FDA Trend Analysis Report on the Occurrence of Foodborne Illness Risk Factors in Selected Institutional Foodservice, Restaurant, and Retail Food Store Facility Types (1998 – 2008)

Prepared by the FDA National Retail Food Team

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FDA:

Center for Food Safety and Applied Nutrition (CFSAN)
- Marc Boyer, Biostatistics Branch
- Martine Ferguson, Biostatistics Branch
- Jerome Schneidman, Biostatistics Branch

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- Regional Retail Food Specialists
- Richard Barnes, Division of Federal-State Relations (DFSR) (retired)

National Retail Food Steering Committee
- Kevin Smith, CFSAN, Director of Division of Cooperative Programs, Committee Chair
- Elizabeth O'Malley, Director of Cooperative Programs – Northeast Region, Field Team Representative
- Glenda Lewis, CFSAN, OC/DCP/Retail Food Protection Team (RFPT) – Team Leader, Team Representative
- Shirley Bohm, CFSAN, OC/DCP/RFPT, Team Representative (retired)
- Kathryn Kennedy, ORA, Regional Retail Food Specialist, Field Team Representative
- Steve Nattrass, ORA, Regional Retail Food Specialist, Field Team Representative
- Jim Fear, ORA, Manager State Training Team, Division of Human Resource Development (DHRD), DHRD Team Representative

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EXECUTIVE SUMMARY

This document presents findings from the Food and Drug Administration's (FDA) National Retail Food Team ten-year study to measure trends in the occurrence of food preparation practices and employee behaviors at the retail and foodservice level that are believed to most commonly contribute to foodborne illness outbreaks. Observational data collected in retail and foodservice establishments across the United States in 1998, 2003, and 2008 have been presented in three separate reports that are available on FDA's website (www.fda.gov/RetailFoodProtection). FDA analyzed the data from these three reports to detect improvement or regression trends over the ten-year period. The data in this Trend Report suggest that the control of certain foodborne illness risk factors improved over the 10-year period in most facility types, but that compliance with important requirements in the FDA Food Code needs further improvement in order to adequately prevent foodborne illness outbreaks.

The results of the trend analysis are reported separately for nine facility types from three different segments of the retail and foodservice industry:

<u>Institutional Foodservice</u>
Hospitals
Nursing Homes
Elementary Schools (K-5)

<u>Restaurants</u>
Fast Food
Full Service

<u>Retail Food Stores</u>
Deli Departments/Stores
Meat and Poultry Markets/Departments
Seafood Markets/Departments
Produce Markets/Departments

Direct observations made by FDA specialists, supplemented with information gained from interviews with management and food employees, were used to document the establishments' compliance status for 42 individual data items. These items comprise the contents of 5 major risk factor categories and are based on the provisions of the 1997 FDA Food Code (See Appendix I, page 138). In each establishment, the status for each data item was recorded as In Compliance, Out of Compliance, Not Observed (meaning the behavior or

practices was not observed during the visit), or Not Applicable (meaning the behavior or practices did not apply to the establishment).

For each of the nine facility types, the report presents trends as follows:

- the overall In Compliance percentage for all 42 data items combined;
- the collective In Compliance percentage for each of five important foodborne illness risk factors: (1) Food from Unsafe Source; (2) Poor Personal Hygiene; (3) Inadequate Cooking; (4) Improper Holding/Time and Temperature, and (5) Contaminated Equipment/Protection from Contamination; and
- the In Compliance percentage for each of individual 42 data items.

In each category, the most significant improvements were typically achieved in those items that had relatively high Out of Compliance percentages at the beginning of the 10-year study. Despite significant improvements in many facility types, the following three Risk Factors--Improper Holding/Time and Temperature, Poor Personal Hygiene, and Contaminated Equipment/Protection from Contamination-- continue to be most in need of priority attention by both industry and regulators. The *2009 FDA Report on the Occurrence of Foodborne Illness Risk Factors in Selected Institutional Foodservice, Restaurant, and Retail Food Store Facility Types*, which is being released concurrently with this Trend Report, calls attention to those items and makes recommendations to the industry and regulatory community for addressing inadequate compliance.

Overall In Compliance percentages (all 42 data items combined)

The trend analysis revealed that the Overall In Compliance percentage improved in all facility types. In five out of the nine facility types, listed below, the improvement was considered statistically significant (using the Cochran Armitage trend test).

- Elementary Schools;
- Fast Food Restaurants;
- Full Service Restaurants;
- Meat and Poultry Markets/Departments, and
- Produce Markets/Departments.

The report also shows that, in two facility types (Meat and Poultry Departments and Produce Departments), targets set by FDA in 1998 for improved compliance percentages were achieved.

In Compliance percentages for foodborne illness risk factors

Eight of the nine facility types showed a statistically significant increase for the In Compliance percentage of at least one of the five foodborne illness risk factors. The In Compliance percentages for the risk factors in Nursing Homes stayed relatively static during the study period. There were no facility types that showed a statistically significant decrease in the In Compliance percentage for a foodborne illness risk factor.
For example, a statistically significant improvement for the Poor Personal Hygiene risk factor was observed over the 10-year study period in the following facility types:

- Elementary Schools;
- Fast Food Restaurants;
- Full Service Restaurants;
- Deli Departments/Stores;
- Meat and Poultry Markets/Departments;
- Seafood Markets/Departments, and
- Produce Markets/Departments.

A statistically significant improvement in the Improper Holding/Time and Temperature risk factor was observed in:

- Elementary Schools;
- Fast Food Restaurants;
- Full Service Restaurants;
- Meat and Poultry Markets/Departments, and
- Produce Markets/Departments.

Notwithstanding these improvements, in many facility types, the compliance percentages remained low in 2008 for many of these risk factors, suggesting the need for greater emphasis on their control.

In Compliance percentage for individual data items

Although four facility types showed statistically significant improvement in the *Proper, Adequate Handwashing* data item, the study suggests that obtaining full compliance in this area continues to be a challenge for many facility types. For example, in 2008, handwashing practices were observed to be out of compliance at least once in approximately 3 out 4 full service restaurants and roughly half of retail delis.

This report suggests that, in many facility types, there has been significant improvement in Food Code compliance in areas where recent efforts by industry and regulatory community have been focused. For example, 6 of 9 facility types showed statistically significant improvement in the area of preventing bare hand contact with ready-to-eat foods and 7 of the 9 facility types showed statistically

significant improvement the proper date marking of refrigerated ready-to-eat foods.

Of interest to FDA for future similar studies is assessing the impact of various industry and regulatory intervention strategies designed to enhance compliance and improve the managerial control of foodborne illness risk factors within retail and foodservice establishments. Examining the correlation between the occurrence of risk factors and the actual incidence of foodborne illness is also of interest to FDA.

I. INTRODUCTION AND PURPOSE

A. Background

Ensuring safe food is an important public health priority for our nation. For years, regulatory and industry food safety programs have focused on reducing the incidence of foodborne illness. Despite these efforts, the 1996 report, "Reinventing Food Regulations" [National Performance Review], concluded that *"foodborne illness caused by harmful bacteria and other pathogenic microorganisms in meat, poultry, seafood, dairy products, and a host of other foods is a significant public health problem in the United States."*

The National Performance Review Report looked at the occurrence of foodborne illness from a farm-to-table perspective. It did not attempt to define the scope of the problem within specific sectors of the farm-to-table continuum.

FDA's Response to the 1996 National Performance Review Report

In response to the 1996 National Performance Review Report and subsequent input from state and local regulatory partners, FDA established the National Retail Food Steering Committee (Steering Committee) that included representation from the Center for Food Safety and Applied Nutrition (CFSAN), Office of Regulatory Affairs (ORA), Division of Federal/State Relations (DFSR), Division of Human Resource Development (DHRD), and the Interstate Travel Program (ITP) Field Team. The Steering Committee is responsible for reviewing retail food program objectives and coordinating program activities.

The 1993 Government Performance and Results Act required federal agencies to develop performance plans that included measurable goals and performance indicators. To establish a strategic direction for the retail food program, the Steering Committee made it a priority to identify a performance measurement to assess the effectiveness of the nation's retail food protection system. The initiatives in the subsequent strategic plan were directed toward developing a national retail food program model that could be used by federal, state, local, and tribal regulatory agencies to:

- Identify essential food safety program performance measurements;
- Assess strengths and gaps in the design, structure, and delivery of program services;
- Establish program priorities and intervention strategies focused on reducing the occurrence of behaviors and practices leading to foodborne illness outbreaks; and
- Create a mechanism that justifies program resources and allocates them to program areas that will provide the most significant public health benefits.

Identifying Performance Measures for Regulatory Retail Food Programs

A study was needed to determine the effectiveness of the nation's retail food protection system and to establish performance measures. Although the level of foodborne illness associated with this segment of the industry would have been the ideal program performance indicator, the occurrence of foodborne illness was and still is grossly underreported. This makes tracking the incidence of foodborne illness an unreliable program performance measure.

As an alternative, the FDA selected the occurrence of foodborne illness risk factors as the performance indicator. The *Centers for Disease Control and Prevention (CDC) Surveillance Report for 1988 – 1992* identifies the most significant contributing factors to foodborne illness. Five of these broad categories of contributing factors directly relate to food safety concerns within foodservice and retail food store facility types and in this study are called "foodborne illness risk factors" or "risk factors" for short:

- Food from Unsafe Sources
- Poor Personal Hygiene
- Inadequate Cooking
- Improper Holding/Time and Temperature
- Contaminated Equipment/Protection from Contamination

In the study, a total of 42 data items were developed to assess the food safety practices and employee behaviors related to these five risk factors and an additional category called "Other" which corresponded to the possible contamination by toxic or unapproved chemicals. Using the results from the 1998 data collection as a baseline, the Steering Committee established a goal of *reducing the Out of Compliance percentage of observations of the original 42 data items related to foodborne illness risk factors in institutional foodservice, restaurants, and retail food establishments by **25%** by 2010.*

Study Timeline

Any study designed to measure trends requires analysis of the subject matter over a period of time. No single point in time can be used to derive conclusions. Rather, it is a review and evaluation of the data collected at several intervals that provide the basis for drawing conclusions.

This project was designed to collect data on the occurrence of the foodborne illness risk factors in selected foodservice and retail food establishments at five-year intervals. These data collection efforts were designed to get an accurate picture of the extent to which foodservice and retail food operations have control over the risk factors during each data collection period.

In order to detect trends of improvement and/or regression, it was necessary to collect data from at least three periods in time. This report uses the data from the 1998, 2003, and 2008 data collection periods to evaluate trends and determine whether progress has been made toward the goals of reducing the occurrence of foodborne illness risk factors.

Table 1 describes the study timeline and the objective(s) of each data collection period/report.

Table 1

Study Timeline and Objectives

Data Collection Period	Title of the Report	Objectives
1998	*Report of the FDA Retail Food Program Database of Foodborne Illness Risk Factors. Published in 2000*	• Establish a Baseline for nine selected institutional foodservice, restaurant, & retail food store facility types.
2003	*FDA Report on the Occurrence of Foodborne Illness Risk Factors within Selected Institutional Foodservice, Restaurant and Retail Food Store Facility Types (2004)*	• Identify risk factors and data items in need of priority attention. • Collect second of at least three sets of data needed to assess trends in occurrence of risk factors.
2008	*FDA Report on the Occurrence of Foodborne Illness Risk Factors within Selected Institutional Foodservice, Restaurant and Retail Food Store Facility Types (2009)*	• Identify risk factors and data items in need of priority attention. • Collect third of at least three sets of data needed to assess trends in occurrence of risk factors.
Trend Analysis **1998 to 2008**	*FDA Trend Analysis Report on the Occurrence of Foodborne Illness Risk Factors within Selected Institutional Foodservice, Restaurant and Retail Food Store Facility Types (1998 – 2008)*	• Examine the improvement or regression in the percentage of IN Compliance observations for each facility type over the ten-year study period. • Assess trends at the risk factor level for each facility type. • Determine the effect of selected data items on the improvement or regression in the IN Compliance observations for risk factors and facility types.

1998 Baseline Measurements and Improvement Goals

Using the results of the 1998 data collection, the 2000 *Report of the FDA Retail Food Program Database of Foodborne Illness Risk Factors* established the first-ever national baseline on the occurrence of foodborne illness risk factors within select institutional foodservice, restaurant, and retail food store facility types. By establishing a baseline, regulatory and industry food safety professionals have a performance measure upon which to assess the impact of efforts directed to positively change behaviors and practices related to foodborne illness.

The data in Table 2 presents the IN Compliance status of the 42 data items used to establish the 1998 Baseline measurements and the FDA 2010 improvement goal for each of the nine facility types included in the study. These measurements represent the "overall IN Compliance percentages" for each of the nine facility types.

Table 2

Percentage (%) of Observations found IN Compliance for ALL Data Items

Industry Segment	Facility Type	1998 Baseline % IN Compliance for Observations made of ALL data items (rounded to nearest %)*	2010 FDA Improvement Goal (rounded to nearest %)
Institutional Foodservice	Hospital	80%	85%
	Nursing Home	82%	87%
	Elementary School	80%	85%
Restaurants	Fast Food	74%	81%
	Full Service	60%	70%
Retail Food	Deli	73%	80%
	Meat and Poultry Markets/Departments	81%	86%
	Seafood Markets/Departments	83%	87%
	Produce Markets/Departments	76%	82%

***1998 Baseline calculation:**

Percent IN Compliance =

$$\frac{\text{All applicable, observable, IN Compliance data items within all risk factor categories}}{\text{Total number of observations (IN and OUT)}} \times 100\%$$

*****To be consistent with the Retail Food Steering Committee's established performance goal, a ten-year goal of 25% reduction for the percent Out of Compliance was set as the target for improvement.

An example computation using hospitals illustrates how the specific ten-year improvement goal percentages were attained:

Hospital: 1998 Baseline % = 80% IN Compliance (20% Out of Compliance)
Improvement goal = 25% reduction in the percent Out of Compliance

25% of 20% = 5%
Baseline Out of Compliance 20% – 5% = 15%
Improvement goal = 85% IN Compliance

Examining trends for the research period 1998 - 2008

This report examines the improvement or regression in the percentage of IN Compliance observations for each facility type. Statistical analysis was used to assess trends at the facility type level (i.e. improvement or regression in the occurrence of the total combined 42 data items for each facility type) and the risk factor level (i.e. improvement or regression in the occurrence of the collective data items pertaining to each risk factor for each facility type). In addition, some of the individual data items had a sufficient number of observations to assess improvement or regression trends for the specific data items during the ten-year study period. The report also determines the effect of selected data items on the improvement or regression in the IN Compliance observations for risk factors and facility types.

B. Study Design, Objectives, and Scope

This study contains nine separate reports of data trend analyses, one for each of the nine different facility types. The target industry segments for this project are institutional foodservice, restaurants, and retail food stores. Of the nine facility types, three were associated with institutional foodservice – hospitals, nursing homes, and elementary schools (K – 5). The restaurant industry segment was comprised of two facility types – fast food and full service. Four facility types were departments of retail food stores and independent specialty operations related to deli, meat and poultry, seafood, and produce.

Although the data presented were collected from many locations across the U.S., this study was not designed to support comparisons of states, counties, cities, or even regions of the U.S. The data from this project provided input into the Healthy People 2010 Initiative under Food Safety Objective 10.6. This objective is designed to improve food preparation practices and food employee behaviors within institutional food service establishments, restaurants, and retail food stores.

C. Introduction

Guidance for interpreting the results in this Report

All statistical studies have limitations. How a research project is designed and implemented can have a profound impact on the interpretation of the data.
Prior to discussing methodology and the trend analysis results, it is essential to review what the study was designed to do and, equally important, what it was NOT designed to

do. Without this discussion, the data presented may be misinterpreted or used inappropriately.

This study was designed using assessment criteria based on the 1997 FDA Food Code

Because FDA's goal was to track trends over time, it was necessary to have a consistent standard of measurement throughout the course of the study. The data collected for the trend analysis consisted of 42 individual data items based on the requirements in the *1997 FDA Food Code*. These 42 data items, listed in Appendix A of this report, corresponded to the five foodborne illness risk factors and one "other" category to evaluate the possible contamination by toxic or unapproved chemicals. These data items remained the same for all three data collection periods (1998, 2003, and 2008). Keeping the data items the same during all three data collection periods provided consistent data points from which FDA could examine trends.

The study was not designed to measure regulatory compliance with specific state or local food codes

The 42 data items used to track trends in the occurrence of foodborne illness risk factors were based on the provisions in the *1997 FDA Food Code*. No attempt was made to determine if an establishment would have been found to be IN Compliance with prevailing state, local, or tribal regulations.

The *FDA Food Code* is neither federal law nor federal regulation and is not preemptive of state, local, or tribal food safety requirements. In many cases, the *FDA Food Code* and prevailing regulatory standards of measurement were the same. For some data items, the standard of measurement was different.

Foodservice and retail food industry practices observed by the data collectors (for this Study, FDA Regional Retail Food Specialists) may have been IN Compliance with less stringent state or local laws even though the report notes they were Out of Compliance with the *1997 FDA Food Code*. Differences in state and/or local requirements had no bearing on the findings in this study since the *1997 FDA Food Code* was the assessment criterion. By using the *1997 FDA Food Code* as the standard of measurement, the study employed a single document of foodservice and retail food safety standards that had undergone national review.

This study was designed to assess industry's management of food safety procedures and practices essential to the control of foodborne illness risk factors

In the 1998, 2003, and 2008 FDA data collections, observations were made for multiple data items (*FDA Food Code* requirements) that comprise food safety practices and employee behaviors specific to each of the five risk factors. Some of these individual data items did not have a direct link to human illness, but were nevertheless essential to the active managerial control of foodborne illness risk factors.

For example, improper handwashing, which falls under the *poor personal hygiene* risk factor, is associated with the spread of pathogens. There is a direct link between

improper handwashing and human illness. The *poor personal hygiene* risk factor also included data items related to the availability of hand soap and sanitary towels/hand drying devices. The availability of hand soap and sanitary towels/hand drying devices, though not directly linked to human illness, is an essential component of the management system needed to ensure proper handwashing.

This same concept was true for all the risk factors examined in the study. Examples include the retention of shellstock tags, which falls under the *food from unsafe sources* risk factor, and date marking of ready-to-eat potentially hazardous foods, which falls under the *improper holding/time and temperature* risk factor. Neither of these data items have a direct link to foodborne illness, but each is necessary to achieve active managerial control of the corresponding risk factor.

An additional category, "Other," was included to capture potential food safety risks related to possible contamination by toxic or unapproved chemicals for each of the facility types.

This study was designed to focus only on a specific point in the farm-to-table food safety continuum

Pathogens may enter the food supply at any point in the farm-to-table food safety continuum. All industry sectors within this continuum have a responsibility for ensuring safe food.

The 1998, 2003, and 2008 data collections and the resulting trend analysis cover only facility types that comprise institutional foodservice, restaurant, and retail food store operations. The report does not attempt to assess the occurrence of foodborne illness risk factors within other sectors of the food industry or in private homes.

Consumers may find the information in this report useful when trying to better understand food safety risks. This report, however, does not provide specific information about the relative risks associated with the many options consumers have when it comes to dining and purchasing food.

Specific retail food safety information is available to consumers from a number of sources including public web sites maintained by federal, state, and local regulatory agencies, universities, consumer organizations, as well as the foodservice and retail food industries. One such federal food safety site is www.foodsafety.gov. Appendix K – Resources, provides a listing of web site locations for food safety documents referenced in this report.

Study Objectives Summary

This study is intended to fill a void that currently exists in the assessment of program effectiveness for controlling foodborne illness risk factors. Table 3 provides a summary of the objectives of the ten-year study.

Table 3

Study Objectives

	The Study **IS NOT** Designed to
Measure trends over time in regulatory and industry efforts to reduce the occurrence of foodborne illness risk factors	Support comparisons of geographic areas, states, counties, cities or chains of foodservice/retail food store operations
Assess the occurrence of foodborne illness risk factors and management practices essential to their control in selected institutional foodservice, restaurant and retail food facility types	Assess the occurrence of foodborne illness risk factors in other industry sectors of the farm-to-table continuum
Use the *1997 FDA Food Code* provisions as the standard of measurement upon which to make observations of employee practices and behaviors	Determine an establishment's regulatory compliance with prevailing state, local, or tribal regulations
Identify employee practices and behaviors that contribute to the occurrence of foodborne illness that are in need of priority attention	Correlate the occurrence of foodborne illness risk factors with actual incidences of human illness

II. METHODOLOGY

In order to detect trends of improvement and/or regression from the 1998 baseline measurements, it was critical that the methodology used to collect data, as well as the study design, remained consistent for each data collection. The following sections of the report present an overview of the methodology used in this study as originally designed in 1998.

A. Selection of Facility Types

For this study, nine facility types were chosen from three different segments of the foodservice and retail food store industry.

INSTITUTIONAL FOODSERVICE

- Hospitals
- Nursing Homes
- Elementary Schools (K-5)

RESTAURANTS

- Fast Food Restaurants
- Full Service Restaurants

RETAIL FOOD STORES

- Deli Departments
- Meat and Poultry Markets/Departments
- Seafood Markets/Departments
- Produce Markets/Departments

A direct focus on these industry segments allowed FDA to track trends in the occurrence of foodborne illness risk factors in the vast majority of establishment types at the retail level that serve both general and highly susceptible populations. For the purposes of this study, a "highly susceptible population" is a group of persons in a segregated environment who are more likely than the general population to experience foodborne disease due to their current health status or age, such as those found in hospitals, nursing homes, and elementary schools.

B. Eligibility of Establishments for Selection

In determining the pool of establishments eligible for selection, an effort was made to exclude operations that handle only pre-packaged food items or conduct low-risk food preparation activities.

Selected establishments included moderate to high-risk operations that:

- Served a highly susceptible population (i.e., hospitals, nursing homes, and elementary schools);
- Handled ingredients extensively; or
- Conducted a variety of food preparation processes.

Some meat, seafood, and produce departments in retail food stores with limited food preparation or handling may have been selected. These facility types were included in this study because foodborne illness outbreaks have been associated with certain products sold in these departments.

C. Selection of Data Collectors

FDA Regional Retail Food Specialists (Specialists) located throughout the nation were chosen as the data collectors for each of the three data collection periods in the study. Each Specialist possessed technical expertise in retail food safety and a solid understanding of the operations inherent to each of the nine facility types chosen. In addition, Specialists were standardized in the consistent and uniform application of the control measures in the *FDA Food Code* and possessed a strong working knowledge of the foodborne illness risk factors. Selection of the Specialists as data collectors strengthened consistency and uniformity in assessing employee behaviors and practices within their work environment. In addition, the Specialists comprised a group within which implementation of the project could be easily coordinated and standardized.

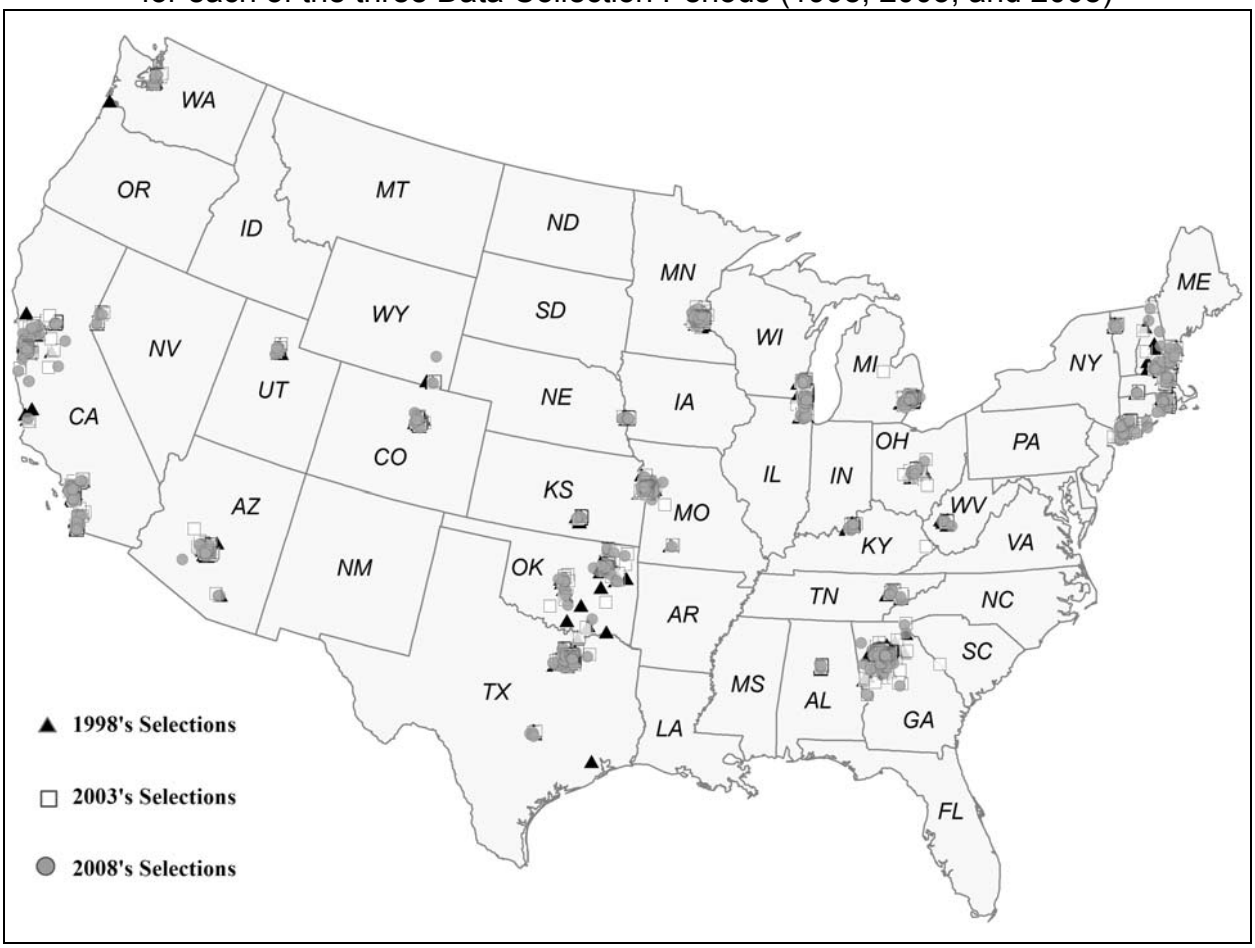
D. Selection of Geographical Locations

The geographical distribution of Specialists throughout the country allowed for a broad sampling of establishments throughout all regions of the U.S. The choice of data collection locations, therefore, was based on the Specialists' geographical areas of responsibility and provided a reasonably convenient design for estimating national risk-related behaviors and practices.

Figure 1, presented at the top of the following page, provides an illustration of the geographic distribution of the selected establishments for each of the three data collection periods (1998, 2003, and 2008).

Figure 1

Representation of the Geographic Distribution of Selected Establishments for each of the three Data Collection Periods (1998, 2003, and 2008)



An improved design for measuring trends within the retail food industry would be one based on probability sampling of the whole nation in which the number of establishments inspected within any given location would be related to the volume of retail food consumed within that location. This would have required the development of comprehensive establishment lists for randomly selected locations around the country, and excessive travel would have been cost-prohibitive and eliminated other vital work by FDA.

E. Summary of Data Collection Procedures

Data Collection Form

So that data could be collected for *specific* behaviors and practices associated with each foodborne illness risk factor, the data collection form used for this study was divided into subparts (see Appendix A). For example, rather than capturing all the behaviors and practices related to the *inadequate cooking* risk factor under one data item and being unable to discern which particular behavior or practice was in need of

attention, there were 12 different types of observations that could be made. Each of these observations had its own corresponding data item.

The data collection form used in the original 1998 baseline study included 42 individual data items sorted among the five foodborne illness risk factors and a sixth category called "Other," for the potential risks related to toxic or unapproved chemicals. Each of the 42 data items was based on criteria and standards contained in the *1997 FDA Food Code* for all three data collection periods (1998, 2003, and 2008).

Random Selection of Establishments Using Comparison Set Lists

For the 1998 data collection period, each Specialist developed five Comparison Set Lists for each of the nine facility types. In most cases, each comparison set list was comprised of between 10 and 20 establishments located in a geographical area. Establishments were selected at random for all three data collection periods using these Comparison Set Lists.

Number of Inspections Conducted

In each of the three data collection periods, FDA Regional Retail Food Specialists collected data from approximately 850 establishments representing the nine facility types. Table 4, presented below, summarizes the total number of establishments included as part of the study, by facility type, for each of three data collection periods (1998, 2003, and 2008).

Table 4

Total Number of Establishments Included in the Study

	Facility Type	Number of Inspections per Data Collection Period		
		1998	2003	2008
Institutional Foodservice	Hospitals	92	90	90
	Nursing Homes	90	93	93
	Elementary Schools	94	93	93
Restaurants	Fast Food Restaurants	100	101	103
	Full Service Restaurants	103	98	96
Retail Food	Deli Departments/Stores	97	99	98
	Meat & Poultry Departments/Stores	101	102	99
	Seafood Markets/Departments	94	86	82
	Produce Markets Departments	102	100	96
TOTAL		**873**	**862**	**850**

Table 4 indicates that for each of the facility types there was a slight variation in the total number of establishments included in the study for each of the three data collection

periods. In order to maintain consistency between data collection periods, the Specialists used the 1998 Comparison Set Lists in 2003 and for the most part used them again in 2008.

