Recalculation of the overall response percentages based on updates
4. Calculation of response percentages based on respondent's organizational categorization and affiliation

### **1. Verification of all responses and removal of responses where no questions were answered**

Three of the survey responses were removed prior to analysis because no questions were answered. These included:

Respondent ID:

- 997746259
- 987159100
- 982894875

This reduced the total number of survey respondents from 111 to 108.

One survey respondent (Respondent ID: 986272914) did not provide the name of their organization, but did complete the entire survey. This record was included in the calculation of response percentages; however, there will be no way to follow up with the respondent in the future.

### **2. Verification of respondents' organizational categorization and affiliation**

Each survey respondent was asked to indicate if their organization categorization was "State, Local, FDA, CDC or USDA or "Other" in Survey Question #3 and if their organization affiliation was Health related, Agriculture related, or "Other" in Survey Question #2.

Each survey respondent's response was reviewed and any blank or "Other" responses were assigned a response from the original pick lists. A summary of the specific changes applied is presented below in Table E-1. This was done because the categorization and affiliation of the respondents' organization will be used to look at response percentages based on these.

**Table E-1. Summary of Pre-analysis Data Updates**

<b>Respondent ID</b>	<b>Question 1: What is the name of your organization?</b>	<b>Question 2: How do you categorize your organization?</b>	<b>Question 3: What is the affiliation of your organization?</b>
999693765	Center for Veterinary Medicine, Division of Surveillance	Changed from Animal Health related to Agriculture related	
999522949	Eastern Idaho Public Health District		Changed from Other to Local
998389814	FDA Office of Crisis Management	Changed from both to Health related	
997440557	South Central Public Health District		
997217169	FDA	Changed from Food to Health related	
993683114	Colorado Department of Public Health and Environment	Changed from Environmental and Public Health to Health related	
987366739	Sauk County Health Dept. Environmental Div.	Changed from blank to Health related	Changed from blank to Local
986539379	Alexandria (VA) Health Department		Changed from Other to Local
986022342	VA Dept of Agriculture & Consumer Services	Changed from Both, Food Safety program regulates retail food stores, food processors and food warehouses to Agriculture related	
985128535	Oregon Department Of Agriculture AHID/Feed	Changed from Government to Agriculture related	
984609938	Gaston County Environmental Health	Changed from public health to Health related	
983592471	Wake County	Changed fro, local government to Health related	
981932662	Florida Department of Agriculture and Consumer Services	Changed from Agency has both, my Division, Food safety is health related to Agriculture related	
978818112	Mississippi State Department of Health		Changed from other to State
1005085105	Center for Veterinary Medicine	Changed from Government; animal food and health to Agriculture related	

**3. Recalculation of the response percentages based on updates**

The response percentages originally derived by the on-line Survey Monkey app were re-calculated based on the changes made to the data. The survey responses were for each response of each question

**Response Percentage** = Count of Individual Question Responses/Total number of respondents who answered the question

**Response Count** = Count of responses for each question response

**Note:** For questions #12 and 14 the response counts and percentages were totaled for the laptop and tablet PC responses since these are very similar technologies.

**4. Calculation of response percentages based on respondent’s organizational categorization and affiliation**

The response percentages were then calculated based on how the respondent categorized their organization and by their affiliation. This included:

**Organization Categorization:** State, Local, Federal (USDA; FDA; CDC combined)

**Organization Affiliation:** Agriculture related; Health related

This would indicate differences in responses based on the categorization and/or affiliation of the respondent's organization and show if the Federal, State, Local, Health and/or Agriculture organizations have similar information and system needs.

These response percentages were calculated using the same method that was used for the overall response percentage calculations (above #3) for consistency.

**Note:** For questions #12 and 14 the response counts and percentages were totaled for the laptop and tablet PC responses since these are very similar technologies.



## **APPENDIX F – Contact Information for Requesting Data and Documents**

The master data results are available in separate document for Download on FDA's Website  
<http://www.fda.gov/ForFederalStateandLocalOfficials/Meetings/default.htm>

Raw data results are available upon request by contacting:

Kata Ritenburg

Massachusetts Department of Public Health

Bureau of Environmental Health, GIS Manager

250 Washington Street 7<sup>th</sup> Floor

Boston, MA 02108

[katherine.ritenburg@state.ma.us](mailto:katherine.ritenburg@state.ma.us)