By the start of the 2008 data collection, a few of the comparison set lists developed in 1998 became unusable because there were no establishments remaining on the list. This occurred because during the 10-year period of the Study, some of the establishments on the original 1998 lists had closed, relocated, or changed their type of operation so they no longer fit the facility type for the comparison set list on which they were originally placed. The slight variation in the total number of establishments did not have any adverse effect on the statistical analysis used to determine improvement and/or regression trends during the ten-year study period.

Data Collection Logistics

Specialists conducted unannounced, non-regulatory inspections of the selected establishments. A representative from the state, county, or city agency having regulatory oversight over the establishments may have accompanied the Specialist. When conditions in the establishments merited regulatory actions, the accompanying state or local representative could intervene to ensure appropriate corrective actions were taken. If a state, county, or city representative was not accompanying a Specialist and conditions warranted regulatory action, the regulatory authority was contacted.

Quantitative measurements were made using equipment such as calibrated thermocouples, heat-sensitive tape, and maximum registering thermometers. For certain data items, visual observations were supplemented by asking non-standardized questions of food employees and/or managers to clarify understanding of the practices and procedures being used in the establishment.

Marking Observations of Data Items

The Specialists determined whether the observations made of the employee food safety practices or behaviors relating to the 42 individual data items were IN Compliance, Out of Compliance, Not Observed, or Not Applicable.

An observation was based on an evaluation of one or more occurrences of a data item in an establishment. If all observed occurrences were IN Compliance, the data item was marked “IN.” If any observed occurrence was Out of Compliance, then the data item was marked “OUT.” The definition for each marking follows:

- **IN** meant that the observation was IN Compliance with the *1997 FDA Food Code* provisions.

- **OUT** meant that the observation was Out of Compliance with the *1997 FDA Food Code* provisions. An explanation of the observation was provided in the comment sections on the data collection form.

- **N.O.** meant the data item was Not Observed during the inspection. The N.O. notation was used when a data item was a usual practice in the establishment,

but the practice was not observed during the time of the inspection. For example, if a restaurant that seasonally serves shellfish was selected for the study but the inspection occurred during non-shellfish season, then the applicable data item was marked N.O.

- **N.A.** meant the data item was Not Applicable. The N.A. notation was used when a data item was not part of the food service operation. For example, if a seafood market/department that conducts no cooking was selected for the study, then all data items pertaining cooking were marked N.A.

The Specialists were provided specific instructions for using the four marking options for each of the data items. Not all four marking options were available for every individual data item. For instance, in the case of cold holding, all establishments that were included in the data collection held PHF/TCS Food cold. As a result, the "Not Observed" (N.O.) and "Not Applicable" (N.A.) marking options were inappropriate given that an observation for cold holding was not only applicable in every case, but was also observable during every inspection.

The use of the "Not Observed" (N.O.) and "Not Applicable" (N.A.) as options for determining the status of individual data items was a critical component for attaining a meaningful performance indicator. For example, if the only options for marking compliance status had been IN Compliance and Out of Compliance, then the default option for data items that did not apply to an operation would have been IN Compliance. If this had been the case, the overall IN Compliance measurement for the establishment would have been higher than what was shown by actual observation of the food safety practice or employee behavior and would have been an over-estimation.

Likewise, for data items that did apply to an establishment's operation but were not observed during the inspection, the default marking option would have been IN Compliance. Again, the overall IN Compliance measurement for the establishment would have been higher than what was shown by actual observation of the food safety practices or employee behavior and would have been an over-estimation.

The Specialists were provided a software program customized to store the data collected. Specialists entered the data into a database and conducted a series of quality assurance checks to verify the accuracy of the information. The data from each Specialist's software files were merged into a central database. Before analyzing the data, an additional quality assurance review of the data was conducted to ensure reporting consistency within the established project design. FDA/CFSAN/Branch of Biostatistics performed the statistical analysis of the data.

Data Collection – Field Limitations

Attempts were made to observe the same data items at each establishment. The foodservice and retail food industry is dynamic. There is no set pattern of operation within foodservice and retail food store facilities; thus, it is impossible to schedule data collections at times when all the data items can be observed. This results in variations in total number of observations for each of the data items.

The framework that Specialists used to collect the data mirrored the process currently employed by state and local inspectors conducting routine inspections. The factors that impacted the ability of Specialists to observe the specific employee food safety practices and behaviors included establishment type, the season of the year, the time of day the data collection was conducted, and the length of time available for each inspection.

Examples of some of the data items that had a low number of observations included the following:

- Foods received according to law, cooled to 41ºF (5ºC) within 4 hours
- Cooked PHF/TCS Food cooled from 140ºF (60ºC) to 70ºF (21ºC) within 2 hours and from 140ºF (60ºC) to 41ºF (5ºC) in a total of 6 hours
- PHF/TCS Food (from ambient ingredients) cooled to 41ºF (5ºC) or below within 4 hours
- Roasts, including formed roasts, are cooked to 130ºF (54ºC) for 112 minutes
- Wild game animals cooked to 165ºF (74ºC) for 15 seconds
- As required, written documentation of parasite destruction maintained for 90 days for fish products
- Critical Control Point (CCP) monitoring records maintained in accordance with HACCP Plan when required

Some of these data items require a significant period of time to assess compliance with regard to time/temperature standards or they involve processes or operational steps that occur outside traditional regulatory work hours; therefore, documentation of these steps or processes may not have been available at the time of the data collection. Other data items such as cooking whole roasts or wild game animals related to foods that are not commonly found on the menus of the facility types inspected.

III. 1998-2008 TREND ANALYSIS SUMMARY

Any study designed to measure trends requires analysis of the subject matter over a period of time. The results contained in this report are intended to identify improvement and/or regression trends of risk factors associated with food preparation procedures and employee behaviors for the three data collection periods, 1998, 2003 and 2008.

The trend analysis summary for the ten-year study period will be presented in three parts:

Part A. Summarizes the Percent of observations found IN Compliance for **ALL COMBINED 42 DATA ITEMS** in each facility type. The facility types that showed statistically significant improvement over the ten-year study period and those for which the FDA 2010 25% target improvement goal was met are also shown.

Part B. Summarizes the of foodborne illness **RISK FACTORS** that showed statistically significant movement over the ten-year study period.

Part C. Summarizes the **INDIVIDUAL DATA ITEMS** for each risk factor that showed statistically significant movement over the ten-year study period.

A. Trends by Facility Type for ALL 42 DATA ITEMS

The primary objective of this report is to highlight trends of improvement or regression from the original 1998 baseline measurement. The FDA National Retail Food Team Steering Committee established a target goal of reducing the Out of Compliance percentage of observations of the original 42 data items related to foodborne illness risk factors in each of the facility types by 25% by 2010.

Another way to illustrate this is to show a corresponding increase in the IN Compliance percentage of all observations for each facility type. Table 5 summarizes the Percent of observations found IN Compliance for ALL COMBINED 42 DATA ITEMS in each facility type. The facility types that showed statistically significant movement over the ten-year study period and those for which the FDA 2010 25% target improvement goal was met are also shown.

Table 5

Percentage (%) of Observations found IN Compliance for ALL Data Items

		1998 Baseline % IN Compliance for Observations made of ALL DATA ITEMS (rounded to nearest %)	2008 % IN Compliance for Observations made of ALL DATA ITEMS (rounded to nearest %)	FDA 2010 Target Improvement Goal (rounded to nearest %)
Institutional Foodservice	Hospitals	80%	81%	85%
	Nursing Homes	82%	83%	87%
	Elementary Schools	**80%**	**84%**	**85%**
Restaurants	**Fast Food**	**74%**	**78%**	**81%**
	Full Service	**60%**	**64%**	**70%**
Retail Food Stores	Delis Departments/Stores	73%	74%	80%
	Meat and Poultry Markets/Departments	**81%**	**88%**	**86%**
	Seafood Markets/Departments	83%	86%	87%
	Produce Markets/Departments	**76%**	**84%**	**82%**

NOTES: ***Facility types shaded in gray met the FDA 25% improvement goal established in 1998***

Bolded facility types showed a statistically significant increase in the IN Compliance percentage during the 1998 – 2008 study period.

Discussion for Table 5

Five of the nine facility types showed a statistically significant improvement in the IN Compliance percentage for all 42 data items combined during the study period:

- Elementary Schools
- Fast Food Restaurants
- Full Service Restaurants
- Meat and Poultry Markets/Departments
- Produce Markets/Departments

Two of the nine retail food store facility types met the 2010 FDA target improvement goal summarized on page 8 of this report:

- Meat and Poultry Markets/Departments
- Produce Markets/Departments

None of the nine facility types' 2008 IN Compliance percentage for all 42 data items combined was lower than their original 1998 baseline.

B. Foodborne Illness Risk Factor Trends for Facility Types

In eight of the nine facility types, at least one foodborne illness risk factor showed a statistically significant improvement during the research period. These results are summarized in Table 6.

Table 6

Foodborne illness Risk Factors with Statistically Significant Improvement 1998 – 2008

Industry Segment	Facility Type	Foodborne Illness Risk Factor(s) with Statistically Significant Improvement
*Institutional Foodservice	Hospitals	● Inadequate Cooking
	Elementary Schools	● Improper Holding/Time and Temperature ● Poor Personal Hygiene
Restaurants	Fast Food	● Improper Holding/Time and Temperature ● Poor Personal Hygiene
	Full Service	● Contaminated Equipment/Protection from Contamination ● Improper Holding/Time and Temperature ● Poor Personal Hygiene
Retail Food Stores	Deli Departments/Stores	● Poor Personal Hygiene
	Meat and Poultry Markets/Departments	● Improper Holding/Time and Temperature ● Poor Personal Hygiene
	Seafood Markets/Departments	● Poor Personal Hygiene
	Produce Markets/Departments	● Improper Holding/Time and Temperature ● Poor Personal Hygiene

**** NOTE: The Nursing Home facility type did not show statistically significant improvement or regression for any of the foodborne illness risk factors during the ten-year study period.***

Discussion for Table 6

From 1998 to 2008, the study data showed

- Significant improvement for the *poor personal hygiene* risk factor in seven of nine facility types
- Significant improvement for the *improper holding/time and temperature* risk factor in five of nine facility types
- None of the 9 facility types had a significant regression for any of the foodborne illness risk factors

Although the scope of the improvement trends for the *poor personal hygiene* and *improper holding/time and temperature* risk factors is encouraging, these risk factors generally had lower IN Compliance percentages than the other risk factor areas. This underscores the need to continue to ensure that effective procedures, training, and monitoring are developed and implemented by industry for these risk factors.

C. Individual Data Items Trends for Each Foodborne Illness Risk Factor

CONTAMINATED EQUIPMENT/PROTECTION FROM CONTAMINATION

Two out of the five data items that comprise the *contaminated equipment/protection from contamination* risk factor showed significant movement in one or more of the facility types during the study period.

Data item 11A relating to the cleaning and sanitization of food contact surfaces and utensils showed statistically significant improvement for the three retail food store facility types presented in Table 7. None of the remaining six facility types showed any significant movement for this data item.

Table 7

Facilities Showing Statistically Significant Improvement

DATA ITEM 11A
Food-contact surfaces and utensils are clean to sight and touch and sanitized before use

Facility Type	% IN 1998	% IN 2003	% IN 2008
Meat and Poultry Markets/Departments	55.4	58.8	70.7
Seafood Markets/Departments	64.9	62.8	81.7
Produce Markets/Departments	37.0	56.0	63.5

Data item 10A related to prevention of cross-contamination between raw animal foods and ready-to-eat food showed statistically significant regression for the three facility types presented in Table 8 below. None of the other remaining six facility types showed any significant movement for this data item.

Table 8

Facilities Showing Statistically Significant Regression

DATA ITEM 10A
Food is protected from cross contamination by separating raw animal foods from raw ready-to-eat food and by separating raw animal foods from cooked ready-to-eat food

Facility Type	% IN 1998	% IN 2003	% IN 2008
Nursing Homes	82.2	73.6	69.6
Elementary Schools	93.3	85.1	80.6
Seafood Markets/Departments	87.9	74.1	74.3

FOOD FROM UNSAFE SOURCES

Two of the seven data items that comprise the *food from unsafe sources* risk factor showed significant movement in seafood markets/departments. None of the other eight facility types had a data item in this risk factor that showed a significant trend during the study period.

For seafood markets/departments, data item 3A pertaining to the retention of shellfish tags showed a significant improvement. Table 9 provides the results for data item 3A.

Table 9

Facility Showing Statistically Significant Improvement

DATA ITEM 3A
Shellstock tags/labels retained for 90 days from the date the container is emptied

Facility Type	% IN 1998	% IN 2003	% IN 2008
Seafood Markets/Departments	54.9	60.4	73.3

In contrast, data item 2A pertaining to foods received at proper temperature, free from contamination, safe, and unadulterated indicated a significant regression. Table 10 provides the results for data item 2A.

Table 10

Facility Showing Statistically Significant Regression

DATA ITEM 2A
Food received at proper temperatures/ protected from contamination during transportation and receiving/food is safe, unadulterated

Facility Type	% IN 1998	% IN 2003	% IN 2008
Seafood Markets/Departments	100.0	100.0	96.3

While the decline in the IN Compliance percentage for data item 2A during the study period is statistically significant, the IN Compliance percentage is high relative to other data items.

IMPROPER HOLDING/TIME AND TEMPERATURE

The *improper holding/time and temperature* risk factor is comprised of ten data items. Three data items showed significant improvement in one or more of the facility types. There were no *improper holding/time and temperature* data items that showed a significant regression in any of the nine facility types. A summary of the percent IN Compliance observations for these five data items during the span of this research is presented in Tables 11 – 13.

Table 11

Facilities Showing Statistically Significant Improvement

DATA ITEM 7A
PHF/TCS food is maintained at 41°F (5°C) or below, except during preparation, cooking, cooling or when time is used as a public health control.

Facility Type	% IN 1998	% IN 2003	% IN 2008
Elementary Schools	54.9	74.2	71.2
Meat and Poultry Markets/Departments	65.3	83.3	80.8
Produce Markets/Departments	23.2	30.2	47.9

Table 12

Facilities Showing Statistically Significant Improvement

DATA ITEM 9A
Ready-to-eat PHF/TCS food held for more than 24 hours is date marked as required (prepared on-site)

Facility Type	% IN 1998	% IN 2003	% IN 2008
Hospitals	59.1	66.3	77.0
Nursing Homes	59.0	70.5	78.4
Elementary Schools	36.2	60.4	83.7
Fast Food Restaurants	28.8	62.5	71.2
Full Service Restaurants	25.3	26.1	42.4
Delis Departments/Stores	33.3	39.2	52.7
Produce Markets/Departments	41.1	64.4	76.8

IMPROPER HOLDING/TIME AND TEMPERATURE

Table 13

Facilities Showing Statistically Significant Improvement
DATA ITEM 9B
Discard RTE PHF/TCS food and/or opened commercial container exceeding 7 days at ≤ 41°F (5°C) or 4 days at ≤ 45°F (7°C)

Facility Type	% IN 1998	% IN 2003	% IN 2008
Hospitals	72.4	82.8	85.9
Fast Food Restaurants	61.5	90.5	88.2
Full Service Restaurants	47.3	55.6	67.9

INADEQUATE COOKING

Twelve data items are used to track the cooking and reheating components included in the *inadequate cooking* risk factor. Only one of these data items showed significant movement during the study period. Data item 5C, presented in Table 14, pertaining to the reheating of commercially processed ready-to-eat foods significantly regressed within the nursing home facility type. None of the other facility types had data items that significantly improved or regressed during the study.

Table 14

Facility Showing Statistically Significant Regression

DATA ITEM 5C
Commercially processed ready-to-eat food, reheated to 140°F (60°C) or above for hot holding

Facility Type	% IN 1998	% IN 2003	% IN 2008
Nursing Homes	100.0	97.0	89.2

POOR PERSONAL HYGIENE

Four of the five data items that comprise the *poor personal hygiene* risk factor showed statistically significant improvement in one or more of the facility types. None of the *poor personal hygiene* data items significantly regressed during the study period. Tables 15 through 18 summarize the percent IN Compliance change for the data items in facility types that showed significant improvement.

Table 15

Facilities Showing Statistically Significant Improvement

DATA ITEM 12A
Hands are clean and properly washed when and as required

Facility Type	% IN 1998	% IN 2003	% IN 2008
Elementary Schools	55.3	66.3	72.5
Fast Food Restaurants	45.5	45.4	61.2
Meat and Poultry Markets/Departments	62.6	65.8	81.6
Produce Markets/Departments	58.6	66.7	75.4

Table 16

Facilities Showing Statistically Significant Improvement

DATA ITEM 13A
Food Employees eat, drink, and use tobacco only in designated areas / do not use a utensil more than once to taste food that is sold or served / do not handle or care for animals present. Food employees experiencing persistent sneezing, coughing, or runny nose do not work with exposed food, clean equipment, utensils, linens, unwrapped single-service or single-use articles

Facility Type	% IN 1998	% IN 2003	% IN 2008
Full Service Restaurants	53.9	66.7	75.8
Meat and Poultry Markets/Departments	88.9	92.5	98.9

POOR PERSONAL HYGIENE

Table 17

Facilities Showing Statistically Significant Improvement

DATA ITEM 14A
Employees do not contact exposed, ready-to-eat food with their bare hands

Facility Type	% IN 1998	% IN 2003	% IN 2008
Hospitals	80.2	92.0	91.0
Elementary Schools	64.9	83.9	91.4
Fast Food Restaurants	42.9	48.0	73.7
Full Service Restaurants	23.5	42.4	53.7
Deli Departments/Stores	83.3	89.6	93.8
Produce Markets/Departments	79.0	87.1	93.8

Table 18

Facilities Showing Statistically Significant Improvement

DATA ITEM 15A
Handwash facilities conveniently located and accessible for employees

Facility Type	% IN 1998	% IN 2003	% IN 2008
Meat and Poultry Markets/Departments	81.2	82.4	93.9
Produce Markets/Departments	71.0	72.7	84.4

IV. TREND ANALYSIS FOR EACH FACILITY TYPE

This section will present the trend analysis data results for the ten-year study for each of the nine facility types. The figures presented in this section for each of the facility types include only observations of the same 42 data items used in all three data collection periods. None of the supplemental data items addressed in the 2004 and 2009 report are included as part of the data analysis in this report.

Appendices A-H contain summary information by facility type for each of the 42 data items. Information is provided on Page 95 to assist the reader with interpreting the data correctly.

Using the Appendix A as a reference, the data items for each risk factor are sorted using the format presented in Table 19.

Table 19

Data Collection Form – Section Reference for Risk Factors

	Number of Data Items for each Risk Factor	Referenced Sections From Data Collection Form
Food from Unsafe Sources	7	Sections 1 – 3
Inadequate Cooking	12	Sections 4 – 5
Improper Holding/Time and Temperature	10	Sections 6 – 9
Contaminated Equipment/Protection from Contamination	5	Sections 10 – 11
Poor Personal Hygiene	5	Sections 12 – 15
Other (Chemical Contamination)	3	Section 16
TOTAL NUMBER OF DATA ITEMS	42	

For each facility type the data is presented in four parts (A, B, C, and D) as follows:

A. Percent of observations found IN Compliance for ALL COMBINED 42 DATA ITEMS

Table 20

Formula for Calculating IN Compliance Percentages

Percent IN Compliance =

$$\frac{\text{Total Number of IN Compliance observations for the facility type}}{\text{Total Number of OBSERVATIONS (IN and OUT) for the facility type}} \times 100\%$$

The percent IN Compliance gives an indication of the overall effectiveness of existing food safety management systems for each of the facility types for each of data collection periods. It can be inferred that the higher the percent IN Compliance, the stronger the management system for control within the facility type.

For each facility type, a bar graph is used to present the percent IN Compliance for each of the three data collection periods that visually depicts any significant improvement and/or regression trends during the ten-year study period.

B. Percent of observations found IN Compliance for each RISK FACTOR

Table 21

Formula for Calculating IN Compliance Percentages for each Risk Factor

Percent IN Compliance =

$$\frac{\text{Total Number IN Compliance Observations for the risk factor}}{\text{Total Number of OBSERVATIONS (IN and OUT) for the risk factor}} \times 100\%$$

The percent IN Compliance gives an indication of the overall effectiveness of existing food safety management systems for each of the risk factors for each of the data collection periods. It can be inferred that the higher the percent IN Compliance, the stronger the management system for control of the risk factor.

For each facility type, a bar graph presents the percent IN Compliance for all six risk factors within each of the data collection periods to visually depict any significant improvement or regression trends during the ten-year study period.

C. Percent of observations found IN Compliance for each INDIVIDUAL DATA ITEM that comprises a risk factor that has significant movement

Table 22

Formula for Calculating IN Compliance Percentages for each DATA ITEM that Comprises a Risk Factor

Percent IN Compliance =

$$\frac{\text{Total IN Compliance Observations for the Data Item}}{\text{Total number of OBSERVATIONS (IN and OUT) for the Data Item}} \times 100\%$$

The percent IN Compliance for an individual data item is the proportion of establishments where that data item was IN Compliance when the practice or procedure could be observed. Each risk factor is comprised of several individual data items based on *1997 FDA Food Code* requirements. The study findings related to these individual data items can be used to assess in greater detail the degree of control a facility type had over each risk factor, especially when found to have a low IN Compliance percentage.

Part C contains a bar graph that presents the percent IN Compliance for the individual data items that comprise a risk factor that had a sufficient number of observations to assess trends using the study's method for statistical analysis presented in Section VI of this report. The individual data items showing significant movement within these risk factor categories are highlighted using bold font in the corresponding bar graph and data item table.

D. Summary of DATA ITEMS with statistical significant trends

Part D provides summary tables that list the data items that showed significant movement during the study period. The data items are presented graphically with their associated risk factor.

INSTITUTIONAL FOODSERVICE

HOSPITALS

1998 – 2008 TREND ANALYSIS
RESULTS AND DISCUSSION

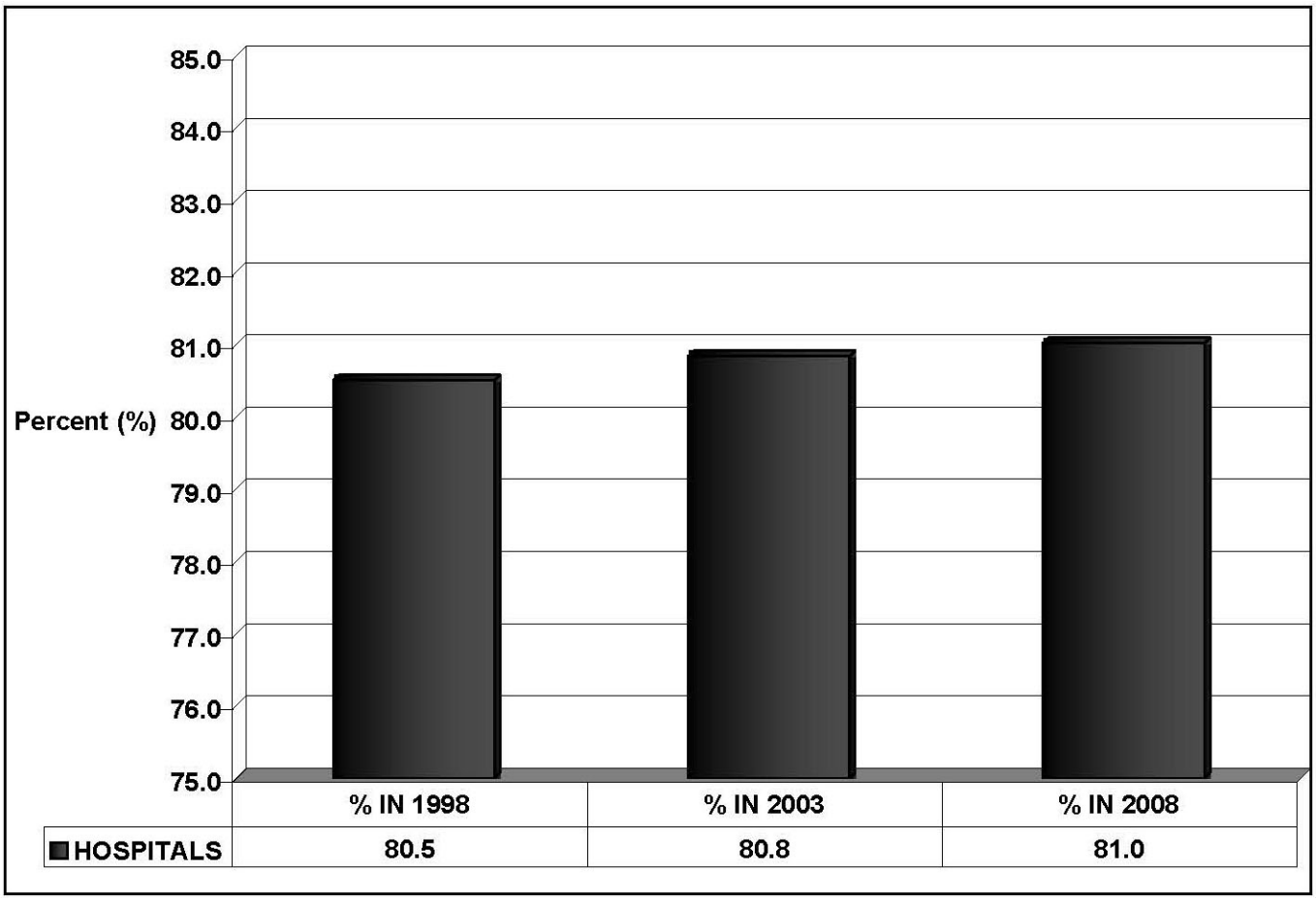
Institutional Foodservice - HOSPITALS

A. Percent of observations found IN Compliance for ALL Data Items

Institutional Foodservice – HOSPITALS

Figure H-1

PERCENT (%) of OBSERVATIONS found IN Compliance for ALL 42 DATA ITEMS



Trend Analysis For Figure H-1

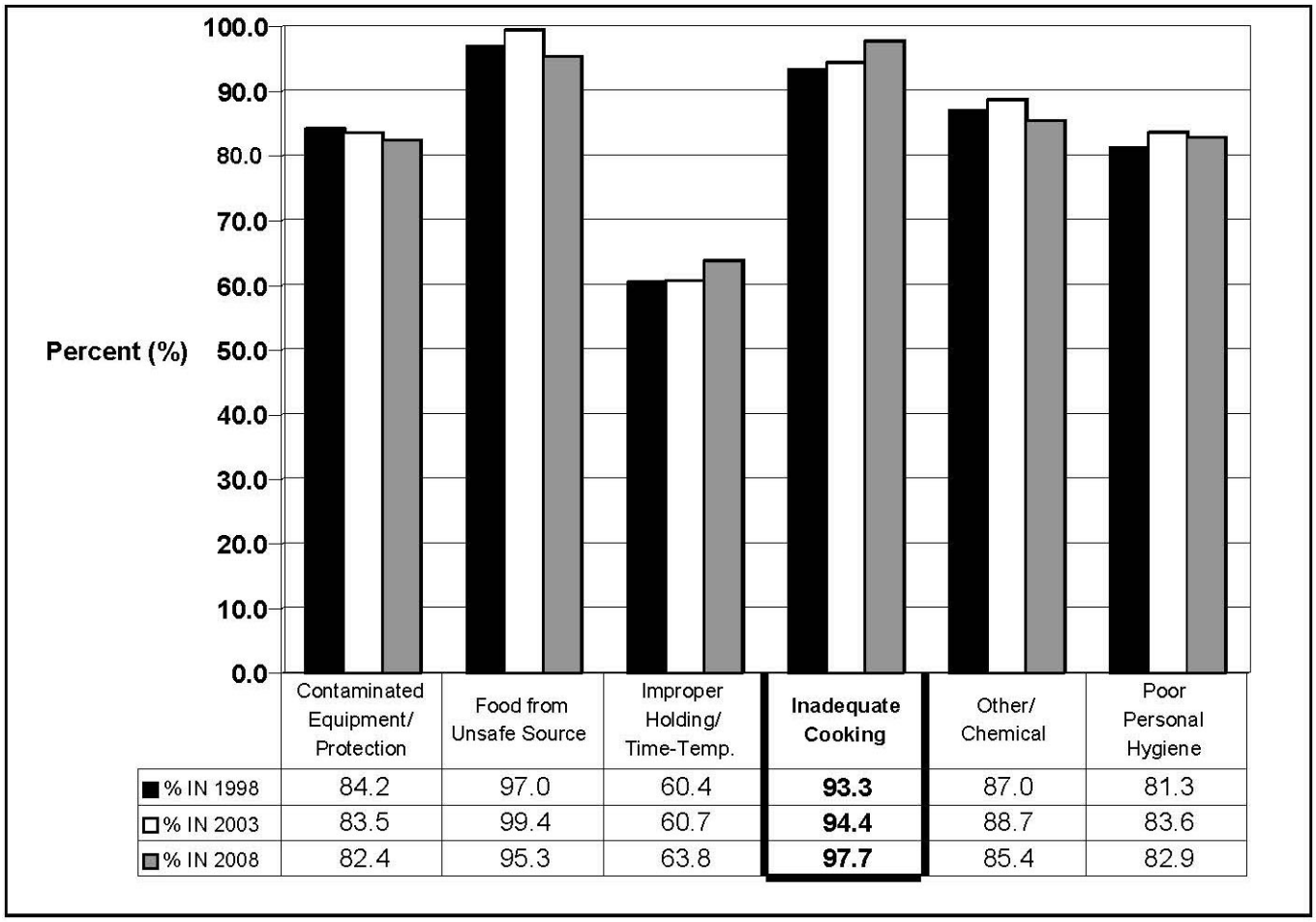
The hospital facility type did not have a statistically significant change in the percent of IN Compliance observations for all combined 42 data items during the study period. The overall IN Compliance percentage showed almost no variation from one period to another with a change IN Compliance percentage of 0.5% during the study period.

Institutional Foodservice - HOSPITALS

B. Percent of observations found IN Compliance for each RISK FACTOR

Institutional Foodservice – HOSPITALS

Figure H-2
PERCENT (%) of OBSERVATIONS found IN Compliance for each RISK FACTOR



	Contaminated Equipment/ Protection	Food from Unsafe Source	Improper Holding/ Time-Temp.	**Inadequate Cooking**	Other/ Chemical	Poor Personal Hygiene
% IN 1998	84.2	97.0	60.4	**93.3**	87.0	81.3
% IN 2003	83.5	99.4	60.7	**94.4**	88.7	83.6
% IN 2008	82.4	95.3	63.8	**97.7**	85.4	82.9

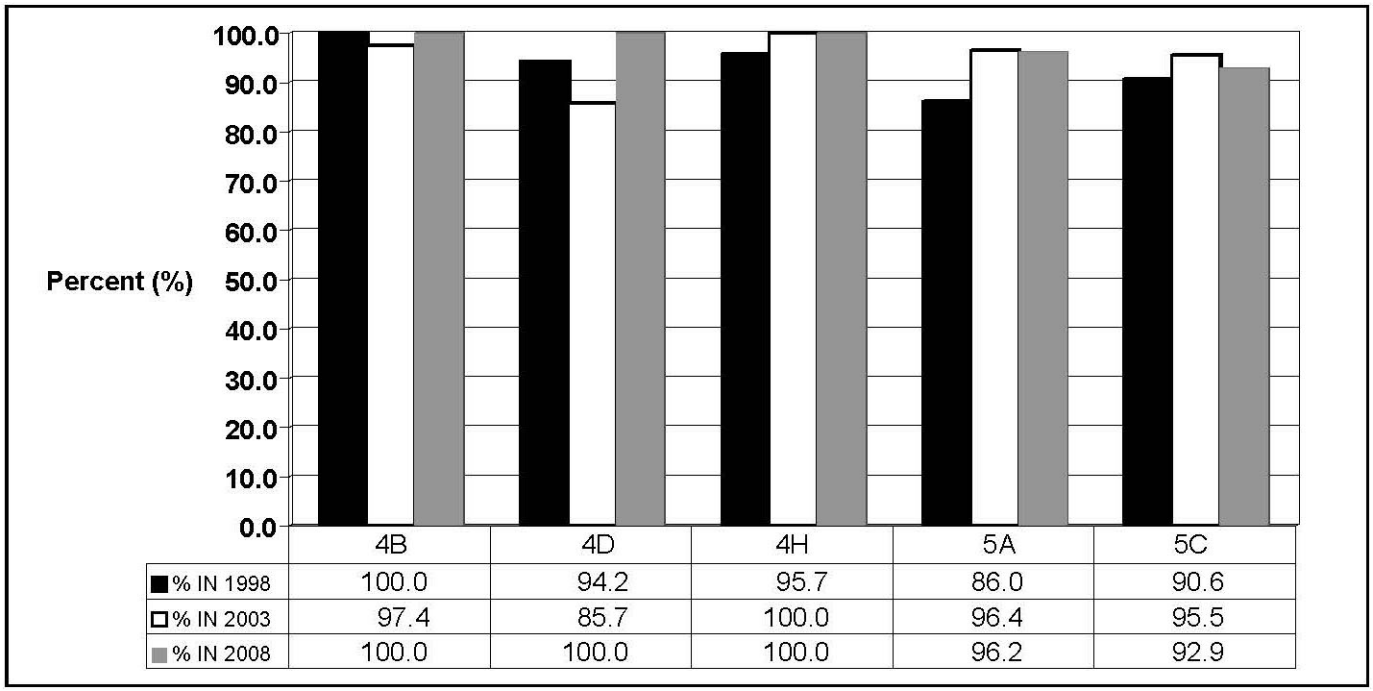
Trend Analysis for Figure H-2
The IN Compliance percentage for the risk factors within the Hospital facility type remained steady, for the most part, during the research period. Only the *inadequate cooking* risk factor showed a statistically significant increase in the IN Compliance percentage.

Institutional Foodservice - HOSPITALS

C. Percent of observations found IN Compliance for each INDIVIDUAL DATA ITEM that comprises a statistically significant risk factor

Institutional Foodservice – HOSPITALS

Figure H-3
INADEQUATE COOKING
PERCENT (%) of OBSERVATIONS found IN Compliance for each DATA ITEM



	4B	4D	4H	5A	5C
% IN 1998	100.0	94.2	95.7	86.0	90.6
% IN 2003	97.4	85.7	100.0	96.4	95.5
% IN 2008	100.0	100.0	100.0	96.2	92.9

DATA ITEM REFERENCE	
*4A	Raw shell eggs broken for immediate service cooked to 145°F (63°C) for 15 seconds. Raw shell eggs broken but not prepared for immediate service cooked to155°F (68°C) for 15 seconds
4B	Comminuted Fish, Meats, Game animals cooked to 155°F (68°C) for 15 seconds
*4C	Roasts, including formed roasts, are cooked to 130°F (54°C) for 112 minutes or as Chart specified and according to oven parameters per Chart
4D	Poultry; stuffed fish, stuffed meat, stuffed pasta, stuffed poultry, stuffed ratites, or stuffing containing fish, meat, poultry or ratites cooked to 165°F (74°C) for 15 seconds
*4E	Wild game animals cooked to 165°F (74°C) for 15 seconds
*4F	Raw animal foods cooked in microwave are rotated, stirred, covered, and heated to 165°F (74°C). Food is allowed to stand covered for 2 minutes after cooking
*4G	Pork, ratites, injected meats are cooked to 155°F (68°C) for 15 seconds. Specify product and temperature in the space below.
4H	All other PHF/TCS Food cooked to 145°F (63°C) for 15 seconds
5A	PHF/TCS Food that is cooked and cooled on premises is rapidly reheated to 165°F (74°C) for 15 seconds for hot holding
*5B	Food reheated in a microwave is heated to 165°F (74°C) or higher
5C	Commercially processed ready-to-eat food, reheated to 140°F (60°C) or above for hot holding
*5D	Remaining unsliced portions of roasts are reheated for hot holding using minimum oven parameters

**** Data items 4A, 4C, 4E, 4F, 4G, 5B, and 5D did not have sufficient observations in one or more of the data collection periods to conduct a trend analysis and are not included in the Inadequate Cooking bar graph.***

Institutional Foodservice - HOSPITALS

Discussion for Figure H-3

Even though the *inadequate cooking* risk factor showed significant improvement, none of the individual data items that comprise this risk factor showed significant improvement. When the data items were combined, however, the cumulative data results showed a statistically significant improvement for the *inadequate cooking* risk factor.

D. Summary of Data Items Showing Statistically Significant Trends

Table 23

HOSPITALS

DATA ITEMS Showing Statistically Significant Improvement

RISK FACTOR		% IN 1998	% IN 2003	% IN 2008
Improper Holding/ Time and Temperature	**9A** - Ready-to-eat PHF/TCS held for more than 24 hours is date marked as required (prepared on-site)	**59.1**	**66.3**	**77.0**
	9B – Discard RTE PHF/TCS and/or opened commercial container exceeding 7 days at ≤ 41°F (5°C) or 4 days at ≤ 45°F (7°C)	**72.4**	**82.8**	**85.9**
Poor Personal Hygiene	**14A** – Employees do not contact exposed, ready-to-eat food with their bare hands	**80.2**	**92.0**	**91.0**

INSTITUTIONAL FOODSERVICE

NURSING HOMES

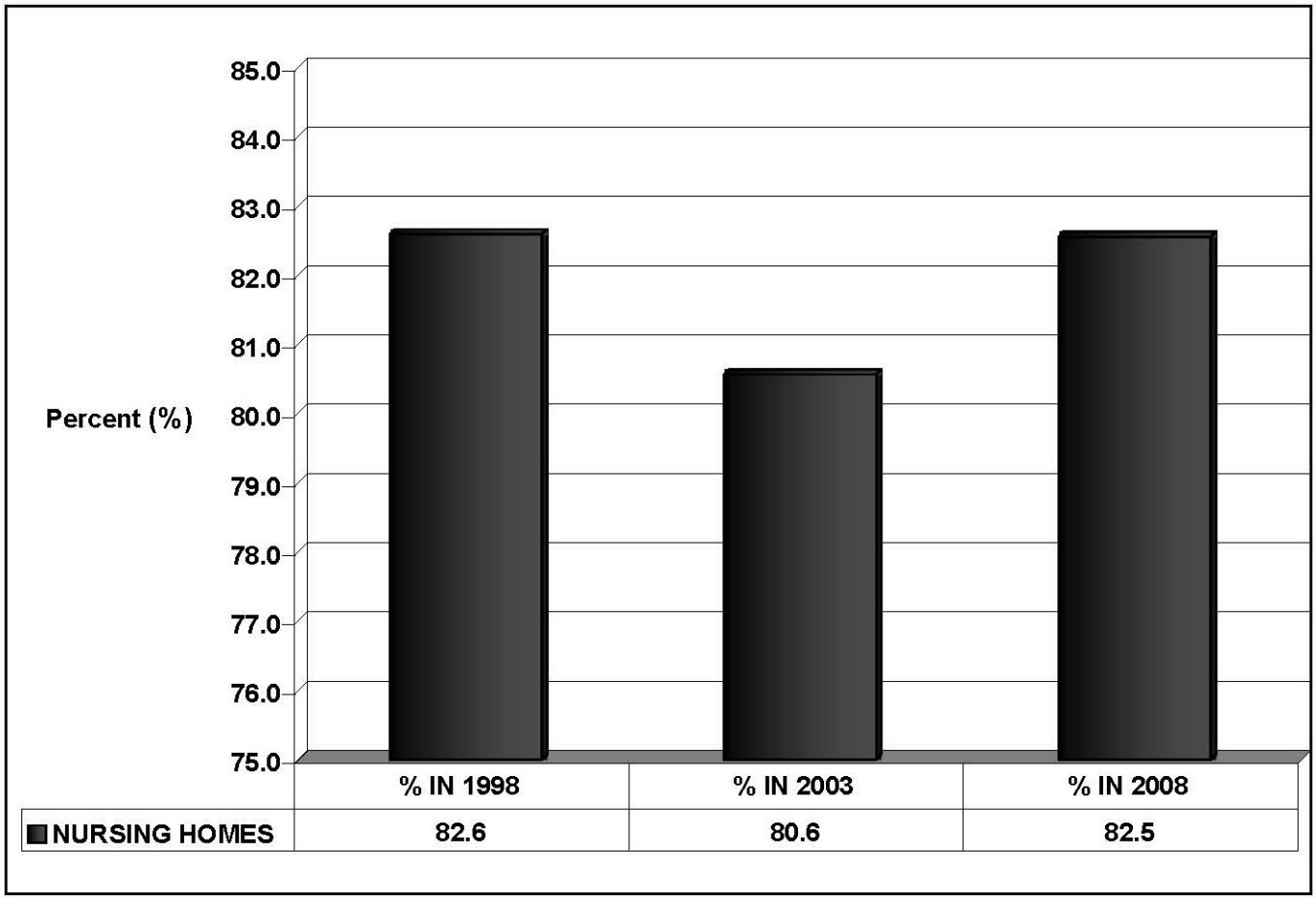
1998 – 2008 TREND ANALYSIS RESULTS AND DISCUSSION

Institutional Foodservice – NURSING HOMES

A. Percent of observations found IN Compliance for ALL Data Items

Institutional Foodservice – NURSING HOMES

Figure NH-1
PERCENT (%) of OBSERVATIONS found IN Compliance for ALL 42 DATA ITEMS



Trend Analysis For Figure NH-1

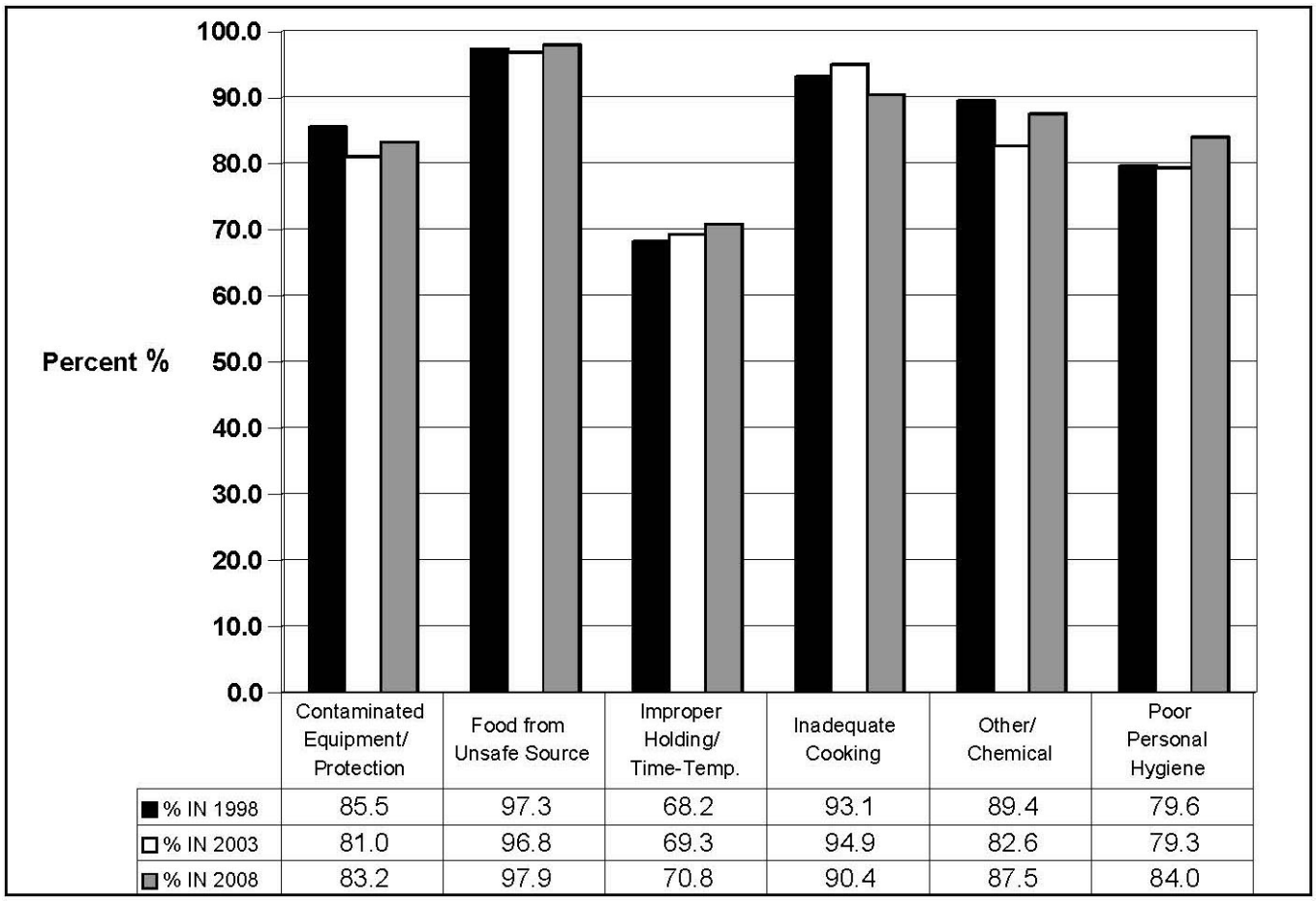
The nursing home facility type did not have a statistically significant change in the percentage of IN Compliance observations for all combined data items during the ten-year study period. The two percent difference in 2003 may have been a result of inherent variations in establishments randomly selected; however, this change was not statistically significant.

Institutional Foodservice – NURSING HOMES

B. Percent of observations found IN Compliance for each RISK FACTOR

Institutional Foodservice – NURSING HOMES

Figure NH-2
PERCENT (%) of OBSERVATIONS found IN Compliance for each RISK FACTOR



	Contaminated Equipment/ Protection	Food from Unsafe Source	Improper Holding/ Time-Temp.	Inadequate Cooking	Other/ Chemical	Poor Personal Hygiene
% IN 1998	85.5	97.3	68.2	93.1	89.4	79.6
% IN 2003	81.0	96.8	69.3	94.9	82.6	79.3
% IN 2008	83.2	97.9	70.8	90.4	87.5	84.0

Trend Analysis for Figure NH-2

The risk factors for nursing homes stayed relatively static during the research period. Each of the risk factors had small changes in the percentage of IN Compliance observations. *Poor personal hygiene* had the largest change, but the change was not statistically significant.

Institutional Foodservice – NURSING HOMES

C. Percent of observations found IN Compliance for each INDIVIDUAL DATA ITEM that comprises a statistically significant risk factor

Not Applicable – For the nursing home facility type, none of the risk factors showed statistically significant improvement or regression trends during the ten-year study period.

D. Summary of Data Items Showing Statistically Significant Trends

Table 24

NURSING HOMES

DATA ITEMS Showing Statistically Significant Improvement

RISK FACTOR		% IN 1998	% IN 2003	% IN 2008
Improper Holding/ Time and Temperature	**9A** - Ready-to-eat PHF/TCS held for more than 24 hours is date marked as required (prepared on-site)	**59.0**	**70.5**	**78.4**

The *contaminated equipment/protection from contamination* and *inadequate cooking* risk factors each contained one data item that showed a statistically significant regression during the ten-year study period. A summary of these data items is presented in Table 25.

Table 25

NURSING HOMES

DATA ITEMS Showing Statistically Significant Regression

RISK FACTOR		% IN 1998	% IN 2003	% IN 2008
Contaminated Equipment/Protection from Contamination	**10A** – Food is protected from cross contamination by separating raw animal foods from raw ready-to-eat food and by separating raw animal foods from cooked ready-to-eat food	**82.2**	**73.6**	**69.6**
Inadequate Cooking	**5C** – Commercially processed ready-to-eat food, reheated to 140°F (60°C) or above for hot holding	**100.0**	**97.0**	**89.2**

INSTITUTIONAL FOODSERVICE

ELEMENTARY SCHOOLS

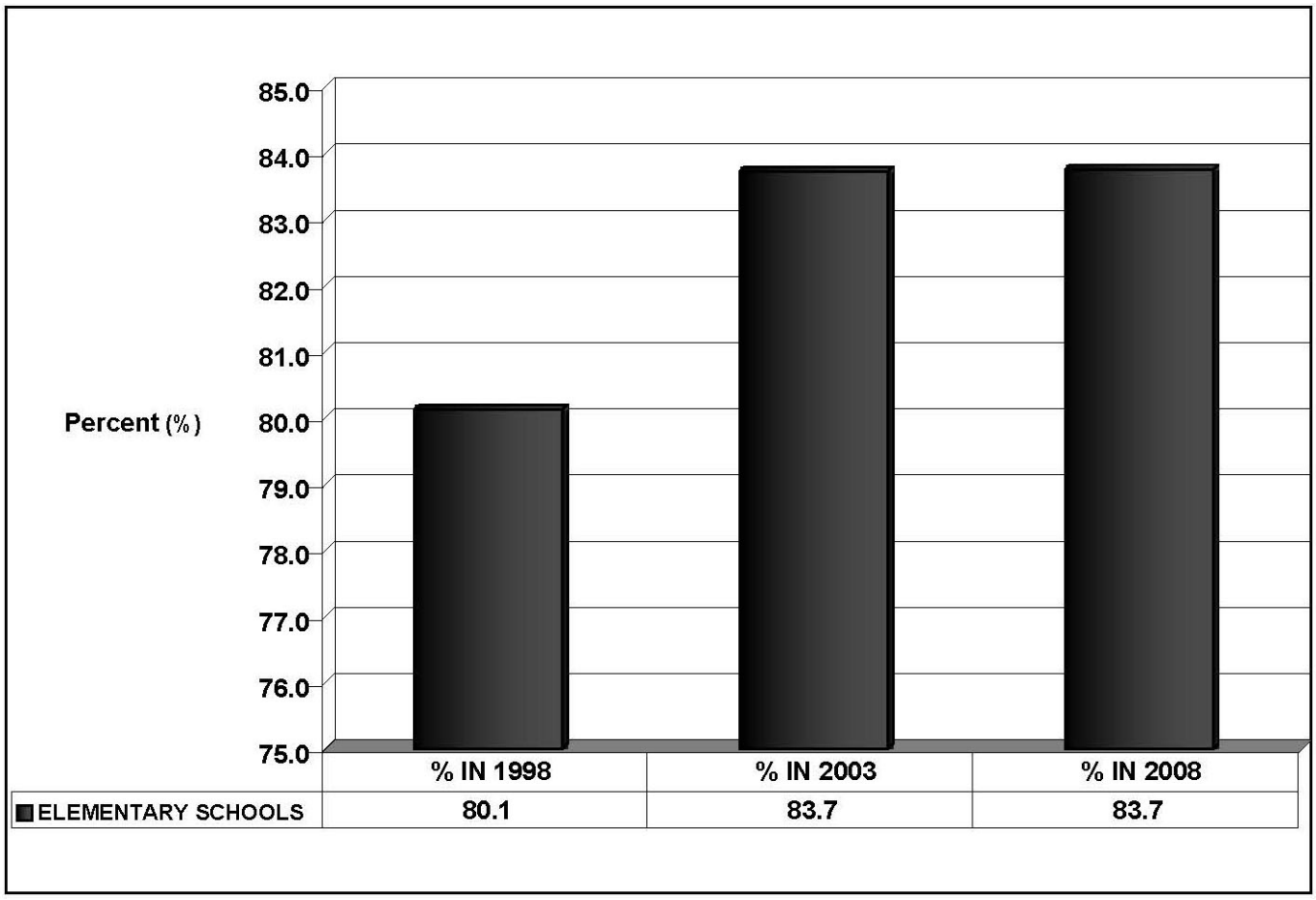
1998 – 2008 TREND ANALYSIS
RESULTS AND DISCUSSION

Institutional Foodservice – ELEMENTARY SCHOOLS

A. Percent of observations found IN Compliance for ALL Data Items

Institutional Foodservice – ELEMENTARY SCHOOLS

Figure ES-1
PERCENT (%) of OBSERVATIONS found IN Compliance for ALL 42 DATA ITEMS



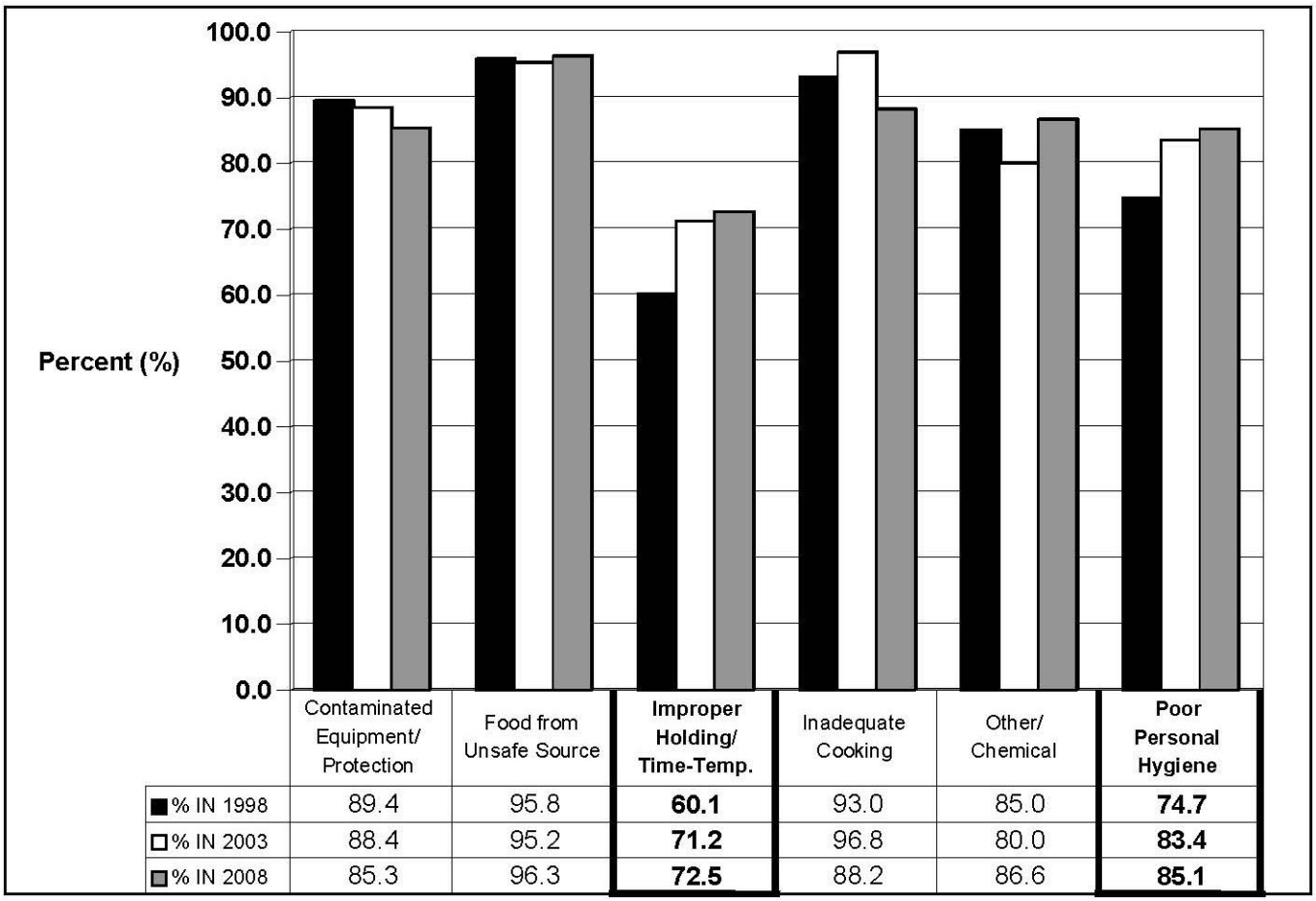
Trend Analysis For Figure ES-1
Elementary Schools showed a statistically significant improvement in the percentage of IN Compliance observations for all combined data items during the study period.

Institutional Foodservice – ELEMENTARY SCHOOLS

B. Percent of observations found IN Compliance for each RISK FACTOR

Institutional Foodservice – ELEMENTARY SCHOOLS

Figure ES-2
PERCENT (%) of OBSERVATIONS found IN Compliance for each RISK FACTOR



	Contaminated Equipment/ Protection	Food from Unsafe Source	**Improper Holding/ Time-Temp.**	Inadequate Cooking	Other/ Chemical	**Poor Personal Hygiene**
% IN 1998	89.4	95.8	**60.1**	93.0	85.0	**74.7**
% IN 2003	88.4	95.2	**71.2**	96.8	80.0	**83.4**
% IN 2008	85.3	96.3	**72.5**	88.2	86.6	**85.1**

NOTE: ***Bold font denotes RISK FACTORS showing statistically significant improvement.***

Trend Analysis for Figure ES-2

The following two risk factors showed statistically significant improvement for elementary schools during the study period:

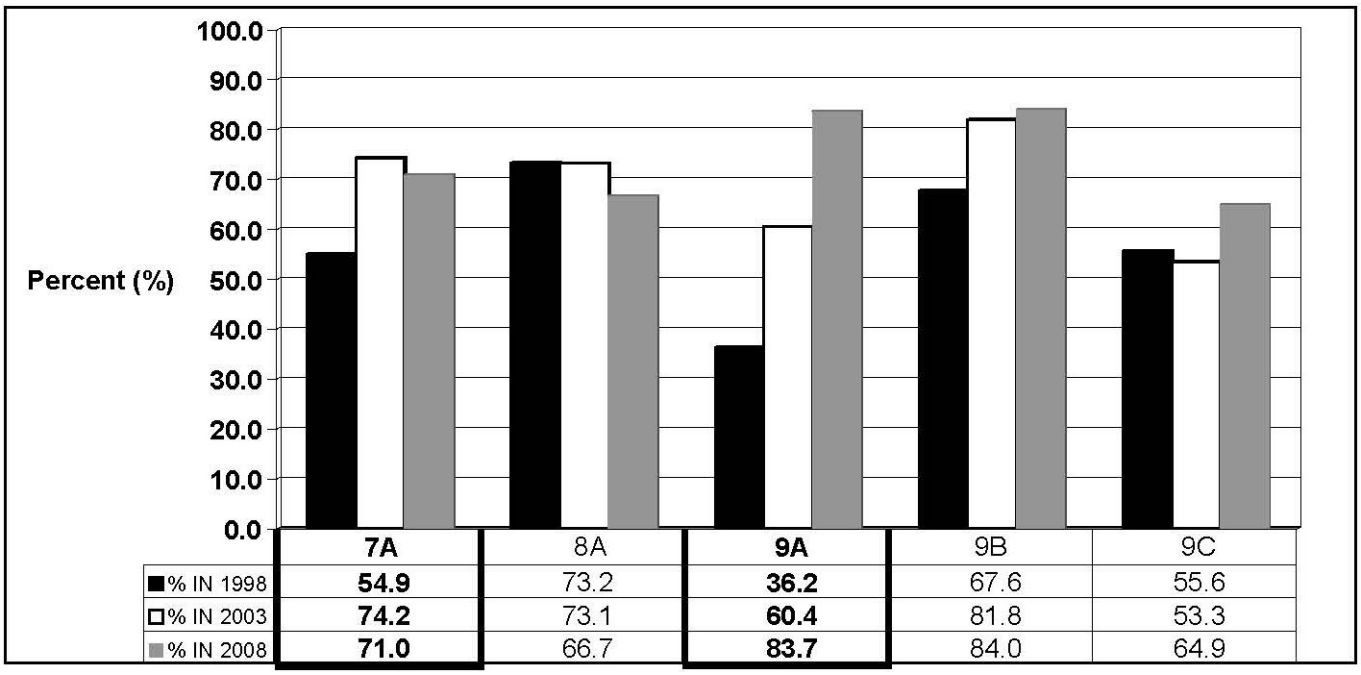
- Improper Holding/Time and Temperature
- Poor Personal Hygiene

Institutional Foodservice – ELEMENTARY SCHOOLS

C. Percent of observations found IN Compliance for each INDIVIDUAL DATA ITEM that comprises a statistically significant risk factor

Institutional Foodservice – ELEMENTARY SCHOOLS

Figure ES-3
IMPROPER HOLDING/TIME AND TEMPERATURE
PERCENT (%) of OBSERVATIONS found IN Compliance for each DATA ITEM



	7A	8A	9A	9B	9C
% IN 1998	**54.9**	73.2	**36.2**	67.6	55.6
% IN 2003	**74.2**	73.1	**60.4**	81.8	53.3
% IN 2008	**71.0**	66.7	**83.7**	84.0	64.9

DATA ITEM REFERENCE	
*6A	Cooked PHF/TCS food is cooled from 140°F (60°C) to 70°F (21°C) within 2 hours and from 140°F (60°C) to 41°F (5°C) or below within 6 hours
*6B	PHF/TCS food (prepared from ingredients at ambient temperature) is cooled to 41°F (5°C) or below within 4 hours
*6C	Foods received at a temperature according to Law are cooled to 41°F (5°C) within 4 hours
7A	**PHF/TCS food is maintained at 41°F (5°C) or below, except during preparation, cooking, cooling or when time is used as a public health control**
8A	PHF/TCS food is maintained at 140°F (60°C) or above, except during preparation, cooking, or cooling or when time is used as a public health control
*8B	Roasts are held at a temperature of 130°F (54°C) or above
9A	**Ready-to-eat PHF/TCS food held for more than 24 hours is date marked as required (prepared on-site)**
9B	Discard RTE PHF/TCS food and/or opened commercial container exceeding 7 days at ≤ 41°F (5°C) or 4 days at ≤ 45°F (7°C)
9C	Opened Commercial container of prepared ready-to-eat PHF/TCS food is date marked as required
*9D	When time only is used as a public health control, food is cooked and served within 4 hours as required

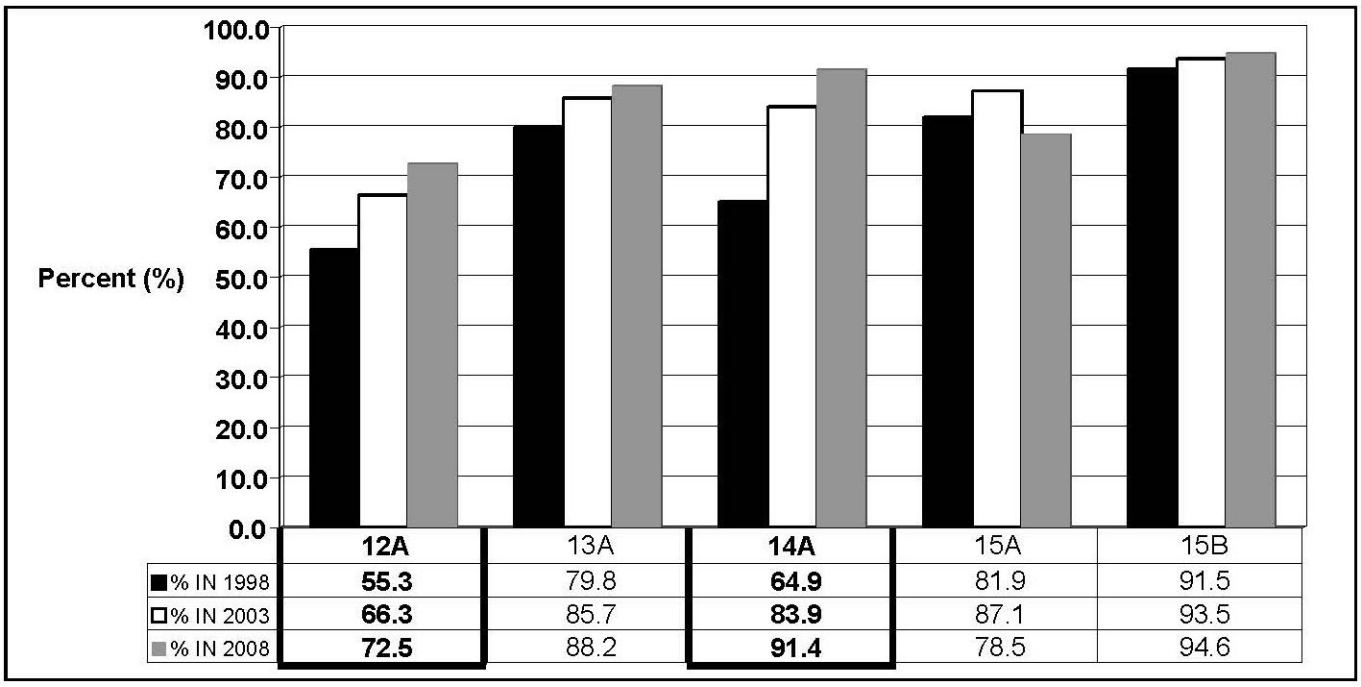
NOTE: ***Bold font denotes DATA ITEMS showing a statistically significant improvement.***

**** Data items 6A, 6B, 6C, 8B and 9D did not have sufficient observations in one or more of the data collection periods to conduct a trend analysis and are not included in the Improper Holding/Time and Temperature bar graph.***

Institutional Foodservice – ELEMENTARY SCHOOLS

Institutional Foodservice – ELEMENTARY SCHOOLS

Figure ES-4
POOR PERSONAL HYGIENE
PERCENT (%) of OBSERVATIONS found IN Compliance for each DATA ITEM



	12A	13A	14A	15A	15B
% IN 1998	**55.3**	79.8	**64.9**	81.9	91.5
% IN 2003	**66.3**	85.7	**83.9**	87.1	93.5
% IN 2008	**72.5**	88.2	**91.4**	78.5	94.6

DATA ITEM REFERENCE	
12A	**Hands are clean and properly washed when and as required.**
13A	Food Employees eat, drink, and use tobacco only in designated areas / do not use a utensil more than once to taste food that is sold or served / do not handle or care for animals present. Food employees experiencing persistent sneezing, coughing, or runny nose do not work with exposed food, clean equipment, utensils, linens, unwrapped single-service or single-use articles.
14A	**Employees do not contact exposed, ready-to-eat food with their bare hands.**
15A	Handwash facilities conveniently located and accessible for employees.
15B	Handwash facilities supplied with hand cleanser / sanitary towels / hand drying devices.

NOTE: ***Bold font denotes DATA ITEMS showing statistically significant improvement.***

Institutional Foodservice – ELEMENTARY SCHOOLS

D. Summary of Data Items Showing Statistically Significant Trends

Table 26

ELEMENTARY SCHOOLS

DATA ITEMS Showing Statistically Significant Improvement

RISK FACTOR		% IN 1998	% IN 2003	% IN 2008
Improper Holding/ Time and Temperature	**7A** – PHF/TCS food is maintained at 41°F (5°C) or below, except during preparation, cooking, cooling, or when time is used as a public health control	**54.9**	**74.2**	**71.0**
	9A - Ready-to-eat PHF/TCS food held for more than 24 hours is date marked as required (prepared on-site)	**36.2**	**60.4**	**83.7**
Poor Personal Hygiene	**12A** – Hands are clean and properly washed when and as required	**55.3**	**66.3**	**72.5**
	14A – Employees do not contact exposed, ready-to-eat food with their bare hands	**64.9**	**83.9**	**91.4**

Table 27

ELEMENTARY SCHOOLS

DATA ITEM Showing Statistically Significant Regression

RISK FACTOR		% IN 1998	% IN 2003	% IN 2008
Contaminated Equipment/Protection from Contamination	**10A** – Food is protected from cross contamination by separating raw animal foods from raw ready-to-eat food and by separating raw animal foods from cooked ready-to-eat food	**93.3**	**85.1**	**80.6**

RESTAURANTS

FAST FOOD

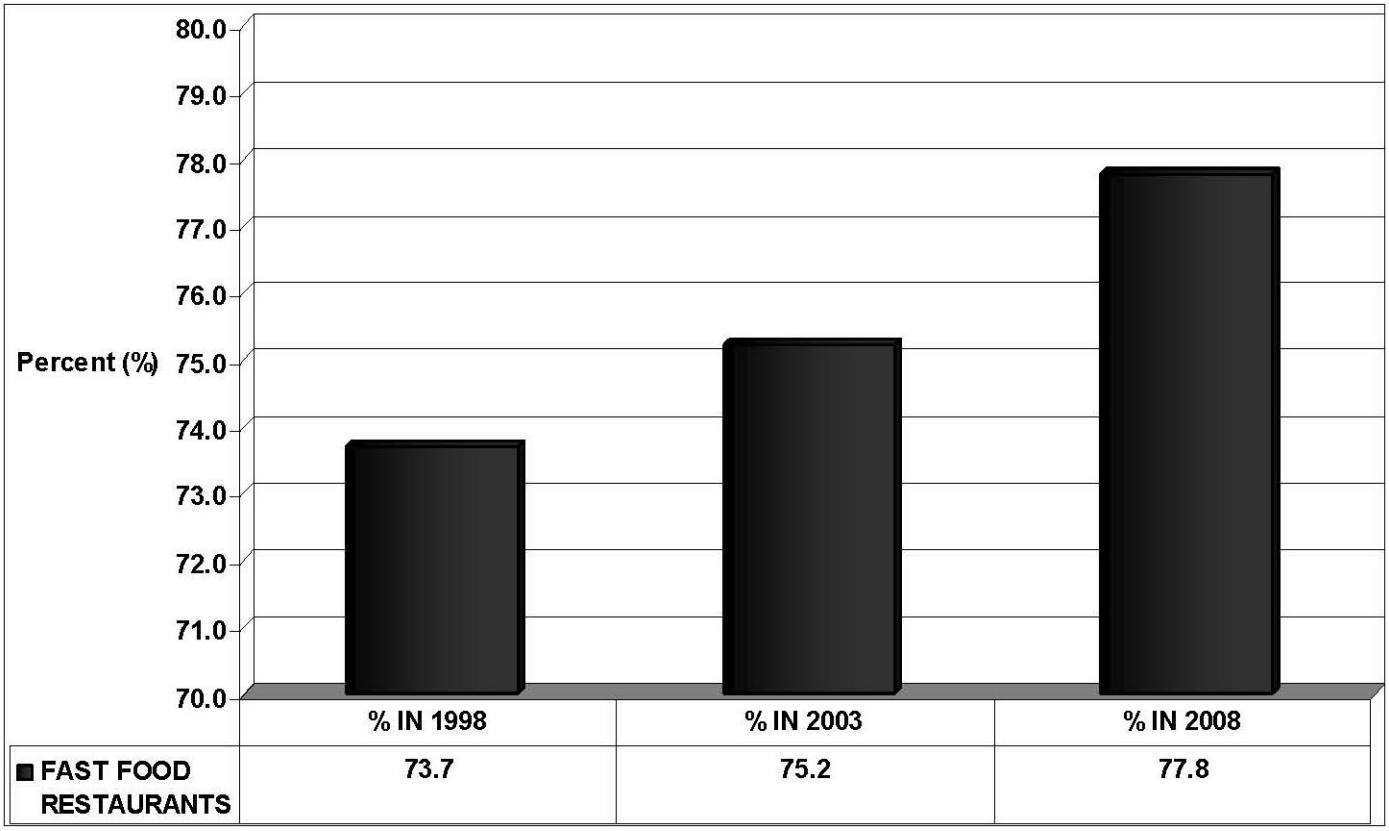
1998 – 2008 TREND ANALYSIS
RESULTS AND DISCUSSION

Restaurants – FAST FOOD

A. Percent of observations found IN Compliance for ALL Data Items

Restaurants – FAST FOOD

Figure FF-1
PERCENT (%) of OBSERVATIONS found IN Compliance for ALL 42 DATA ITEMS



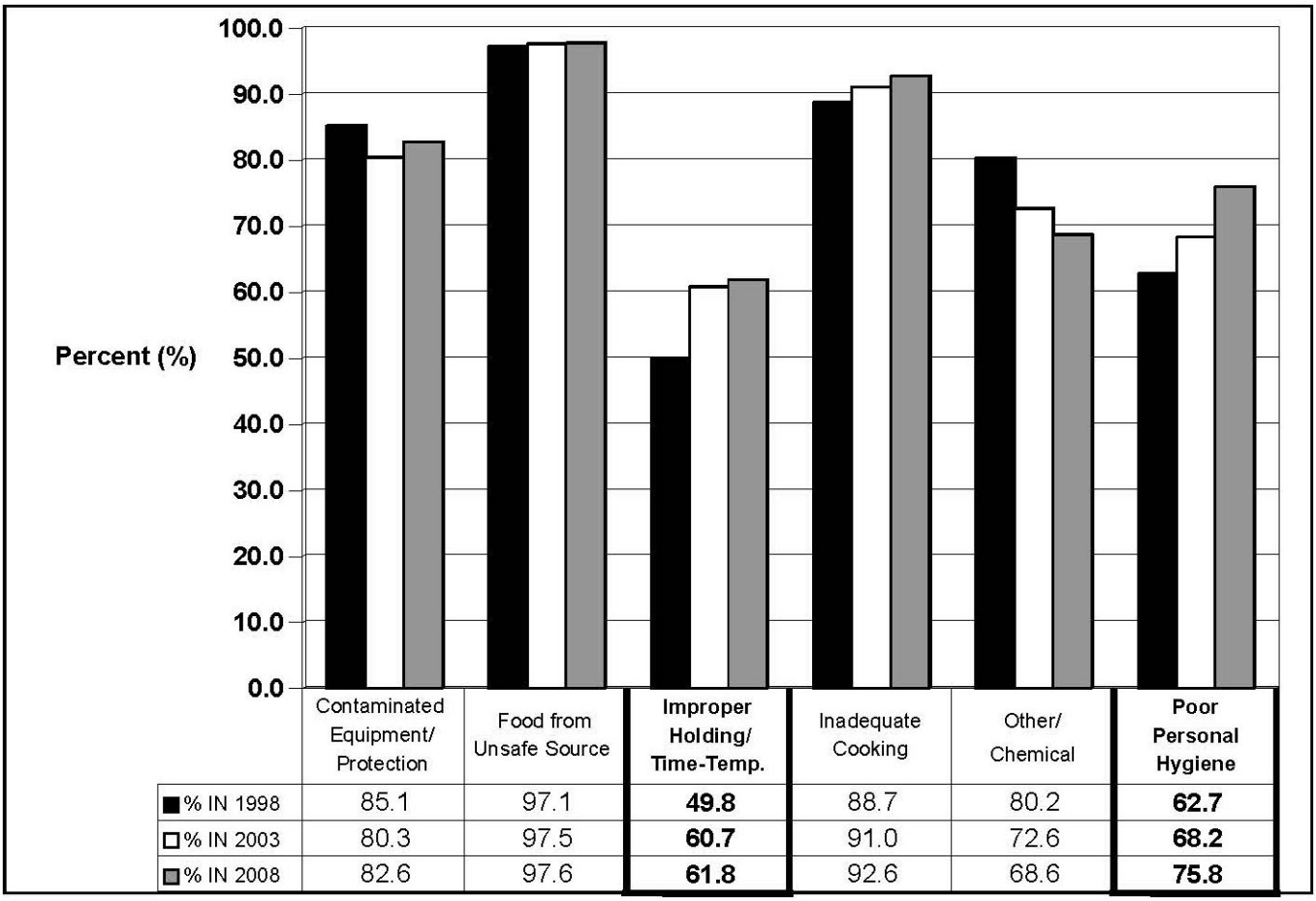
Trend Analysis For Figure FF-1
Fast Food Restaurants showed a statistically significant improvement in the percentage of IN Compliance observations for all combined data items during the study period.

Restaurants – FAST FOOD

B. Percent of observations found IN Compliance for each RISK FACTOR

Restaurants – FAST FOOD

Figure FF-2
PERCENT (%) of OBSERVATIONS found IN Compliance for each RISK FACTOR



	Contaminated Equipment/ Protection	Food from Unsafe Source	**Improper Holding/ Time-Temp.**	Inadequate Cooking	Other/ Chemical	**Poor Personal Hygiene**
■ % IN 1998	85.1	97.1	**49.8**	88.7	80.2	**62.7**
□ % IN 2003	80.3	97.5	**60.7**	91.0	72.6	**68.2**
▩ % IN 2008	82.6	97.6	**61.8**	92.6	68.6	**75.8**

NOTE: ***Bold font denotes RISK FACTORS showing statistically significant improvement.***

Trend Analysis for Figure FF-2

The following two risk factors showed statistically significant improvement for fast food restaurants during the study period:

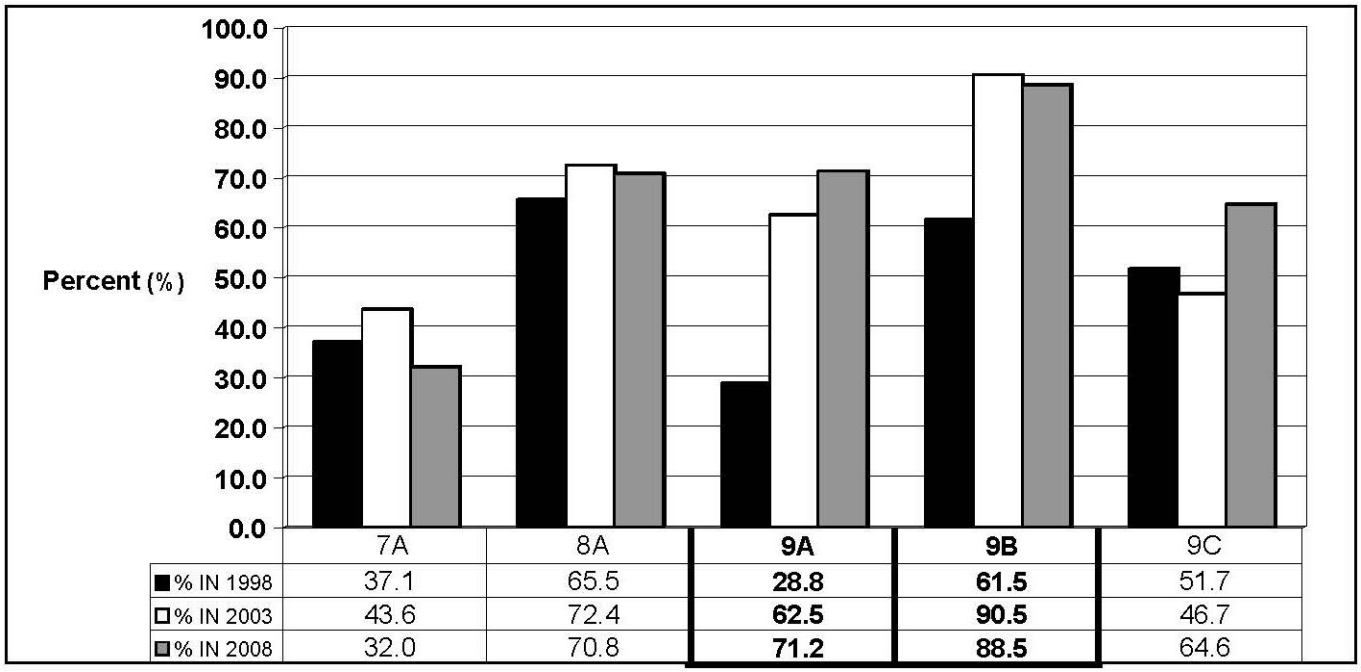
- Improper Holding/Time and Temperature
- Poor Personal Hygiene

Restaurants – FAST FOOD

C. Percent of observations found IN Compliance for each INDIVIDUAL DATA ITEM that comprises a statistically significant risk factor

Restaurants – FAST FOOD

Figure FF-3
IMPROPER HOLDING/TIME AND TEMPERATURE
PERCENT (%) of OBSERVATIONS found IN Compliance for each DATA ITEM



	7A	8A	**9A**	**9B**	9C
% IN 1998	37.1	65.5	**28.8**	**61.5**	51.7
% IN 2003	43.6	72.4	**62.5**	**90.5**	46.7
% IN 2008	32.0	70.8	**71.2**	**88.5**	64.6

DATA ITEM REFERENCE	
*6A	Cooked PHF/TCS food is cooled from 140°F (60°C) to 70°F (21°C) within 2 hours and from 140°F (60°C) to 41°F (5°C) or below within 6 hours
*6B	PHF/TCS food (prepared from ingredients at ambient temperature) is cooled to 41°F (5°C) or below within 4 hours
*6C	Foods received at a temperature according to Law are cooled to 41°F (5°C) within 4 hours
7A	PHF/TCS food is maintained at 41°F (5°C) or below, except during preparation, cooking, cooling or when time is used as a public health control.
8A	PHF/TCS food is maintained at 140°F (60°C) or above, except during preparation, cooking, or cooling or when time is used as a public health control.
*8B	Roasts are held at a temperature of 130°F (54°C) or above
9A	**Ready-to-eat PHF/TCS food held for more than 24 hours is date marked as required (prepared on-site)**
9B	**Discard RTE PHF/TCS food and/or opened commercial container exceeding 7 days at ≤ 41°F (5°C) or 4 days at ≤ 45°F (7°C)**
9C	Opened Commercial container of prepared ready-to-eat PHF/TCS food is date marked as required
*9D	When time only is used as a public health control, food is cooked and served within 4 hours as required

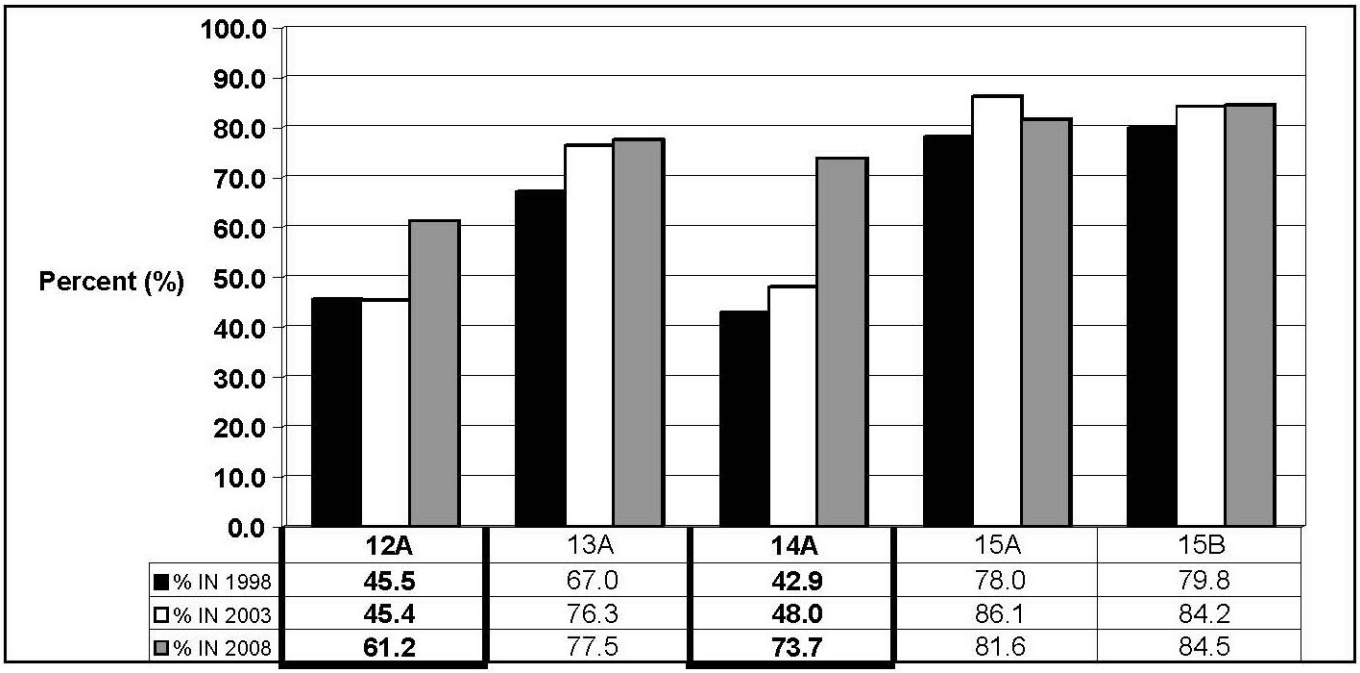
NOTE: ***Bold font denotes DATA ITEMS showing statistically significant improvement.***

**** Data items 6A, 6B, 6C, 8B, and 9D did not have sufficient observations in one or more of the data collection periods to conduct a trend analysis and are not included in the Improper Holding/Time and Temperature bar graph.***

Restaurants – FAST FOOD

Restaurants – FAST FOOD

Figure FF-4
POOR PERSONAL HYGIENE
PERCENT (%) of OBSERVATIONS found IN Compliance for each DATA ITEM



	12A	13A	14A	15A	15B
% IN 1998	**45.5**	67.0	**42.9**	78.0	79.8
% IN 2003	**45.4**	76.3	**48.0**	86.1	84.2
% IN 2008	**61.2**	77.5	**73.7**	81.6	84.5

DATA ITEM REFERENCE	
12A	**Hands are clean and properly washed when and as required.**
13A	Food Employees eat, drink, and use tobacco only in designated areas / do not use a utensil more than once to taste food that is sold or served / do not handle or care for animals present. Food employees experiencing persistent sneezing, coughing, or runny nose do not work with exposed food, clean equipment, utensils, linens, unwrapped single-service or single-use articles.
14A	**Employees do not contact exposed, ready-to-eat food with their bare hands**.
15A	Handwash facilities conveniently located and accessible for employees.
15B	Handwash facilities supplied with hand cleanser / sanitary towels / hand drying devices.

NOTE: ***Bold font denotes DATA ITEMS showing statistically significant improvement.***

Restaurants – FAST FOOD

D. Summary Data Items Showing Statistically Significant Trends

Table 28

FAST FOOD RESTAURANTS

DATA ITEMS Showing Statistically Significant Improvement

RISK FACTOR		% IN 1998	% IN 2003	% IN 2008
Improper Holding/ Time and Temperature	**9A** - Ready-to-eat PHF/TCS food held for more than 24 hours is date marked as required (prepared on-site)	**28.8**	**62.5**	**71.2**
	9B – Discard RTE PHF/TCS food and/or opened commercial container exceeding 7 days at ≤ 41°F (5°C) or 4 days at ≤ 45°F (7°C)	**61.5**	**90.5**	**88.5**
Poor Personal Hygiene	**12A** – Hands are clean and properly washed when and as required	**45.5**	**45.4**	**61.2**
	14A – Employees do not contact exposed, ready-to-eat food with their bare hands	**42.9**	**48.0**	**73.7**

RESTAURANTS

FULL SERVICE

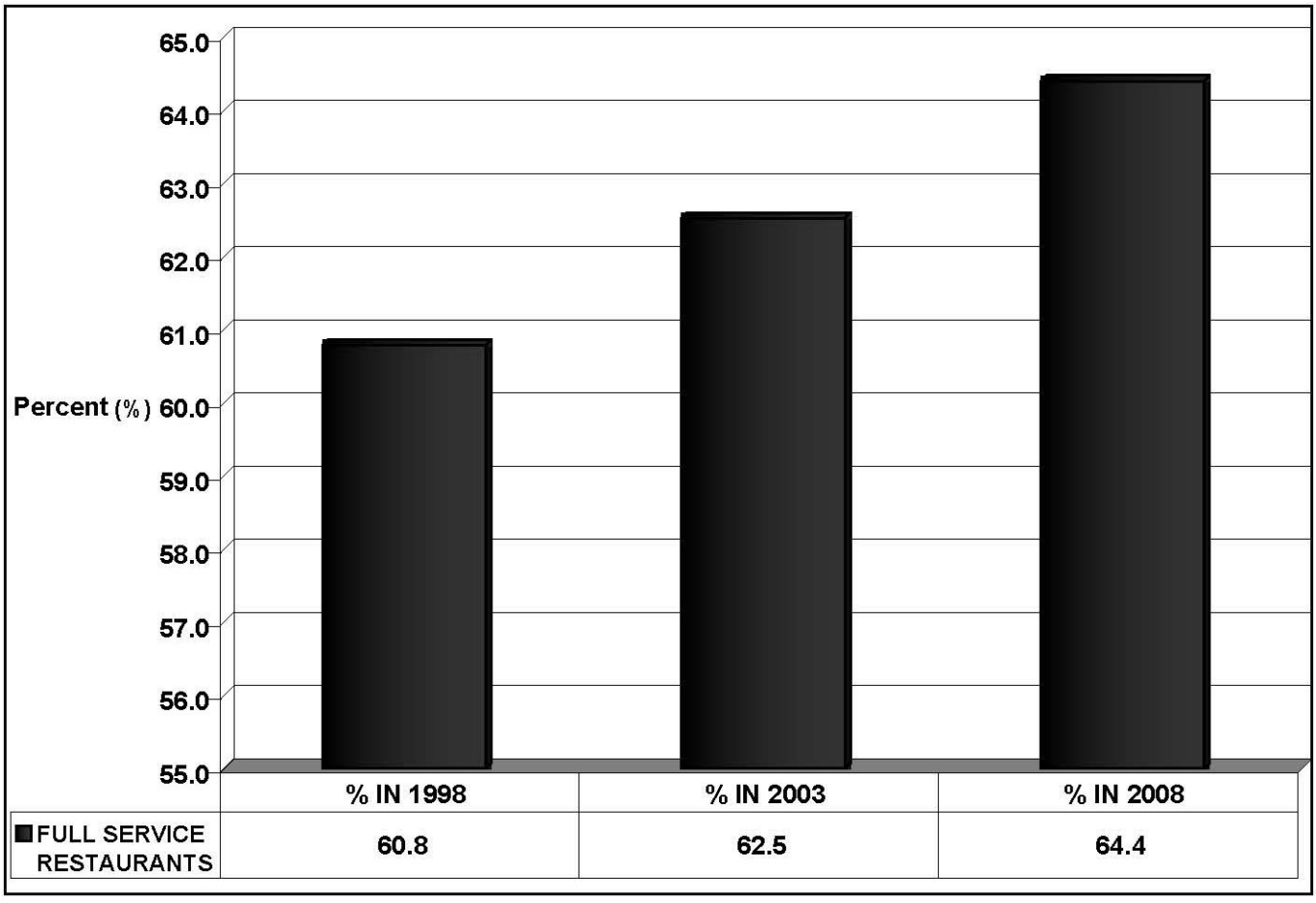
1998 – 2008 TREND ANALYSIS
RESULTS AND DISCUSSION

Restaurants – FULL SERVICE

A. Percent of observations found IN Compliance for ALL Data Items

Restaurants – FULL SERVICE

Figure FS-1
PERCENT (%) of OBSERVATIONS found IN Compliance for ALL 42 DATA ITEMS



	% IN 1998	% IN 2003	% IN 2008
FULL SERVICE RESTAURANTS	60.8	62.5	64.4

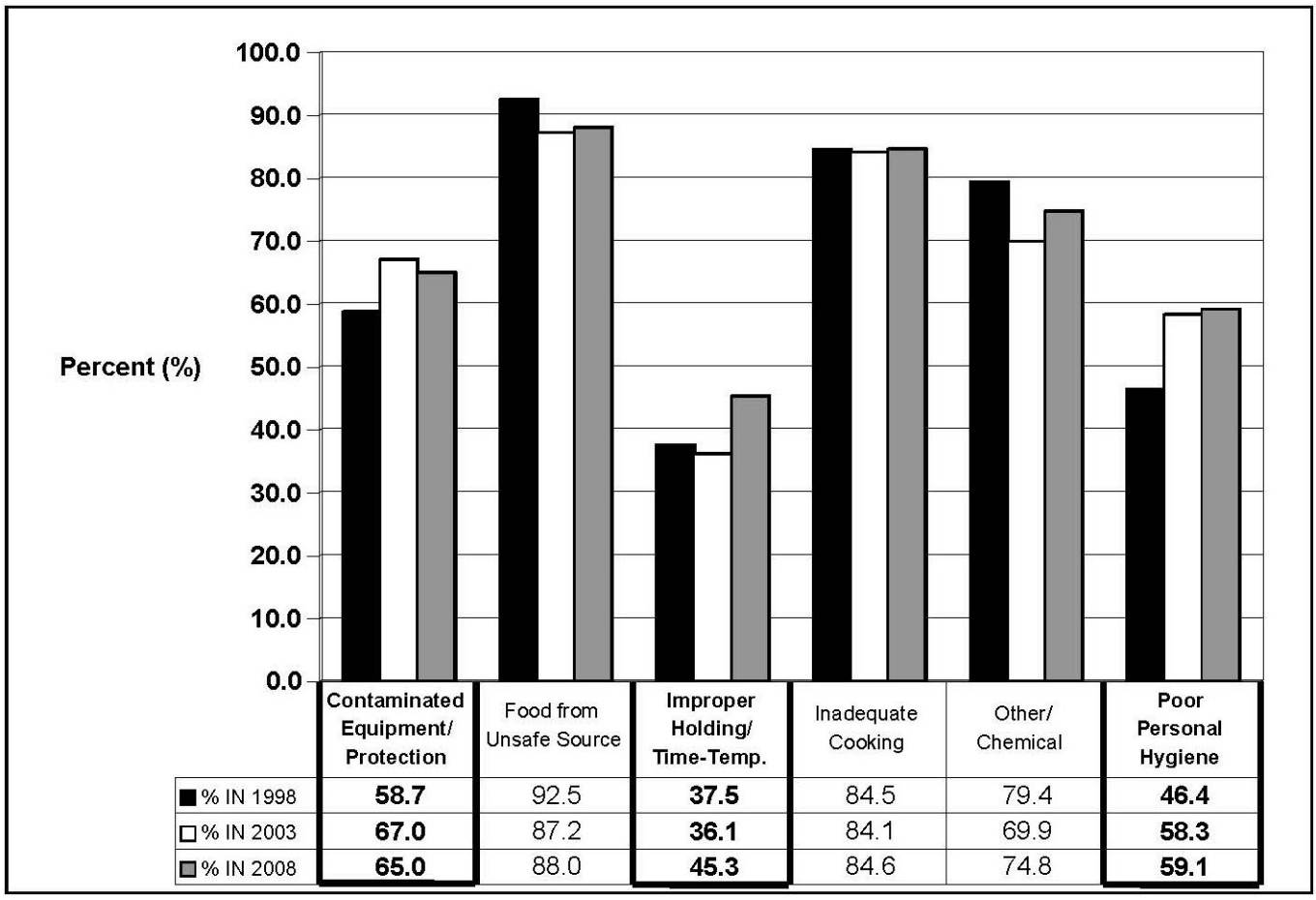
Trend Analysis For Figure FS-1
Full Service Restaurants showed a statistically significant improvement in the percentage of IN Compliance observations for all combined data items during the study period.

Restaurants – FULL SERVICE

B. Percent of observations found IN Compliance for each RISK FACTOR

Restaurants – FULL SERVICE

Figure FS-2
PERCENT (%) of OBSERVATIONS found IN Compliance for each RISK FACTOR



	Contaminated Equipment/ Protection	Food from Unsafe Source	Improper Holding/ Time-Temp.	Inadequate Cooking	Other/ Chemical	Poor Personal Hygiene
% IN 1998	**58.7**	92.5	**37.5**	84.5	79.4	**46.4**
% IN 2003	**67.0**	87.2	**36.1**	84.1	69.9	**58.3**
% IN 2008	**65.0**	88.0	**45.3**	84.6	74.8	**59.1**

NOTE: ***Bold font denotes RISK FACTORS showing statistically significant improvement.***

Trend Analysis for Figure FS-2

The following 3 risk factors showed statistically significant improvement for Full Service Restaurants during the study period:

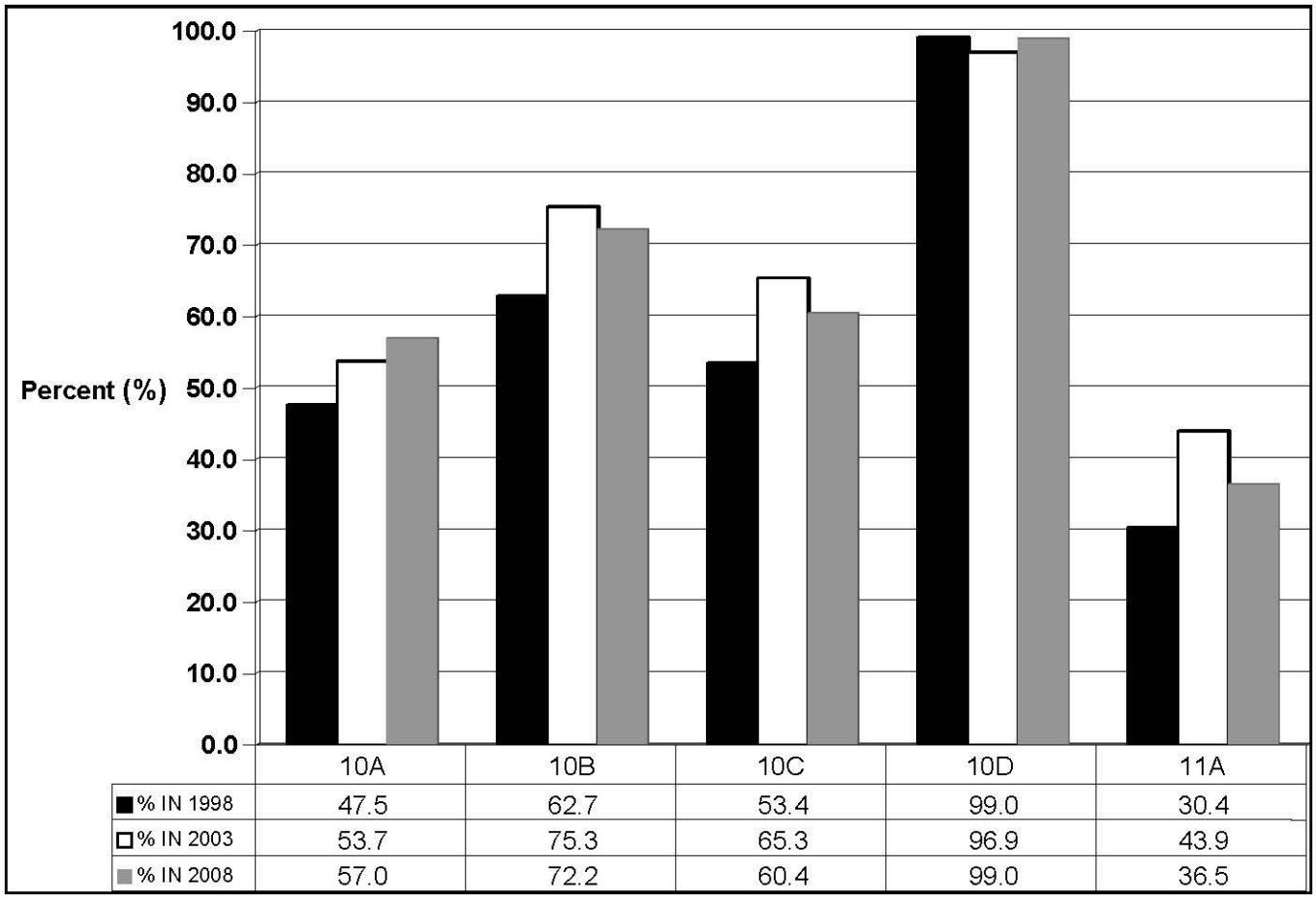
- Contaminated Equipment/Protection From Contamination
- Improper Holding/Time and Temperature
- Poor Personal Hygiene

Restaurants – FULL SERVICE

C. Percent of observations found IN Compliance for each INDIVIDUAL DATA ITEM that comprises a statistically significant risk factor

Restaurants – FULL SERVICE

Figure FS-3
CONTAMINATED EQUIPMENT/PROTECTION FROM CONTAMINATION
PERCENT (%) of OBSERVATIONS found IN Compliance for each DATA ITEM



	10A	10B	10C	10D	11A
% IN 1998	47.5	62.7	53.4	99.0	30.4
% IN 2003	53.7	75.3	65.3	96.9	43.9
% IN 2008	57.0	72.2	60.4	99.0	36.5

DATA ITEM REFERENCE	
10A	Food is protected from cross contamination by separating raw animal foods from raw ready-to-eat food and by separating raw animal foods from cooked ready-to-eat food
10B	Raw animal foods are separated from each other during storage, preparation, holding, and display
10C	Food is protected from environmental contamination – critical items
10D	After being served or sold to a consumer, food is not re-served
11A	Food-contact surfaces and utensils are clean to sight and touch and sanitized before use

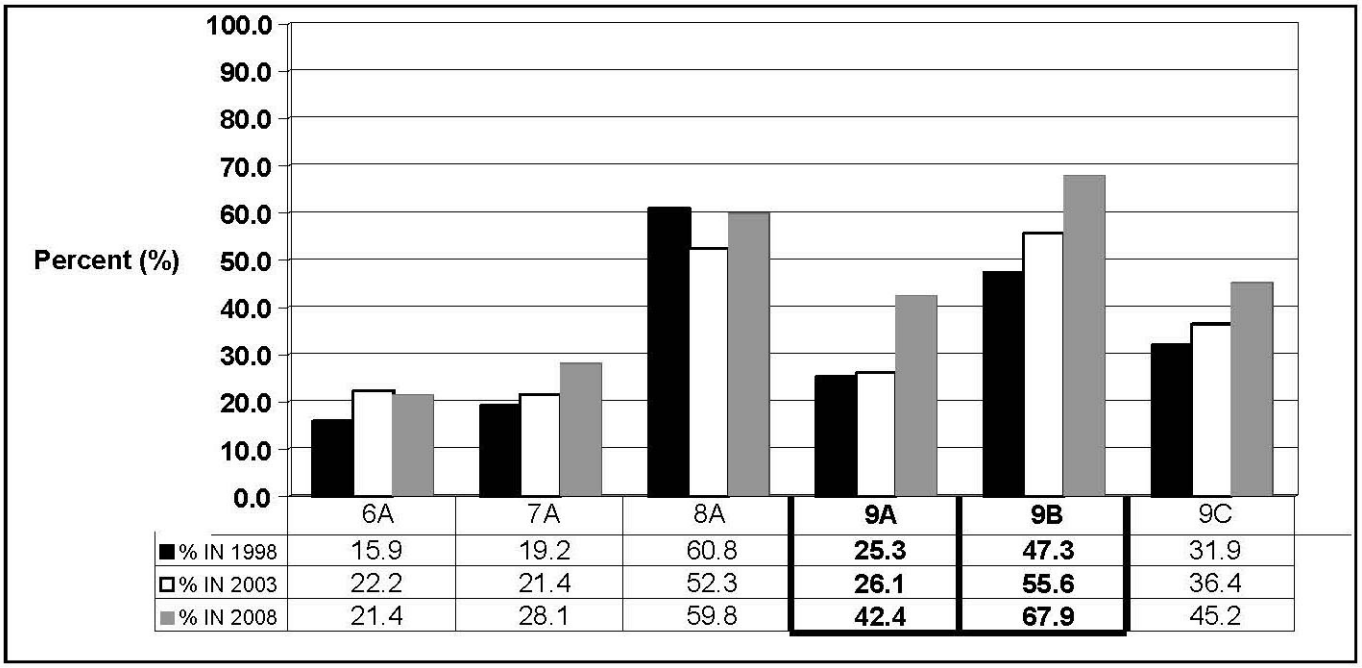
Discussion for Figure FS-3

Even though the *contaminated equipment/protection from contamination* risk factor showed significant improvement, none of the individual data items that comprise this risk factor showed significant improvement. When the data items were combined, however, the cumulative data results showed a statistically significant improvement for the *contaminated equipment/protection from contamination* risk factor.

Restaurants – FULL SERVICE

Restaurants – FULL SERVICE

Figure FS-4
IMPROPER HOLDING/TIME AND TEMPERATURE
PERCENT (%) of OBSERVATIONS found IN Compliance for each DATA ITEM



	6A	7A	8A	**9A**	**9B**	9C
% IN 1998	15.9	19.2	60.8	**25.3**	**47.3**	31.9
% IN 2003	22.2	21.4	52.3	**26.1**	**55.6**	36.4
% IN 2008	21.4	28.1	59.8	**42.4**	**67.9**	45.2

DATA ITEM REFERENCE	
6A	Cooked PHF/TCS food is cooled from 140°F (60°C) to 70°F (21°C) within 2 hours and from 140°F (60°C) to 41°F (5°C) or below within 6 hours
*6B	PHF/TCS food (prepared from ingredients at ambient temperature) is cooled to 41°F (5°C) or below within 4 hours
*6C	Foods received at a temperature according to Law are cooled to 41°F (5°C) within 4 hours
7A	PHF/TCS food is maintained at 41°F (5°C) or below, except during preparation, cooking, cooling or when time is used as a public health control.
8A	PHF/TCS food is maintained at 140°F (60°C) or above, except during preparation, cooking, or cooling or when time is used as a public health control.
*8B	Roasts are held at a temperature of 130°F (54°C) or above
9A	**Ready-to-eat PHF/TCS food held for more than 24 hours is date marked as required (prepared on-site)**
9B	**Discard RTE PHF/TCS food and/or opened commercial container exceeding 7 days at ≤ 41°F (5°C) or 4 days at ≤ 45°F (7°C)**
9C	Opened Commercial container of prepared ready-to-eat PHF/TCS food is date marked as required
*9D	When time only is used as a public health control, food is cooked and served within 4 hours as required

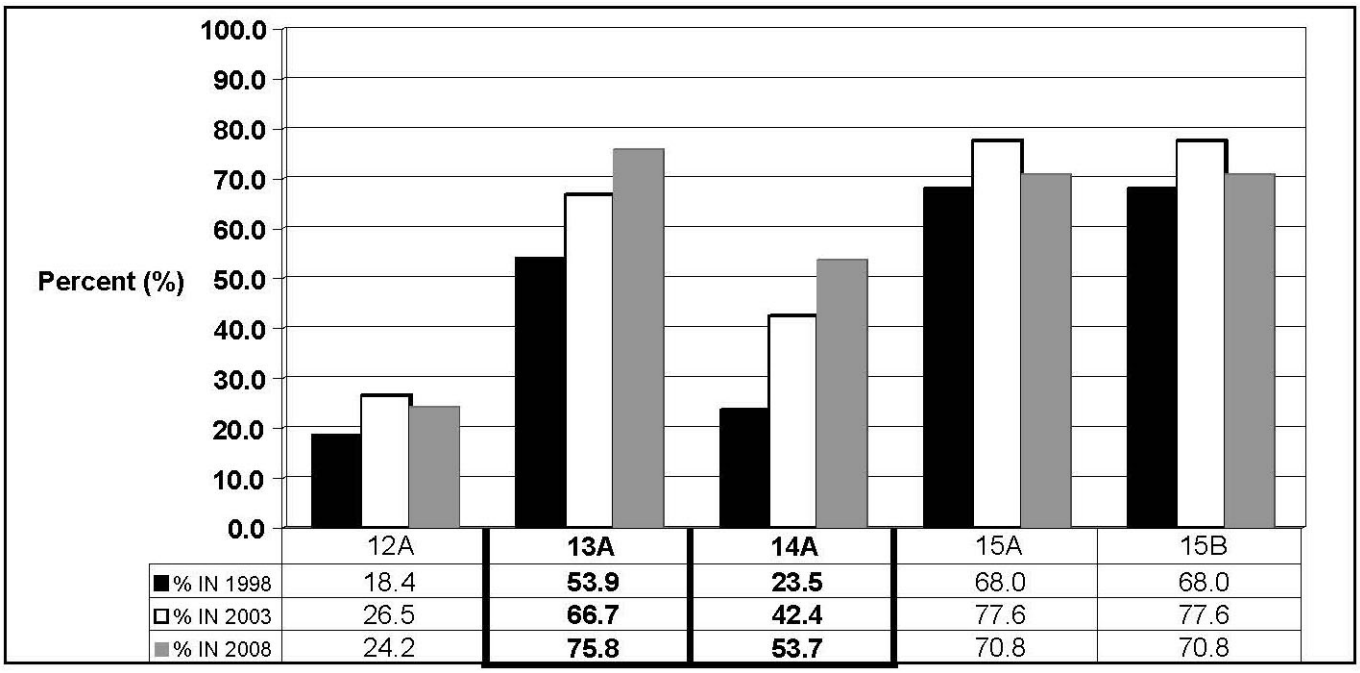
NOTE: ***Bold font denotes DATA ITEMS showing statistically significant improvement.***

**** Data items 6B, 6C, 8B, and 9D did not have sufficient observations in one or more of the data collection periods to conduct a trend analysis and are not included in the Improper Holding/Time and Temperature bar graph.***

Restaurants – FULL SERVICE

Restaurants – FULL SERVICE

Figure FS-5
POOR PERSONAL HYGIENE
PERCENT (%) of OBSERVATIONS found IN Compliance for each DATA ITEM



	12A	**13A**	**14A**	15A	15B
% IN 1998	18.4	**53.9**	**23.5**	68.0	68.0
% IN 2003	26.5	**66.7**	**42.4**	77.6	77.6
% IN 2008	24.2	**75.8**	**53.7**	70.8	70.8

DATA ITEM REFERENCE	
12A	Hands are clean and properly washed when and as required.
13A	**Food Employees eat, drink, and use tobacco only in designated areas / do not use a utensil more than once to taste food that is sold or served / do not handle or care for animals present. Food employees experiencing persistent sneezing, coughing, or runny nose do not work with exposed food, clean equipment, utensils, linens, unwrapped single-service or single-use articles.**
14A	**Employees do not contact exposed, ready-to-eat food with their bare hands.**
15A	Handwash facilities conveniently located and accessible for employees.
15B	Handwash facilities supplied with hand cleanser / sanitary towels / hand drying devices.

NOTE: ***Bold font denotes DATA ITEMS showing statistically significant improvement***

Restaurants – FULL SERVICE

D. Summary of Data Items Showing Statistically Significant Trends

Table 29

FULL SERVICE RESTAURANTS

DATA ITEMS Showing Statistically Significant Improvement

RISK FACTOR		% IN 1998	% IN 2003	% IN 2008
Improper Holding/ Time and Temperature	**9A** - Ready-to-eat PHF/TCS food held for more than 24 hours is date marked as required (prepared on-site)	**25.3**	**26.1**	**42.4**
	9B – Discard RTE PHF/TCS food and/or opened commercial container exceeding 7 days at ≤ 41°F (5°C) or 4 days at ≤ 45°F (7°C)	**47.3**	**55.6**	**67.9**
Poor Personal Hygiene	**13A** – Food Employees eat, drink, and use tobacco only in designated areas / do not use a utensil more than once to taste food that is sold or served / do not handle or care for animals present. Food employees experiencing persistent sneezing, coughing, or runny nose do not work with exposed food, clean equipment, utensils, linens, unwrapped single-service or single-use articles	**53.9**	**66.7**	**75.8**
	14A – Employees do not contact exposed, ready-to-eat food with their bare hands	**23.5**	**42.4**	**53.7**

RETAIL FOOD

DELI DEPARTMENTS/STORES

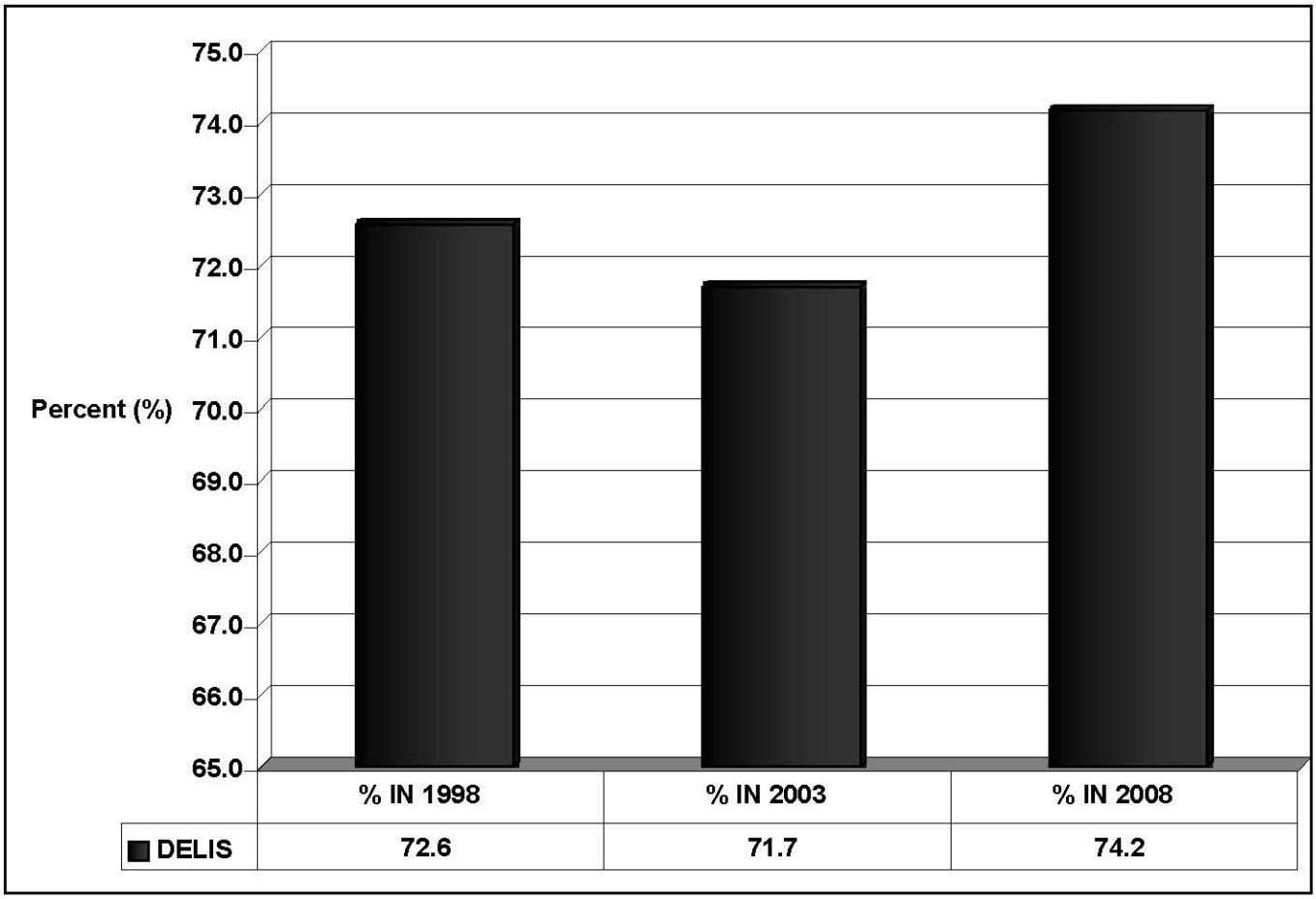
1998 – 2008 TREND ANALYSIS RESULTS AND DISCUSSION

Retail Food – DELI DEPARTMENTS/STORES

A. Percent of observations found IN Compliance for ALL Data Items

Retail Food – DELI DEPARTMENTS/STORES

Figure D-1
PERCENT (%) of OBSERVATIONS found IN Compliance for ALL 42 DATA ITEMS



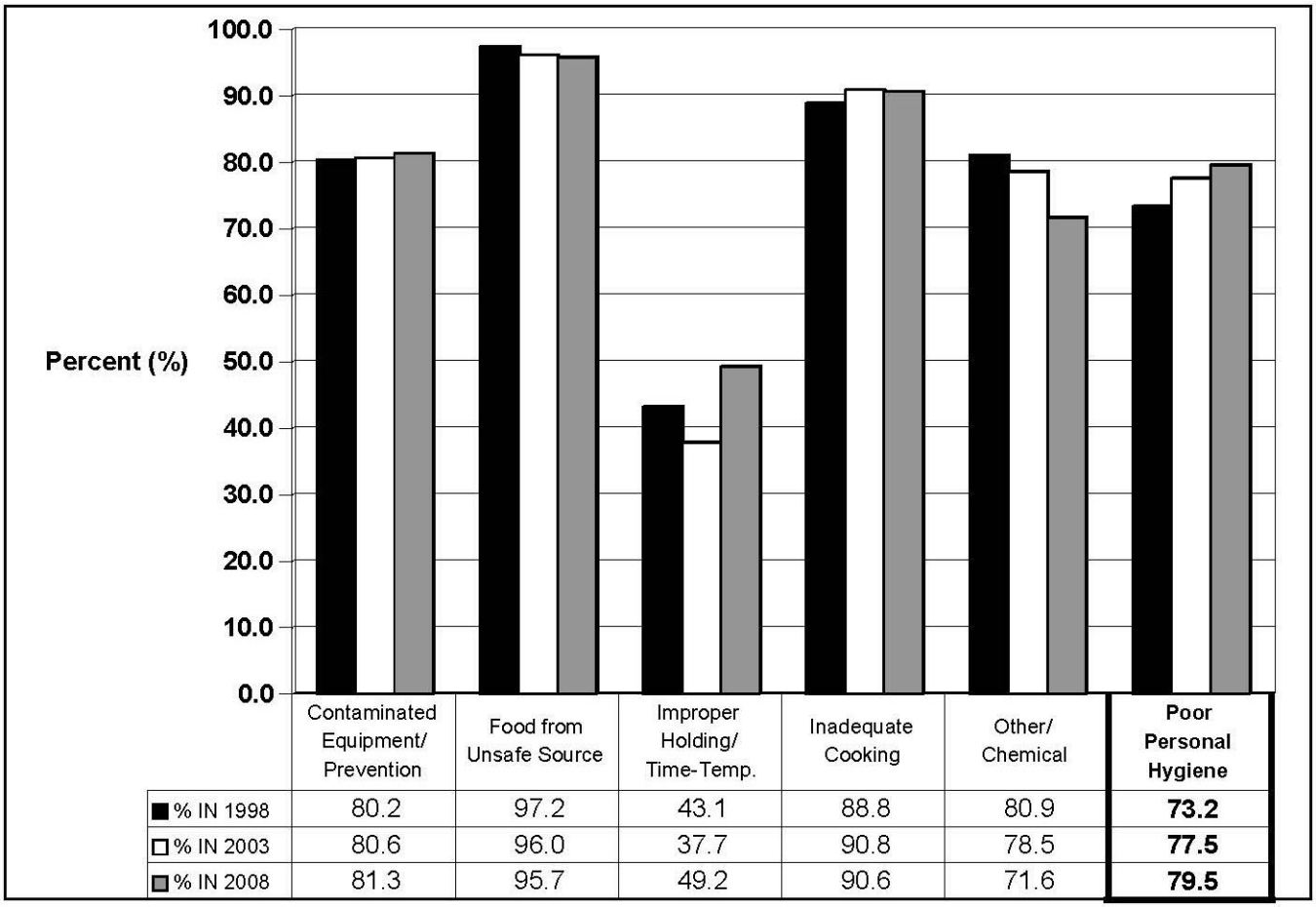
Trend Analysis For Figure D-1
Deli departments/stores did not show a statistically significant change in the percentage of IN Compliance observations for all combined data items during the study period.

Retail Food – DELI DEPARTMENTS/STORES

B. Percent of observations found IN Compliance for each RISK FACTOR

Retail Food – DELI DEPARTMENTS/STORES

Figure D-2
PERCENT (%) of OBSERVATIONS found IN Compliance for each RISK FACTOR



	Contaminated Equipment/ Prevention	Food from Unsafe Source	Improper Holding/ Time-Temp.	Inadequate Cooking	Other/ Chemical	**Poor Personal Hygiene**
■ % IN 1998	80.2	97.2	43.1	88.8	80.9	**73.2**
□ % IN 2003	80.6	96.0	37.7	90.8	78.5	**77.5**
▩ % IN 2008	81.3	95.7	49.2	90.6	71.6	**79.5**

NOTE: ***Bold font denotes RISK FACTOR showing statistically significant improvement.***

Trend Analysis for Figure D-2

The following risk factor showed statistically significant improvement for deli departments/stores during the study period:

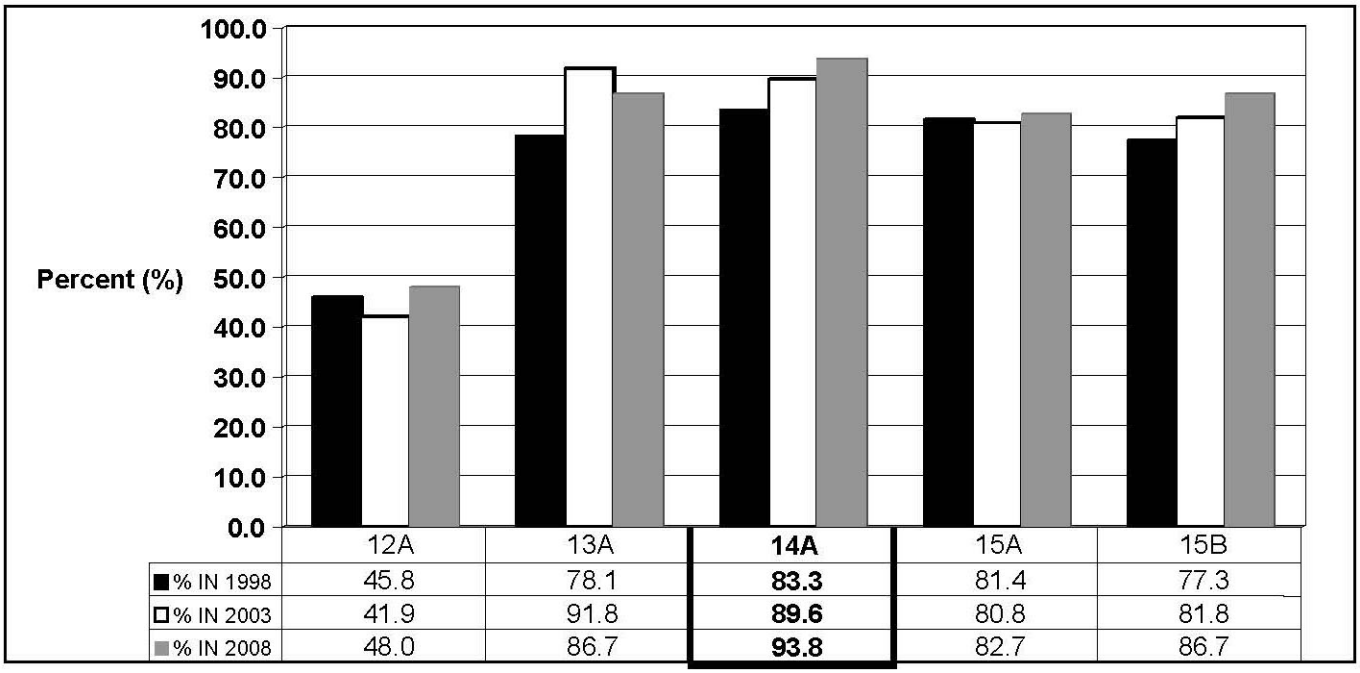
- Poor Personal Hygiene

Retail Food – DELI DEPARTMENTS/STORES

C. Percent of observations found IN Compliance for each INDIVIDUAL DATA ITEM that comprises a statistically significant risk factor

Retail Food – DELI DEPARTMENTS/STORES

Figure D-3
POOR PERSONAL HYGIENE
PERCENT (%) of OBSERVATIONS found IN Compliance for each DATA ITEM



	12A	13A	**14A**	15A	15B
% IN 1998	45.8	78.1	**83.3**	81.4	77.3
% IN 2003	41.9	91.8	**89.6**	80.8	81.8
% IN 2008	48.0	86.7	**93.8**	82.7	86.7

DATA ITEM REFERENCE	
12A	Hands are clean and properly washed when and as required.
13A	Food Employees eat, drink, and use tobacco only in designated areas / do not use a utensil more than once to taste food that is sold or served / do not handle or care for animals present. Food employees experiencing persistent sneezing, coughing, or runny nose do not work with exposed food, clean equipment, utensils, linens, unwrapped single-service or single-use articles.
14A	**Employees do not contact exposed, ready-to-eat food with their bare hands.**
15A	Handwash facilities conveniently located and accessible for employees.
15B	Handwash facilities supplied with hand cleanser / sanitary towels / hand drying devices.

NOTE: ***Bold font denotes DATA ITEM showing statistically significant improvement.***

Retail Food – DELI DEPARTMENTS/STORES

D. Summary Data Items Showing Statistically Significant Trends

Table 30

DELI DEPARTMENTS/STORES

DATA ITEMS Showing Statistically Significant Improvement

RISK FACTOR		% IN 1998	% IN 2003	% IN 2008
Improper Holding/ Time and Temperature	**9A** - Ready-to-eat PHF/TCS food held for more than 24 hours is date marked as required (prepared on-site)	**33.3**	**39.2**	**52.7**
Poor Personal Hygiene	**14A** – Employees do not contact exposed, ready-to-eat food with their bare hands	**83.3**	**89.6**	**93.8**

RETAIL FOOD

MEAT and POULTRY MARKETS/DEPARTMENTS

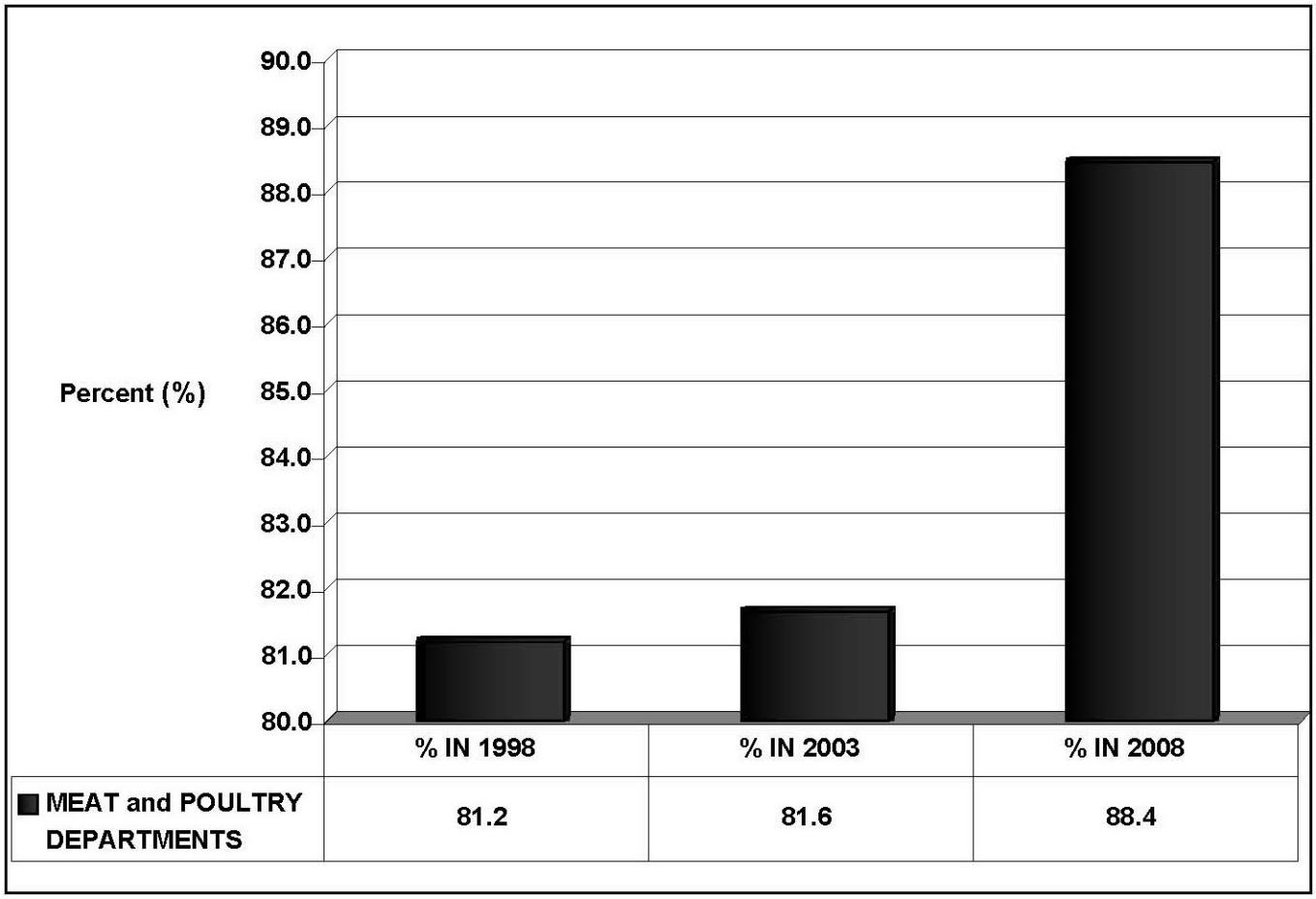
1998 – 2008 TREND ANALYSIS RESULTS AND DISCUSSION

Retail Food – MEAT AND POULTRY MARKETS/DEPARTMENTS

A. Percent of observations found IN Compliance for ALL Data Items

Retail Food – MEAT AND POULTRY MARKETS/DEPARTMENTS

Figure MP-1
PERCENT (%) of OBSERVATIONS found IN Compliance for ALL 42 DATA ITEMS



	% IN 1998	% IN 2003	% IN 2008
MEAT and POULTRY DEPARTMENTS	81.2	81.6	88.4

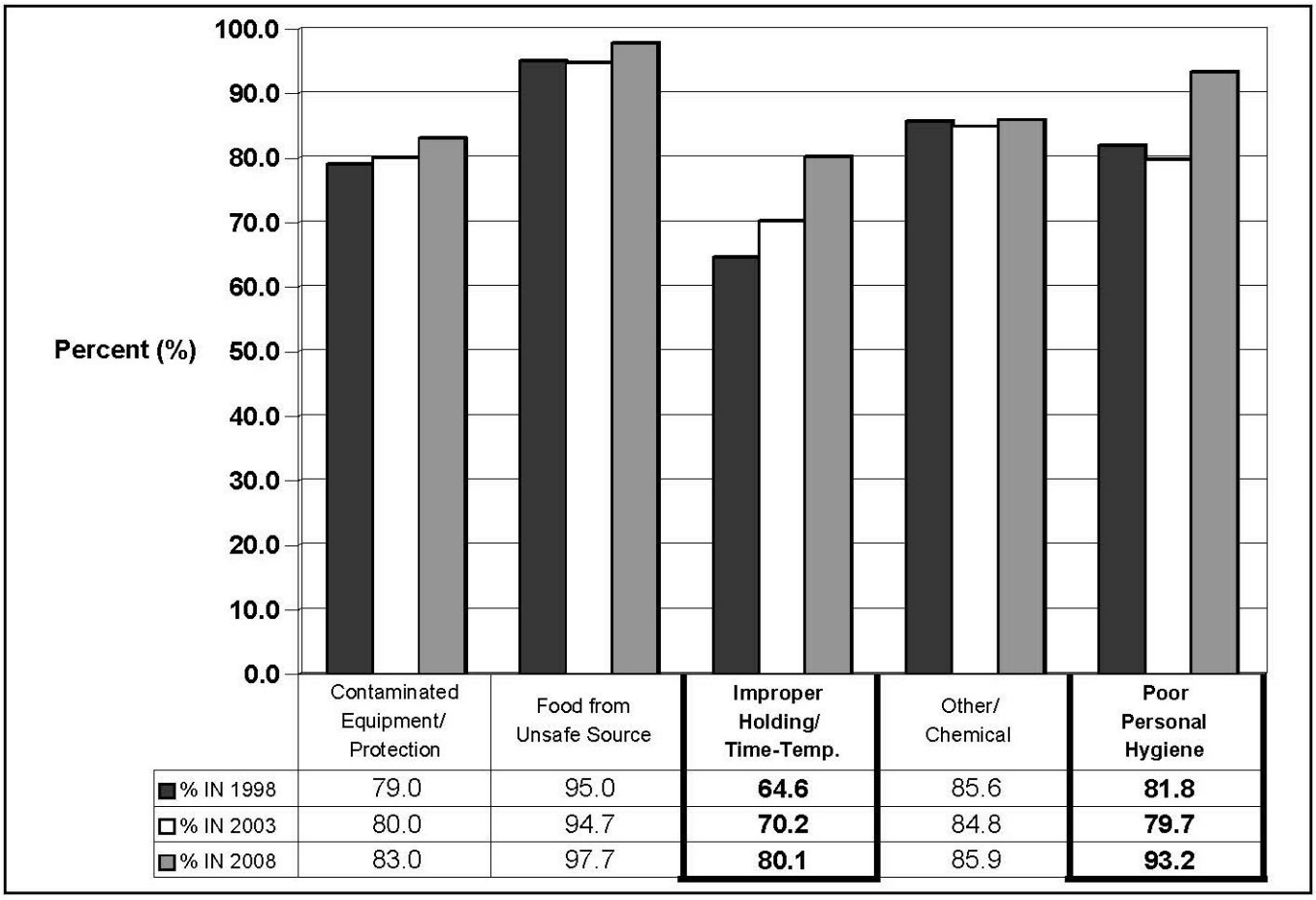
Trend Analysis For Figure MP-1
Meat and poultry markets/departments had a statistically significant improvement in the percentage of IN Compliance observations for all combined data items during the study period.

Retail Food – MEAT AND POULTRY MARKETS/DEPARTMENTS

B. Percent of observations found IN Compliance for each RISK FACTOR

Retail Food – MEAT AND POULTRY MARKETS/DEPARTMENTS

Figure MP-2
PERCENT (%) of OBSERVATIONS found IN Compliance for each RISK FACTOR



	Contaminated Equipment/ Protection	Food from Unsafe Source	**Improper Holding/ Time-Temp.**	Other/ Chemical	**Poor Personal Hygiene**
% IN 1998	79.0	95.0	**64.6**	85.6	**81.8**
% IN 2003	80.0	94.7	**70.2**	84.8	**79.7**
% IN 2008	83.0	97.7	**80.1**	85.9	**93.2**

NOTES: ***Bold font denotes RISK FACTORS showing statistically significant improvement.***

The inadequate cooking risk factor is not included in Figure MP-2 due to an insufficient number of observations to form any conclusions. Cooking and reheating were not common processes associated with meat and poultry markets/departments.

Trend Analysis for Figure MP-2

The following two risk factors showed statistically significant improvement for Meat and Poultry Markets/Departments during the study period:

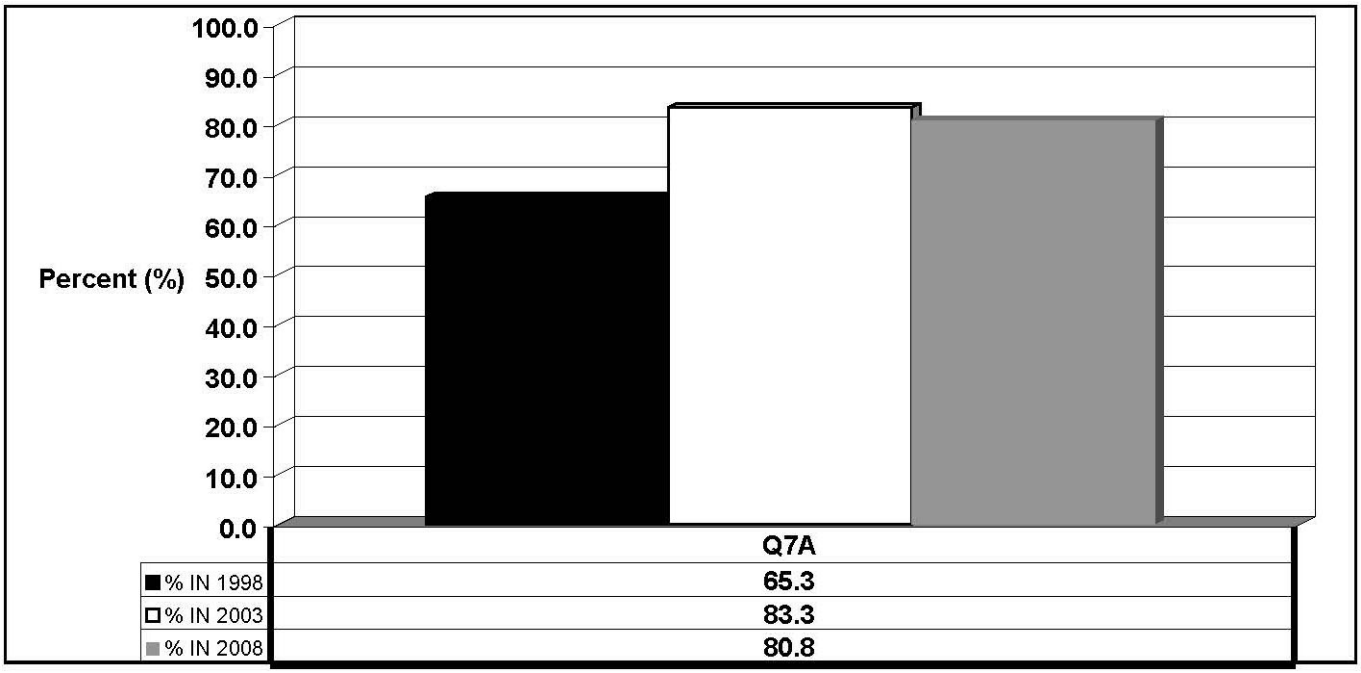
- Improper Holding/Time and Temperature
- Poor Personal Hygiene

Retail Food – MEAT AND POULTRY MARKETS/DEPARTMENTS

C. Percent of observations found IN Compliance for each INDIVIDUAL DATA ITEM that comprises a statistically significant risk factor

Retail Food – MEAT AND POUTRY MARKETS/DEPARTMENTS

Figure MP-3
IMPROPER HOLDING/TIME AND TEMPERATURE
PERCENT (%) of OBSERVATIONS found IN Compliance for each DATA ITEM



DATA ITEM REFERENCE	
*6A	Cooked PHF/TCS food is cooled from 140°F (60°C) to 70°F (21°C) within 2 hours and from 140°F (60°C) to 41°F (5°C) or below within 6 hours
*6B	PHF/TCS food (prepared from ingredients at ambient temperature) is cooled to 41°F (5°C) or below within 4 hours
*6C	Foods received at a temperature according to Law are cooled to 41°F (5°C) within 4 hours
7A	**PHF/TCS food is maintained at 41°F (5°C) or below, except during preparation, cooking, cooling or when time is used as a public health control.**
*8A	PHF/TCS food is maintained at 140°F (60°C) or above, except during preparation, cooking, or cooling or when time is used as a public health control.
*8B	Roasts are held at a temperature of 130°F (54°C) or above
*9A	Ready-to-eat PHF/TCS food held for more than 24 hours is date marked as required (prepared on-site)
*9B	Discard RTE PHF/TCS food and/or opened commercial container exceeding 7 days at ≤ 41°F (5°C) or 4 days at ≤ 45°F (7°C)
*9C	Opened Commercial container of prepared ready-to-eat PHF/TCS food is date marked as required
*9D	When time only is used as a public health control, food is cooked and served within 4 hours as required

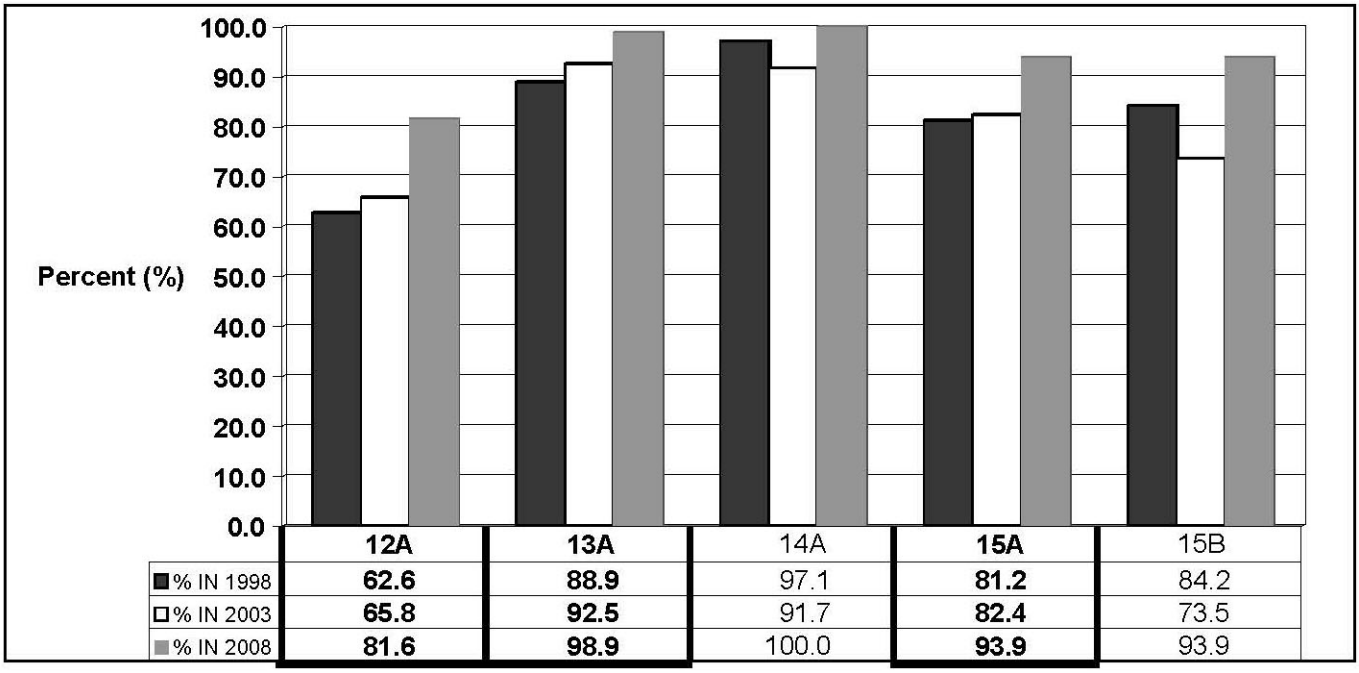
NOTE: ***Bold font denotes DATA ITEM showing statistically significant improvement.***

**** All data items for the improper holding/time and temperature risk factor, with the exception of 7A, did not have sufficient observations in one or more of the data collection periods to conduct a trend analysis and are not included in the bar graph illustrated above. Food processes within meat and poultry markets/departments primarily related to the cold holding of raw animal food products.***

Retail Food – MEAT AND POULTRY MARKETS/DEPARTMENTS

Retail Food – MEAT AND POUTRY MARKETS/DEPARTMENTS

Figure MP-4
POOR PERSONAL HYGIENE
PERCENT (%) of OBSERVATIONS found IN Compliance for each DATA ITEM



	12A	13A	14A	15A	15B
% IN 1998	**62.6**	**88.9**	97.1	**81.2**	84.2
% IN 2003	**65.8**	**92.5**	91.7	**82.4**	73.5
% IN 2008	**81.6**	**98.9**	100.0	**93.9**	93.9

DATA ITEM REFERENCE	
12A	**Hands are clean and properly washed when and as required.**
13A	**Food Employees eat, drink, and use tobacco only in designated areas / do not use a utensil more than once to taste food that is sold or served / do not handle or care for animals present. Food employees experiencing persistent sneezing, coughing, or runny nose do not work with exposed food, clean equipment, utensils, linens, unwrapped single-service or single-use articles.**
14A	Employees do not contact exposed, ready-to-eat food with their bare hands.
15A	**Handwash facilities conveniently located and accessible for employees.**
15B	Handwash facilities supplied with hand cleanser / sanitary towels / hand drying devices.

NOTE: ***Bold font denotes DATA ITEMS showing statistically significant improvement.***

Retail Food – MEAT AND POULTRY MARKETS/DEPARTMENTS

D. Summary Data Items Showing Statistically Significant Trends

Table 31

MEAT AND POULTRY MARKETS/DEPARTMENTS

DATA ITEMS Showing Statistically Significant Improvement

RISK FACTOR		% IN 1998	% IN 2003	% IN 2008
Contaminated Equipment/Protection from Contamination	**11A** – Food-contact surfaces and utensils are clean to sight and touch and sanitized before use	**55.4**	**58.8**	**70.7**
Improper Holding/ Time and Temperature	**7A** – PHF/TCS is maintained at 41°F (5°C) or below, except during preparation, cooking, cooling, or when time is used as a public health control	**65.3**	**83.3**	**80.8**
Poor Personal Hygiene	**12A** – Hands are clean and properly washed when and as required	**62.6**	**65.8**	**81.6**
	13A – Food Employees eat, drink, and use tobacco only in designated areas / do not use a utensil more than once to taste food that is sold or served / do not handle or care for animals present. Food employees experiencing persistent sneezing, coughing, or runny nose do not work with exposed food, clean equipment, utensils, linens, unwrapped single-service or single-use articles	**88.9**	**92.5**	**98.9**
	15A – Handwash facilities conveniently located and accessible for employees	**81.2**	**82.4**	**93.9**

RETAIL FOOD

SEAFOOD MARKETS/DEPARTMENTS

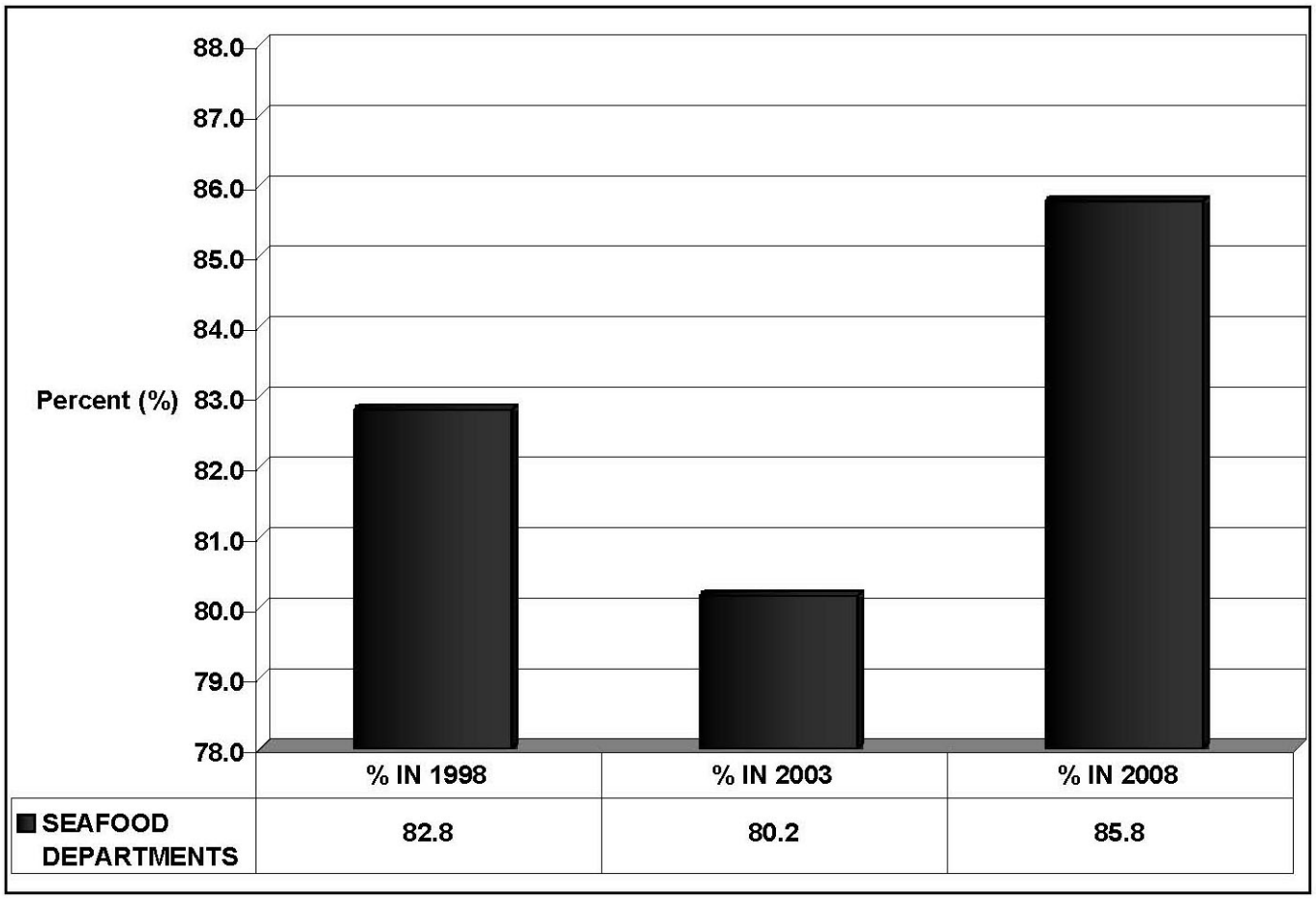
1998 – 2008 TREND ANALYSIS
RESULTS AND DISCUSSION

Retail Food – SEAFOOD MARKETS/DEPARTMENTS

A. Percent of observations found IN Compliance for ALL Data Items

Retail Food – SEAFOOD MARKETS/DEPARTMENTS

Figure S-1
PERCENT (%) of OBSERVATIONS found IN Compliance for ALL 42 DATA ITEMS



Trend Analysis For Figure S-1

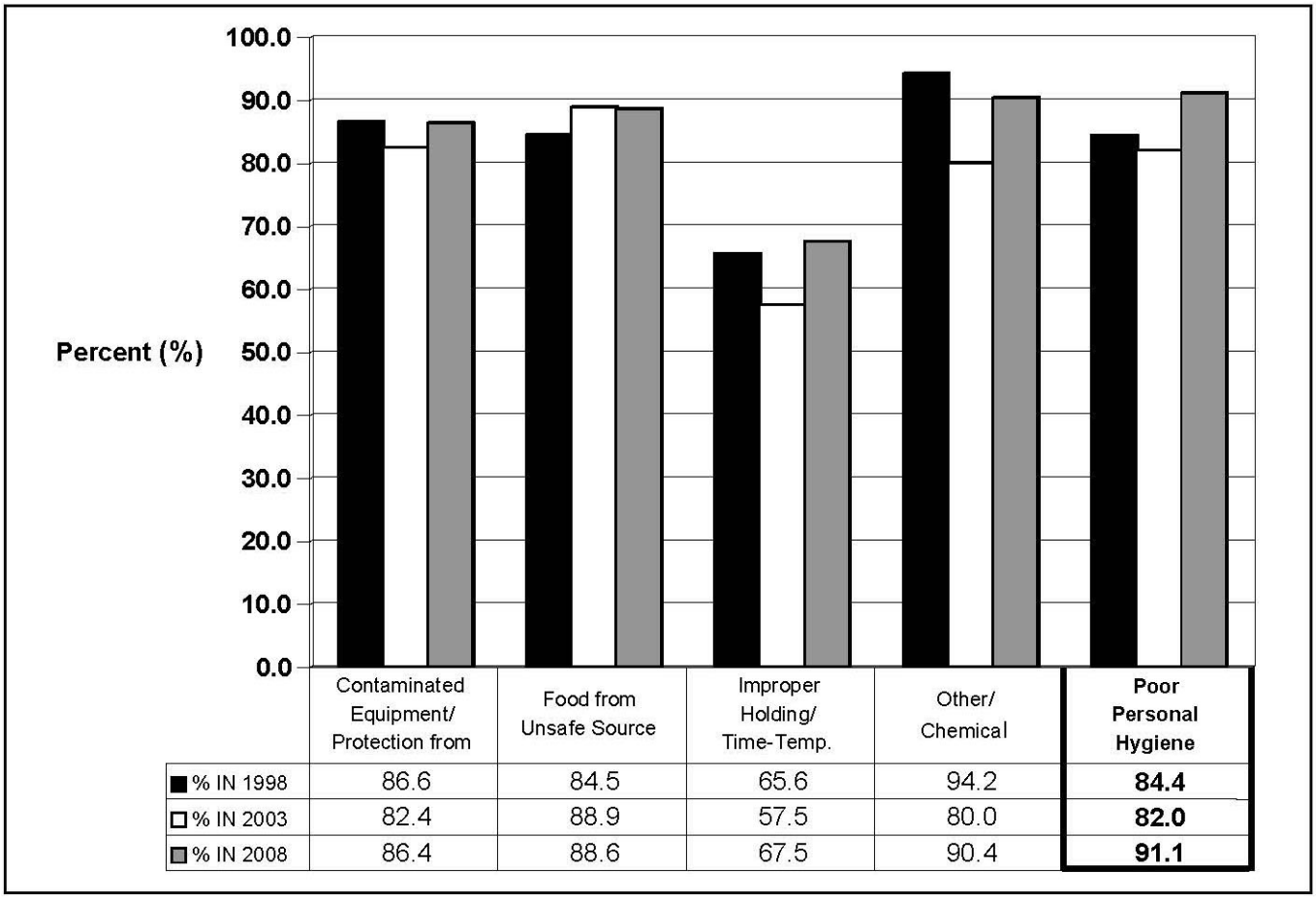
Seafood markets/departments did not show statistically significant changes in the percentage of IN Compliance observations for all combined data items during the study period.

Retail Food – SEAFOOD MARKETS/DEPARTMENTS

B. Percent of observations found IN Compliance for each RISK FACTOR

Retail Food – SEAFOOD MARKETS/DEPARTMENTS

Figure S-2
PERCENT (%) of OBSERVATIONS found IN Compliance for each RISK FACTOR



	Contaminated Equipment/ Protection from	Food from Unsafe Source	Improper Holding/ Time-Temp.	Other/ Chemical	**Poor Personal Hygiene**
% IN 1998	86.6	84.5	65.6	94.2	**84.4**
% IN 2003	82.4	88.9	57.5	80.0	**82.0**
% IN 2008	86.4	88.6	67.5	90.4	**91.1**

NOTES: ***Bold font denotes RISK FACTOR showing statistically significant improvement.***

The inadequate cooking risk factor is not included in Figure S-2 due to an insufficient number of observations to form any conclusions. Cooking and reheating were not common processes associated with seafood markets/departments.

Trend Analysis for Figure S-2

The following risk factor showed statistically significant improvement for seafood markets/departments during the study period:

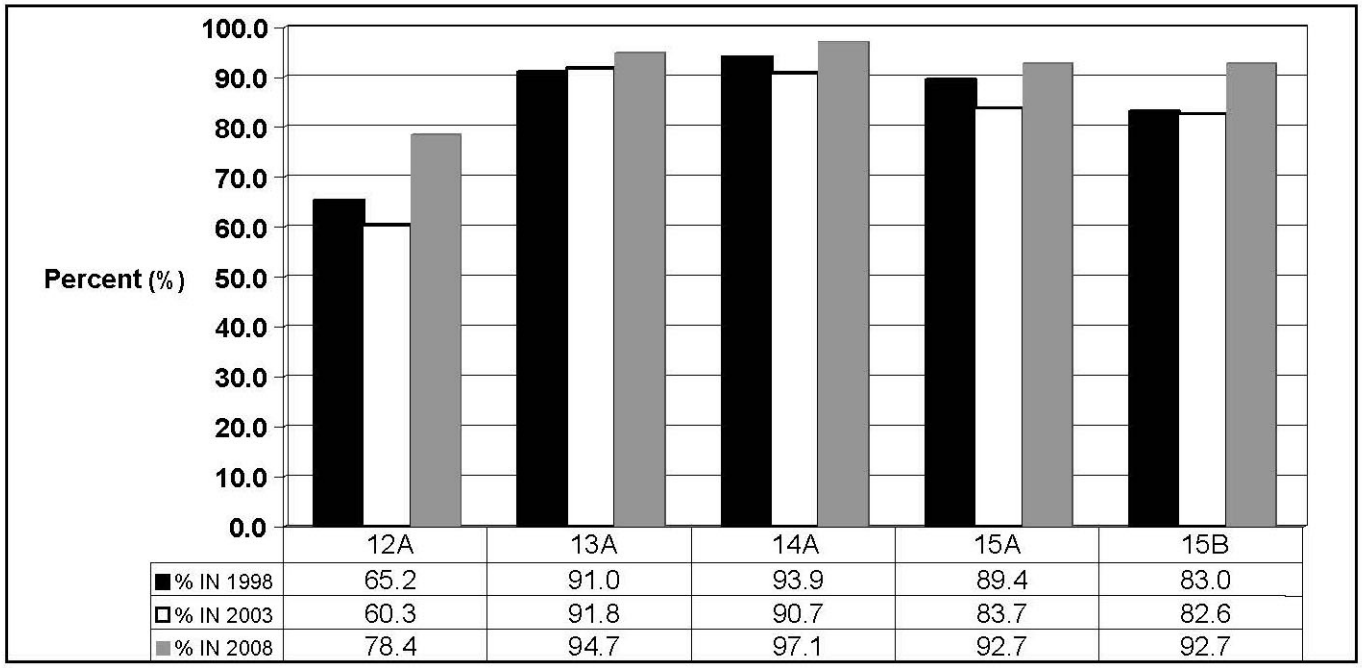
- Poor Personal Hygiene

Retail Food – SEAFOOD MARKETS/DEPARTMENTS

C. Percent of observations found IN Compliance for each INDIVIDUAL DATA ITEM that comprises a statistically significant risk factor

Retail Food – SEAFOOD MARKETS/DEPARTMENTS

Figure S-3
POOR PERSONAL HYGIENE
PERCENT (%) of OBSERVATIONS found IN Compliance for each DATA ITEM



	12A	13A	14A	15A	15B
% IN 1998	65.2	91.0	93.9	89.4	83.0
% IN 2003	60.3	91.8	90.7	83.7	82.6
% IN 2008	78.4	94.7	97.1	92.7	92.7

DATA ITEM REFERENCE	
12A	Hands are clean and properly washed when and as required.
13A	Food Employees eat, drink, and use tobacco only in designated areas / do not use a utensil more than once to taste food that is sold or served / do not handle or care for animals present. Food employees experiencing persistent sneezing, coughing, or runny nose do not work with exposed food, clean equipment, utensils, linens, unwrapped single-service or single-use articles.
14A	Employees do not contact exposed, ready-to-eat food with their bare hands.
15A	Handwash facilities conveniently located and accessible for employees.
15B	Handwash facilities supplied with hand cleanser / sanitary towels / hand drying devices.

Even though the *poor personal hygiene* risk factor showed statistically significant improvement, the improvement or regression trends noted for each of the five individual data items that comprise this risk factor were not statistically significant.

Retail Food – SEAFOOD MARKETS/DEPARTMENTS

D. Summary of Data Items Showing Statistically Significant Trends

Four data items showed statistically significant movement during the study period. Table 32 presents the data indicating a statistically significant improvement for cleaning and sanitizing food contact surfaces within the *contaminated equipment/protection from contamination* risk factor, as well as, improvement in the retention of shellfish tags/identification within for the *food from unsafe sources* risk factor.

Table 32

SEAFOOD MARKETS/DEPARTMENTS

DATA ITEMS Showing Statistically Significant Improvement

RISK FACTOR		% IN 1998	% IN 2003	% IN 2008
Contaminated Equipment/Protection from Contamination	**11A** – Food-contact surfaces and utensils are clean to sight and touch and sanitized before use	**64.9**	**62.8**	**81.7**
Food from Unsafe Sources	**3A** – Shellstock tags/labels retained for 90 days from the date the container is emptied	**54.9**	**60.4**	**73.3**

Two other data items showed a statistically significant regression. For the *contaminated equipment/protection from contamination* risk factor, the separation of raw animal foods from ready-to-eat food had a decrease in the IN Compliance percentage during the research period. In addition, the IN Compliance percentage decreased for receiving food at proper temperature and free from contamination for the *food from unsafe sources* risk factor. The results for these two data items are presented in Table 33.

Table 33

SEAFOOD MARKETS/DEPARTMENTS

DATA ITEMS Showing Statistically Significant Regression

RISK FACTOR		% IN 1998	% IN 2003	% IN 2008
Contaminated Equipment/Protection from Contamination	**10A** – Food is protected from cross contamination by separating raw animal foods from raw ready-to-eat food and by separating raw animal foods from cooked ready-to-eat food	**87.9**	**74.1**	**74.3**
Food from Unsafe Sources	**2A** – Food received at proper temperatures/ protected from contamination during transportation and receiving/food is safe, unadulterated	**100.0**	**100.0**	**96.3**

RETAIL FOOD

PRODUCE MARKETS/DEPARTMENTS

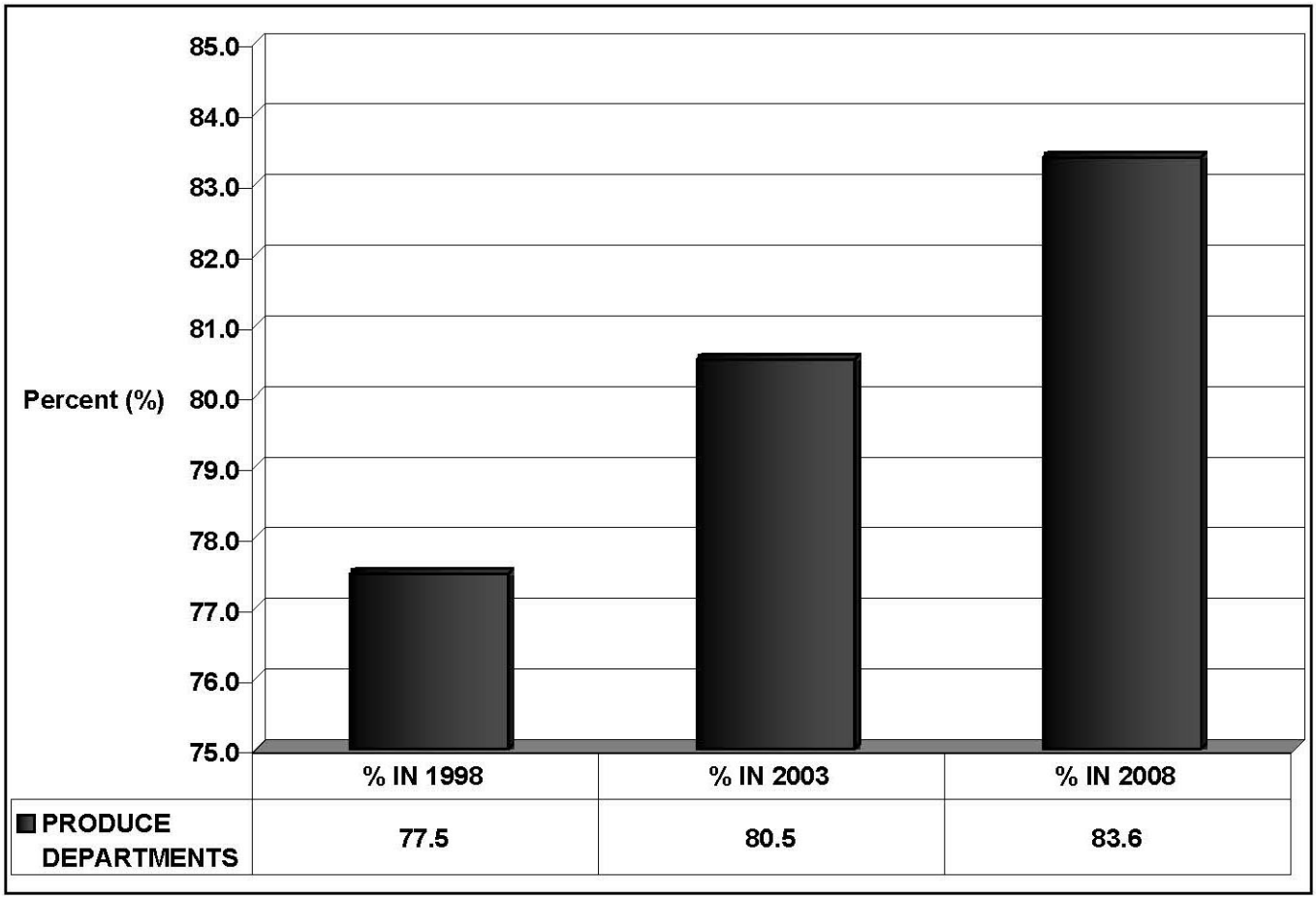
1998 – 2008 TREND ANALYSIS RESULTS AND DISCUSSION

Retail Food – PRODUCE MARKETS/DEPARTMENTS

A. Percent of observations found IN Compliance for ALL Data Items

Retail Food – PRODUCE MARKETS/DEPARTMENTS

Figure P-1
PERCENT (%) of OBSERVATIONS found IN Compliance for ALL 42 DATA ITEMS



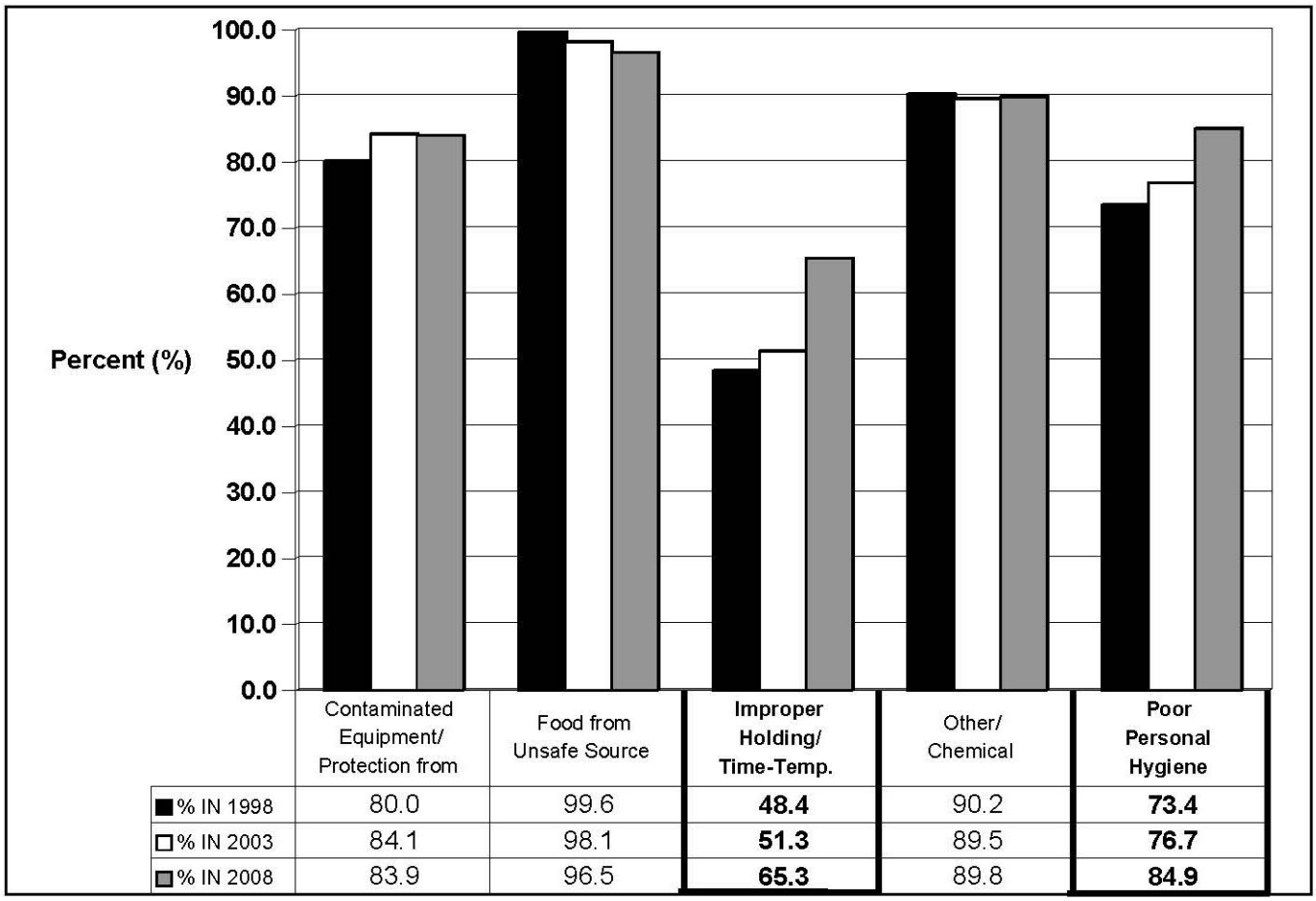
Trend Analysis for Figure P-1
Produce markets/departments had a statistically significant improvement in the percentage of IN Compliance observations for all combined data items during the study period.

Retail Food – PRODUCE MARKETS/DEPARTMENTS

B. Percent of observations found IN Compliance for each RISK FACTOR

Retail Food – PRODUCE MARKETS/DEPARTMENTS

Figure P-2
PERCENT (%) of OBSERVATIONS found IN Compliance for each RISK FACTOR



	Contaminated Equipment/ Protection from	Food from Unsafe Source	**Improper Holding/ Time-Temp.**	Other/ Chemical	**Poor Personal Hygiene**
■ % IN 1998	80.0	99.6	**48.4**	90.2	**73.4**
□ % IN 2003	84.1	98.1	**51.3**	89.5	**76.7**
▩ % IN 2008	83.9	96.5	**65.3**	89.8	**84.9**

NOTES: ***Bold font denotes RISK FACTORS showing statistically significant improvement.***

The inadequate cooking risk factor is not included in Figure P-2 due to an insufficient number of observations to form any conclusions. Cooking and reheating were not common processes associated with produce markets/departments.

Trend Analysis for Figure P-2

The following two risk factors showed statistically significant improvement for Produce Markets/Departments during the study period:

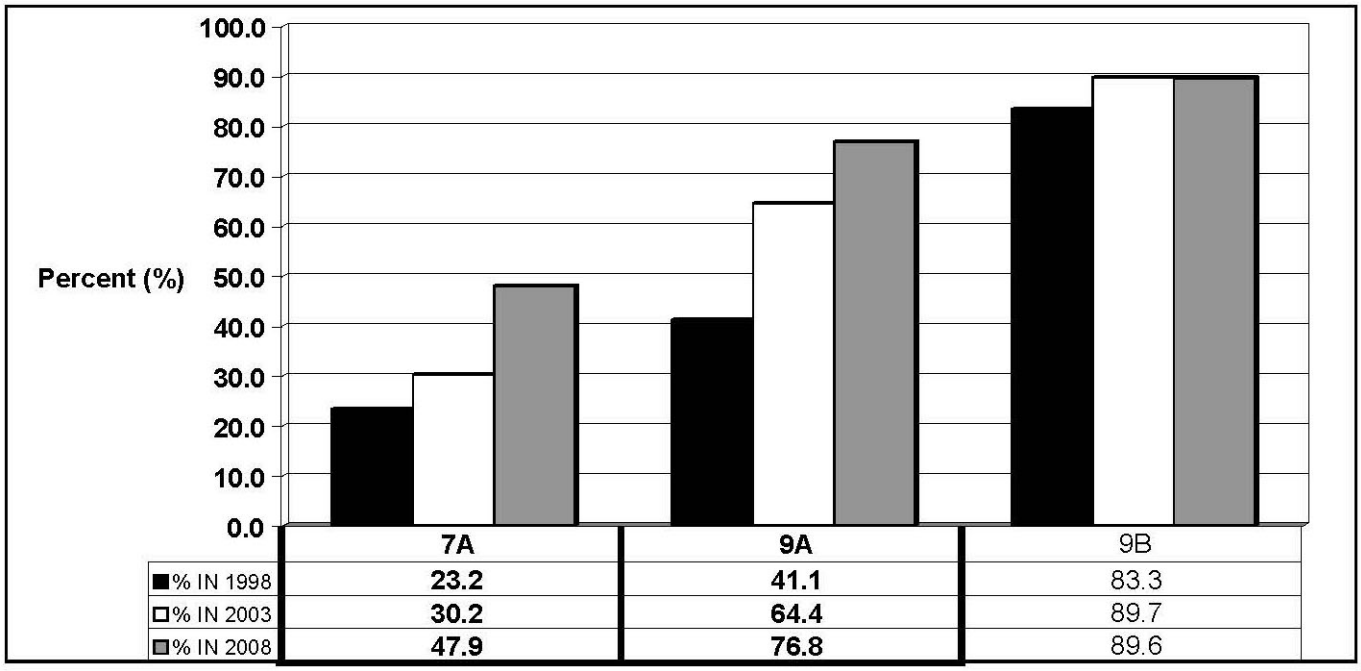
- Improper Holding/Time and Temperature
- Poor Personal Hygiene

Retail Food – PRODUCE MARKETS/DEPARTMENTS

C. Percent of observations found IN Compliance for each INDIVIDUAL DATA ITEM that comprises a statistically significant risk factor

Retail Food – PRODUCE MARKETS/DEPARTMENTS

Figure P-3
IMPROPER HOLDING/TIME AND TEMPERATURE
PERCENT (%) of OBSERVATIONS found IN Compliance for each DATA ITEM



	7A	9A	9B
% IN 1998	**23.2**	**41.1**	83.3
% IN 2003	**30.2**	**64.4**	89.7
% IN 2008	**47.9**	**76.8**	89.6

DATA ITEM REFERENCE	
*6A	Cooked PHF/TCS food is cooled from 140°F (60°C) to 70°F (21°C) within 2 hours and from 140°F (60°C) to 41°F (5°C) or below within 6 hours
*6B	PHF/TCS food (prepared from ingredients at ambient temperature) is cooled to 41°F (5°C) or below within 4 hours
*6C	Foods received at a temperature according to Law are cooled to 41°F (5°C) within 4 hours
7A	**PHF/TCS food is maintained at 41°F (5°C) or below, except during preparation, cooking, cooling or when time is used as a public health control.**
*8A	PHF/TCS food is maintained at 140°F (60°C) or above, except during preparation, cooking, or cooling or when time is used as a public health control.
*8B	Roasts are held at a temperature of 130°F (54°C) or above
9A	**Ready-to-eat PHF/TCS food held for more than 24 hours is date marked as required (prepared on-site)**
9B	Discard RTE PHF/TCS food and/or opened commercial container exceeding 7 days at ≤ 41°F (5°C) or 4 days at ≤ 45°F (7°C)
*9C	Opened Commercial container of prepared ready-to-eat PHF/TCS food is date marked as required
*9D	When time only is used as a public health control, food is cooked and served within 4 hours as required

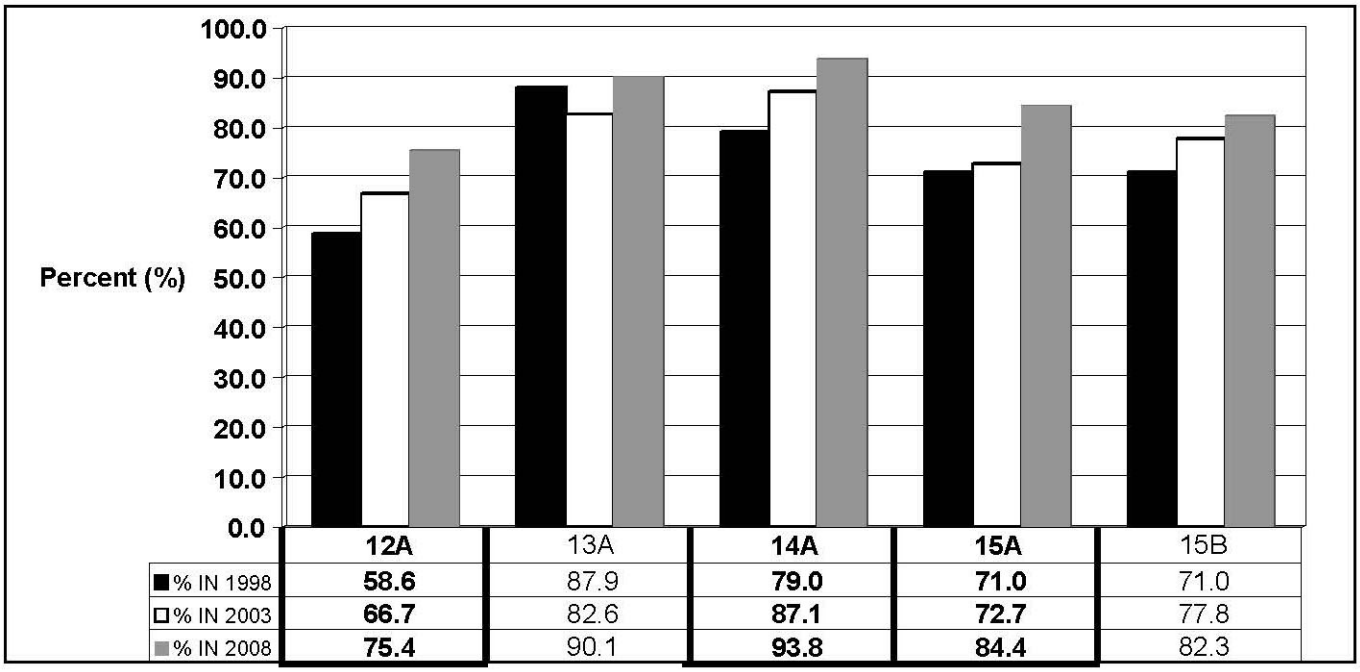
NOTE: ***Bold font denotes DATA ITEMS showing a statistically significant improvement.***

**** Data items 6A,6B, 6C, 8A, 8B, 9C and 9D did not have sufficient observations in one or more of the data collection periods to conduct a trend analysis and are not included in the Improper Holding/Time and Temperature bar graph.***

Retail Food – PRODUCE MARKETS/DEPARTMENTS

Retail Food – PRODUCE MARKETS/DEPARTMENTS

Figure P-4
POOR PERSONAL HYGIENE
PERCENT (%) of OBSERVATIONS found IN Compliance for each DATA ITEM



	12A	13A	**14A**	**15A**	15B
■ % IN 1998	**58.6**	87.9	**79.0**	**71.0**	71.0
□ % IN 2003	**66.7**	82.6	**87.1**	**72.7**	77.8
■ % IN 2008	**75.4**	90.1	**93.8**	**84.4**	82.3

DATA ITEM REFERENCE	
12A	**Hands are clean and properly washed when and as required.**
13A	Food Employees eat, drink, and use tobacco only in designated areas / do not use a utensil more than once to taste food that is sold or served / do not handle or care for animals present. Food employees experiencing persistent sneezing, coughing, or runny nose do not work with exposed food, clean equipment, utensils, linens, unwrapped single-service or single-use articles.
14A	**Employees do not contact exposed, ready-to-eat food with their bare hands.**
15A	**Handwash facilities conveniently located and accessible for employees.**
15B	Handwash facilities supplied with hand cleanser / sanitary towels / hand drying devices.

NOTE: ***Bold font denotes DATA ITEMS showing statistically significant improvement.***

Retail Food – PRODUCE MARKETS/DEPARTMENTS

D. Summary of Data Items Showing Statistically Significant Trends

Table 34

Produce Markets/Departments

DATA ITEMS Showing Statistically Significant Improvement

RISK FACTOR		% IN 1998	% IN 2003	% IN 2008
Contaminated Equipment/Protection from Contamination	**11A** – Food-contact surfaces and utensils are clean to sight and touch and sanitized before use	**37.0**	**56.0**	**63.5**
Improper Holding/ Time and Temperature	**7A** – PHF/TCS is maintained at 41°F (5°C) or below, except during preparation, cooking, cooling, or when time is used as a public health control	**23.2**	**30.2**	**47.9**
	9A - Ready-to-eat PHF/TCS food held for more than 24 hours is date marked as required (prepared on-site)	**41.1**	**64.4**	**76.8**
Poor Personal Hygiene	**12A** – Hands are clean and properly washed when and as required	**58.6**	**66.7**	**75.4**
	14A – Employees do not contact exposed, ready-to-eat food with their bare hands	**79.0**	**87.1**	**93.8**
	15A – Handwash facilities conveniently located and accessible for employees	**71.0**	**72.7**	**84.4**

V. STATISTICAL METHODS

A. Introduction

This section examines the techniques used in the determination of the improvement or regression in the percentage of IN Compliance observations for each facility type utilizing statistical analysis to assess trends.

This type of analysis must be presented in a way that illustrates the nature of the changes without presenting information in a way that could be misinterpreted. Several issues which could affect the results are explored in the following discussion.

B. Comparison Set Lists

In the study, each FDA Regional Retail Food Specialist developed five comparison set lists for each of the nine facility types. These lists were generally comprised of ten or more establishments located in the specialist's geographical area. Establishments were randomly selected from these lists such that, in general, only one establishment from each of the five lists was selected during a specific data collection period. The same comparison set lists were used for all three collection periods.

One drawback of the original design was that establishments within the geographic regions of the study that opened for business after the comparison set lists were developed had no opportunity to be selected for the study. For the third data collection period, there were no establishments on the comparison set lists that had opened in the last ten years. This could introduce bias due to the fact that new establishments may perform differently than those entrenched for a long period of time. Having the potential establishment inventory artificially reduced impairs the representativeness of the sample selected.

Since some comparison set lists were exhausted and new specialists came on board in different geographic locations, new comparison set lists were developed and used in the 2003 data collection process. To be as consistent as possible, only establishments that came from original comparison set lists were used for this trend analysis. Each establishment included in this analysis came from a comparison set list that was utilized in all 3 data collection periods. Those establishments that came from lists not used in each of the collection periods were removed for this analysis. Therefore, the values in this trend analysis report for 1998 and 2003 were modified and will vary from the respective values used in the stand alone reports issued in 2000 and 2004.

C. Quality Assurance

A complete quality assurance review was conducted after the 2003 data collection and again after the 2008 data collection. During this process, the data were examined in order to determine if there were any data items that exhibited signs of anomalous behavior. In this context, an anomaly could be a data item with much larger or smaller numbers of Not Applicable or Not Observed responses from one data collection period to another. Additionally, comments submitted by the Regional Retail Food Specialists were reviewed to determine if

misinterpretation of data items created an anomaly. If an anomaly existed, it was investigated to determine the reason for its occurrence.

Relative weight

If a data item was observed, it was marked "IN" or "OUT". "Scores" of "IN" or "OUT" are referred to as observations. In order to be marked "IN", all observed occurrences of the data item had to be IN Compliance. If any occurrence was not IN Compliance, the data item was marked "OUT". If the data item was applicable but not observed by the Specialist, it was marked "Not Observed". If the item was solely related to practices that the establishment did not engage in, it was marked "Not Applicable".

The overall IN Compliance percentage for a facility type is calculated by dividing the sum of the number of "IN" observations for each of the 42 data items by the sum of the number of "IN" and "OUT" observations for each of the 42 data items, and then multiplying the resulting decimal value by 100. The risk factor IN Compliance percentage is defined analogously.

Therefore, both the overall IN Compliance percentage and the risk factor IN Compliance percentage are equal to a weighted average of the individual data items' IN Compliance percentages, where the weights are the number of observations of each data item. This latter formulation is very useful for analyzing the influence of each data item on these aggregate measures.

The use of "Not Observed" (N.O.) and "Not Applicable" (N.A.) as options for determining the status of individual data items was a critical component for attaining a meaningful performance indicator. For example, if the only options for marking compliance status had been IN Compliance and OUT of Compliance, then the default option for data items that did not apply to an operation would have been IN Compliance. If this had been the case, the overall IN Compliance measurement for the establishment would have been higher than what was shown by actual observation of the food safety practice or employee behavior and would have been an over-estimate.

Likewise, for data items that did apply to an establishment's operation but were not observed during the inspection, the default marking option would have been IN Compliance. Again, the overall IN Compliance measurement for the establishment would have been higher than what was shown by actual observation of the food safety practices or employee behavior and would have been an over-estimate.

Each risk factor is comprised of several data items. When pooling data items into risk factors or facility types, each data item has a relative weight. The relative weight for each data item is the total number of IN and OUT observations for that data item divided by the total number of IN and OUT observations of all data items for the risk factor or facility type.

The following examples illustrate the concept of relative weight:

Situation #1

Data Item	# IN Compliance Observations	# OUT of Compliance Observations	Total # IN and Out Observations	Relative Weight
A	100	0	100	25.0%
B	90	20	110	27.5%
C	80	30	110	27.5%
D	10	70	80	20.0%
TOTAL	280	120	400	100.0%

Situation #1 shows that data items B and C each make up 27.5% of the observations. Data item A makes up 25% and data item D 20%. Since the relative weights for all data items comprising a risk factor (in this case data items A, B, C, and D) will always add up to 100%, a change in the number of IN or OUT observations for a data item can have an effect on the relative weight of other data items.

To illustrate, the total number of observations for data item A in Situation #2 below has decreased by 50 from one data collection period to the next. The total number of observations for data items B, C, and D remain the same but the relative weights changed for all four data items.

Situation #2

Data Item	# IN Compliance Observations	# OUT of Compliance Observations	Total # IN and Out Observations	Relative Weight
A	50	0	50	14.3%
B	90	20	110	31.4%
C	80	30	110	31.4%
D	10	70	80	22.9%
TOTAL	230	120	350	100.0%

The examples above depict a situation where the IN Compliance percentage for each data item remained constant but the IN Compliance percentage for the risk factor made up of data items A, B, C, and D decreased only because of the change in the relative weights, i.e., the reduction in total number of observations for the four data items (from 280/400 = 70% to 230/350 = 65.7%).

Several factors can cause a change in the relative weights. An industry practice could change resulting in a higher or lower frequency of applicable data items. For example, during the ten-year period of this study, institutional foodservice facilities increased their use of pasteurized egg products and decreased the use of whole shell eggs. Therefore, the number of total

observations related to the cooking of whole shell eggs decreased substantially after the first data collection period.

The analysis should appropriately take into account changes in the relative weight of a data item when assessing if a trend is indicated. If an industry practice that was frequently OUT of Compliance was eliminated or curtailed, but all other data items that comprise the risk factor or facility type stayed steady, a significant positive trend could still be detected since the relative weight of the high OUT of Compliance data item would be smaller and would have less effect on the IN Compliance percentage of the risk factor or facility type.

The reports issued in 2000, 2004, and 2009 were designed to be stand alone reports that focused attention on risk factors or data items needing attention. Changes in relative weight of data items did not have a major effect on the message since these reports focused on very high Out of Compliance data items. This current report, however, focuses on the trends over time and is affected by changes in relative weights of data items.

The most notable changes in relative weights occurred when a data item had marking instructions that were modified or when the wording of the data item had been changed or clarified. With one notable exception, this had the effect of a data item with almost universal IN Compliance responses having increases or decreases in the proportion of applicable and observed responses. For this reason, three of the forty-two data items were adjusted to mitigate the misleading effect they would have on the presence or absence of a trend.

For a given risk factor or an overall facility type, the relative weight of a data item could impact the determination of a trend even if the IN Compliance percentages for each data item that comprises the risk factor or facility type remain steady. The following section describes the challenges in analyzing the effect of the relative weights to determine whether a trend exists.

D. Weight of Data Items

The original design of the study called for grouping data items into risk factors and then grouping these risk factors into overall compliance percentages for each of the nine facility types. Only items applicable to an establishment and observed by the specialist were included.

As previously described, the original report was based on data collected in 1998 and presented IN Compliance percentages that were a weighted average of the IN Compliance percentages of the 42 data items. Each data item was assigned a response of IN Compliance if the activity was observed and found to be IN Compliance; a response of OUT of Compliance if the activity was observed and found to be OUT of Compliance; a response of Not Observed if the item was applicable but unable to be observed by the specialist, and a response of Not Applicable if the data item was related to a practice that the establishment did not engage in. The Not Observed and Not Applicable responses were not used in the analysis. Therefore, for each data item the percentage IN Compliance is a ratio of the number of IN Compliance observations to the sum of the number of IN Compliance observations and the number of OUT of Compliance observations.

Each of the 42 data items were assigned to one of six risk factors, with each risk factor having a varying number of data items as depicted below.

Data Collection Form – Section Reference for Risk Factors

RISK FACTOR	Number of Data Items for each Risk Factor	Referenced Sections From Data Collection Form
Food from Unsafe Sources	7	Sections 1 – 3
Inadequate Cooking	12	Sections 4 – 5
Improper Holding/Time and Temperature	10	Sections 6 – 9
Contaminated Equipment/Protection from Contamination	5	Sections 10 – 11
Poor Personal Hygiene	5	Sections 12 – 15
Other (Chemical Contamination)	3	Section 16
TOTAL NUMBER OF DATA ITEMS	42	

Each data item was applicable and observed at varying proportions. The relative weight of each data item is directly proportional to the number of times that the item was observed. Stated another way, data items with more observations will have greater influence on the percentage of compliance for a given risk factor or facility type. For example, the data items relating to hand washing were observed with a very high frequency while those relating to ratites and injected meats were observed relatively infrequently. Therefore, the hand washing data items will have more relative weight than ratites and injected meats data items.

The relative weight of a data item can change for several different reasons. The random nature of the study has the feature that facilities selected in different periods may have different operations, meaning that a data item may be evaluated at different rates in the different periods. Other reasons for the changes in applicable and observed responses were discussed previously. Several examples of the dangers of interpreting data of this nature follow.

Suppose that we had only three data items and collected data over two periods. The chart below shows the result:

Data Collection Period #1

Data Items	IN Compliance	Out of Compliance	Total Observations	% IN Compliance
#1	215	1785	2000	10.75%
#2	300	300	600	50.00%
#3	450	50	500	90.00%
TOTAL	965	2135	3100	31.13%

Data Collection Period #2

Data Items	IN Compliance	Out of Compliance	Total Observations	% IN Compliance
#1	50	625	675	7.41%
#2	900	1025	1925	46.75%
#3	400	100	500	80.00%
TOTAL	1350	1750	3100	43.55%

In this example, if we pooled the data and analyzed the total we would report a statistically significant increase in the percentage of IN Compliance observations. However, looking closely at the individual data items, we can see that the IN Compliance percentage for each of the data items has decreased. Data item #1, with a very low IN Compliance percentage, had a large decrease in observations, while data item #2 had a large increase in observations. The relative weight of data item #1 is far less in period #2, causing the pooled percentage to increase even as the individual percentages decrease. This is the inherent danger of "pooling" data items as was done in this study**.** In this example, the number of applicable and observed responses changed in a manner that caused the data items' relative weights to change. This caused the anomaly.

A thorough analysis of the weight of each data item in the study showed that most of the relative percentages of observations remained remarkably constant throughout the three data collection periods. With the exception of data items 2A, 10D, 16A, and 16C which were identified as anomalous, the relative weight of each item remained, for the most part, constant.

Data items 2A, 10D, and 16C were found to have clearly identifiable areas where the misinterpretation of the data item, modification of the marking instruction, or change in the wording of the data item could be rectified. The relative weights of these data items were modified in such a way as to filter out the effect that each would have on any trend at the risk factor or facility type level. These data items had, for the most part, consistent IN Compliance percentages for each of the three periods. However, the number of observations changed

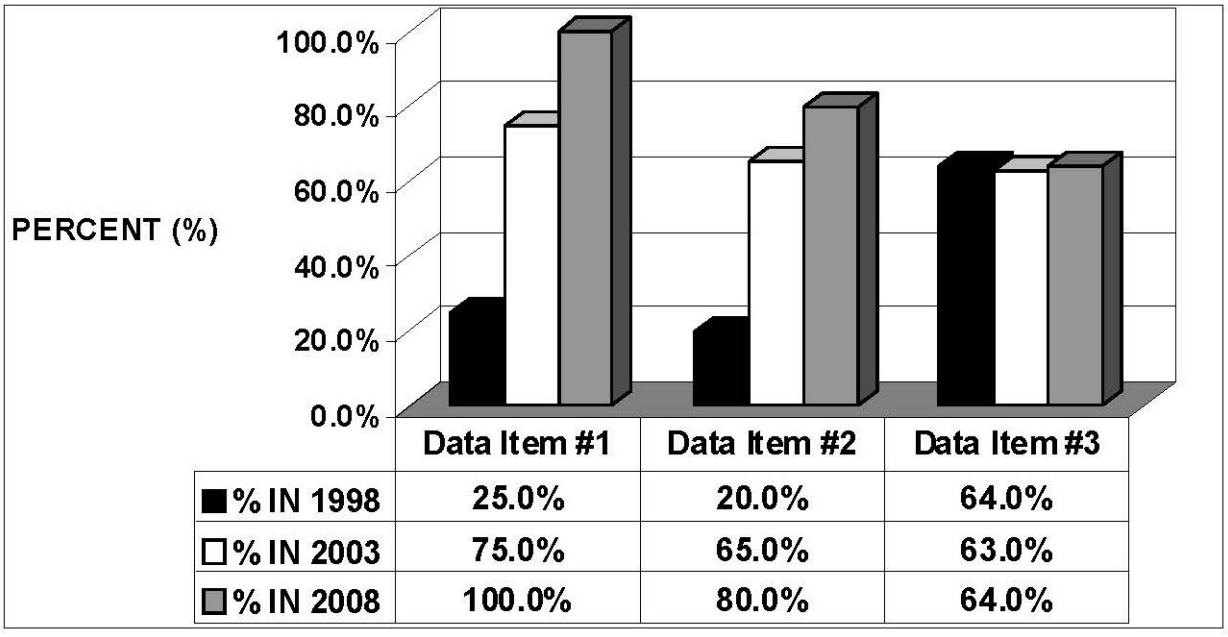
dramatically from one study period to the next. The relative weight, therefore, was modified in order to more accurately reflect the actual behavior of the risk factor or facility type.

Data item 16A had universal IN Compliance responses for 1998 and 2003. Following the 1998 data collection, the words “if used” were added to more accurately reflect the meaning of the data item. This caused a dramatic decrease in the number of IN observations and an increase in the number of NA responses. If the IN Compliance percentages had stayed steady, we would have adjusted this item in the same way items 2A, 10D, and 16C were adjusted. However, the IN Compliance percentage dropped precipitously, and we could find no reason for the change. Therefore, data item 16A was not adjusted.

With the “corrections” to the relative weights of data items 2A, 10D and 16C, approximately 97% of the data items’ relative weights fluctuated by only a small amount (2% or less). With the exception of data item 16A, which had the largest change in relative weight for each facility type, all other remaining data items with a change in relative weight of more than 2% were analyzed.

A reasonable variation in relative weight is expected in a study of this type. Since most of the data items relative weights fluctuated minimally we proceeded with comparisons at the risk factor and facility type level.

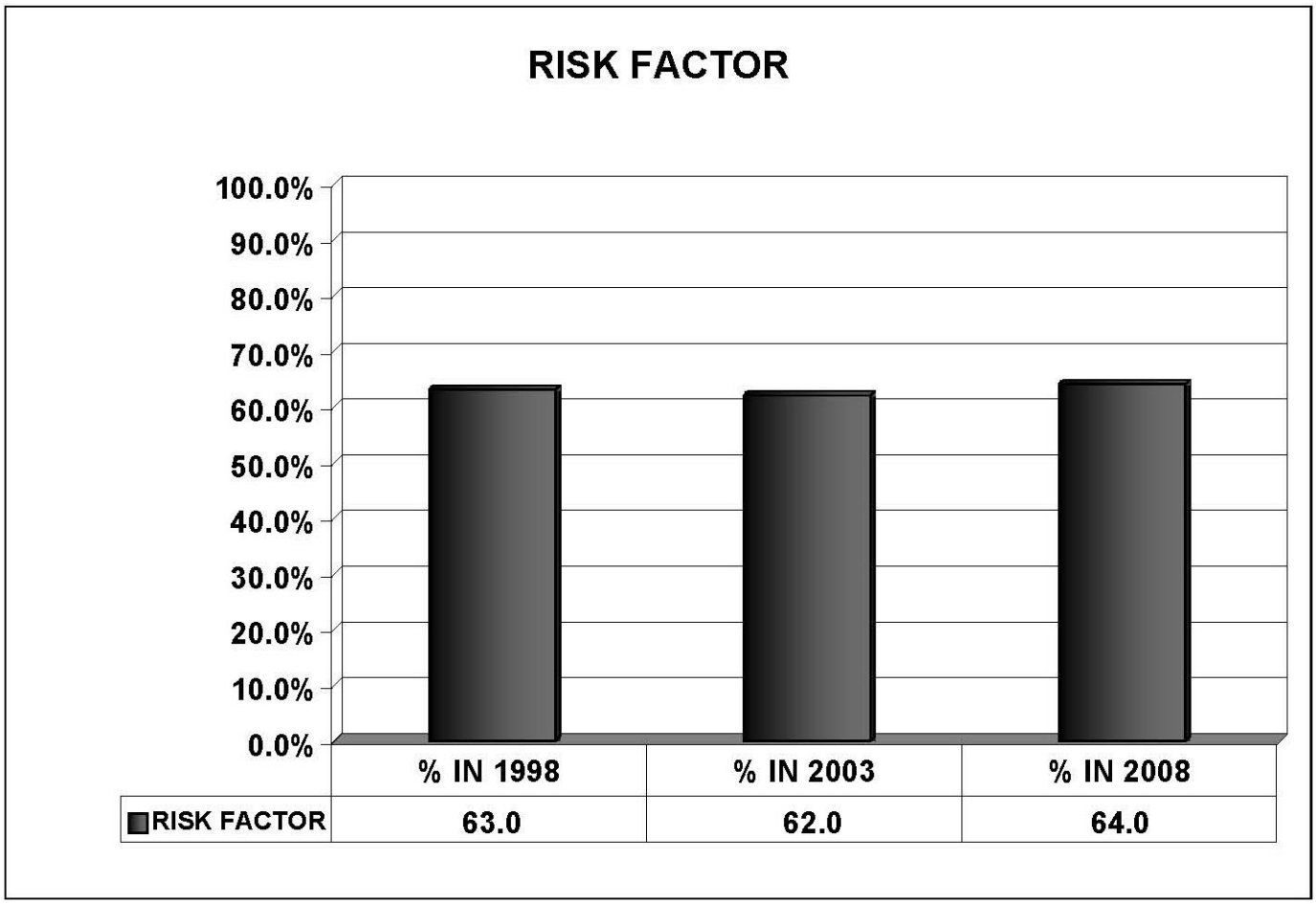
The next challenge was to correctly interpret a trend if one exists. The interpretation of trends also can be complicated because of several factors. First consider the example illustrated in the following charts and table:



	Data Item #1	Data Item #2	Data Item #3
% IN 1998	25.0%	20.0%	64.0%
% IN 2003	75.0%	65.0%	63.0%
% IN 2008	100.0%	80.0%	64.0%

It seems clear that data item #1 and data item #2 had positive movement in the IN Compliance percentage while data item #3 held steady.

Now let's examine the chart of all three data items summed together into a risk factor:



Combining the three data items into a risk factor shows a much different picture. It seems clear from this graph that the IN Compliance percentages for the risk factor stayed static. Now we can examine the number of observations for individual data items.

Data Items	# of Observations 1998	# of Observations 2003	# of Observations 2008
#1	4	4	4
#2	10	10	10
#3	1000	1000	1000

Since data item #3 constitutes most of the observations, it has the most effect on the risk factor. In other words, it has the most relative weight. The other data items, while having remarkable improvements in their respective IN Compliance percentages, make up only a small proportion of the total observations in this risk factor. This is an extreme example of one of the possible misinterpretations that can result from graphical representation of percentage data.

Since the study design did not anticipate analysis of this type, the technique of weighting each data item was not researched at the study inception. This means that data items observed

more frequently have more influence on risk factor IN Compliance percentages and facility type IN Compliance percentages.

Using only three data points for the analysis

If we had more intermediate data points (i.e. more frequent sampling) we would have a better representation of the underlying longitudinal trend and it is possible that different conclusions may have been reached.

E. Standard of Measurement

For the current study, the 1997 FDA Food Code was the basis for the data collection tool for all three data collection periods. This was done in an attempt to keep the evaluation criteria constant throughout the ten-year study period.

F. Statistical Methods

Trend Test *(Agresti)*[1]

The Cochran Armitage trend test was utilized to determine if there was a statistically significant trend. The exact method was used to calculate the p-values.

The Cochran Armitage test is a method of directing Chi squared tests toward narrow alternatives. The test is sensitive to the linearity between response variable and explanatory variables and detects trends that would not be noticed by more crude methods.

The test determines if there is evidence to conclude that the slope is not equal to zero. In other words, it tests whether a trend exists.

Multiple Comparisons

The procedure described above was applied to the data at the facility type, risk factor and data item levels. There are 9 facility types which are made up of 6 risk factors. Each of the risk factors is comprised of 3 or more data items.

In any statistical test, there is a probability that the test conducted will lead to the erroneous conclusion that a difference exists even if the two population parameters are the same (in this case, that a trend exists, when in fact a trend does not exist). Since the significance level of the tests was 0.05, there is a 5% chance that we would conclude that a trend is present when in fact no trend exists.

Generally, as the number of tests increases, the number of significant findings that are merely due to chance increases. As an example, in this case 181 tests were performed on data items. Therefore, one would expect that about 5% (or 9) of these would be statistically significant even if there were no true trends.

[1]Agresti, Alan (2002). *Categorical Data Analysis (Second Edition)*. Wiley. ISBN 0-471-36093-7

In some circumstances when multiple tests are conducted, an adjustment is made to the significance level of each test in order to control the type I error rate for the entire group of comparisons made. In this case, an adjustment of this type would have been inappropriate due to the correlation structure of the data items. An adjustment such as the Bonferroni would have produced significance rates too conservative for the data.

VI. Conclusions and Areas of Future Study

The Food and Drug Administration's Foodborne Illness Risk Factor Trend Analysis Report (1998 – 2008) shows industry improvement in the occurrence of some risk factors, with eight of the nine facility types showing significant improvement in at least one of the foodborne illness risk factors. However, many segments of the food industry continue to show a high percentage of Out of Compliance observations in critical areas. There is considerable room for improvement since some of the greatest improvement in the occurrence of foodborne illness risk factors was in areas with the lowest compliance observations at the beginning of the study. Moving forward, more proactive steps must be taken to reduce the occurrence of the risk factors if progress is to be made in improving food safety. And at the same time, better attempts will be made to determine whether initiatives, intervention strategies and food safety programs have a positive effect on the reduction of foodborne illness risk factors.

Measuring and reporting on the control of foodborne illness risk factors at retail provides the foundation for the implementation of a risk-based model that allocates resources to those program areas that will have the greatest impact on enhancing public health protection. FDA has used, and will continue to use, the results of this study as an information source to aid decision makers responsible for providing direction focused on enhancing the nation's retail food safety system and reducing the incidence of foodborne illness.

Continued research is needed to identify the root causes for poor retail food safety practices and determine the most effective intervention strategies and inspections approaches for enhancing the effectiveness of the nation's retail food protection system. FDA is in the process of developing new studies to assess how well foodborne illness risk factors are being controlled in the retail and foodservice industries. The intent is to develop data collection tools that will allow us to identify and understand influences that support or detract from the ability of food establishments to employ safe food preparation and employee behavioral practices. Areas of study the FDA is considering include, but are not limited to:

- Assessing the correlations between industry compliance with food safety standards and the adoption of the most current FDA Food Code.
- Determining the percentage of establishments that implement preventive industry measures, such as written procedures, training, and/or verification, for controlling the contributing factors to foodborne illness.
- Expanding the research on the extent to which the presence a certified manager impacts the control of the contributing factors to foodborne illness within an establishment.
- Evaluating the impact of a regulatory jurisdiction's enrollment in the FDA Voluntary National Retail Food Regulatory Program Standards on the control of contributing factors to foodborne illness.
- Analyzing how different aspects of regulatory retail food protection programs, such as posting scores, enforcement activities, grading, frequency of inspection, or alternative inspection approaches, etc., may impact industry compliance with food safety standards.
- Examining how differences in management and operational structure (e.g., multi-unit vs independently owned establishments; impact of third-party audits, and corporate quality assurance programs) correlate with compliance.

- Measuring the extent to which industry's food safety systems effectively manage specific issues, such as allergens, employee health, etc.
- Assessing the feasibility for linking the results risk factor occurrence studies with the prevalence or nature of foodborne illness outbreaks in the study area.

In designing future studies focused on the operational risk factors that contribute to foodborne illness within the retail segment of the food industry, FDA will take into account emerging food safety issues, epidemiologic research and literature on recent foodborne illness outbreaks, as well as, advancements in food science. Trends in the data generated from this type of study assist FDA in determining the strengths inherent within the nation's retail food protection system. More importantly, the data can identify areas in need of improvement within the retail food protection system. This report is provided to regulatory and industry retail food safety professionals with the expectation that it will be used to focus greater attention and increased resources on the development an implementation of preventative measures for controlling foodborne illness risk factors.

APPENDICES

DATA SUMMARY FORMAT FOR APPENDICES A – H

Appendices A – H provide a summary of the data collected during the ten-year study period for each of the nine facility types. The information for each facility type is presented in its own separate Appendix. Each of the Appendices contains two parts.

Part I – Data Items and Study Classifications

Part I contains a listing of all 42 data items used to observe food safety practices and behaviors. The data items are listed in table format under the foodborne illness risk factor with which they are associated. Each data item is also classified based upon the study's ability to identify a trend over the ten-year period, as follows:

Insufficient Sample Size – The total number of observations (IN and OUT) for a data item was less than 20 in any of the three data collection periods.

No Material Change – The p-value using the statistical method described in Section VI is greater than .20. There is insufficient evidence to conclude that any change occurred in the IN Compliance percentage during the ten-year study period.

Improvement but Not Statistically Significant – The p-value using the statistical method described in Section VI is greater than .05 but less than .20, indicating the data item is showing positive movement but not statistically significant at the.05 level.

Regression but Not Statistically Significant – The p-value using the statistical method described in Section VI is greater than .05 but less than .20, indicating the data item is showing negative movement but not statistically significant at the.05 level.

Statistically Significant Improvement – The p-value using the statistical method described in Section VI is .05 or less, indicating that the data item showed statistically significant improvement trend during the ten-year study period.

Statistically Significant Regression – The p-value using the statistical method described in Section VI is .05 or less, indicating that the data item showed statistically significant regression trend during the ten-year study period.

Part II – Total Number for each Data Item Marking

Part II lists all the data items and the total number of markings for each of the three data collection periods for the following categories:

- **IN** meant that the observation was IN Compliance with the *1997 FDA Food Code* provisions.
- **OUT** meant that the observation was Out of Compliance with the *1997 FDA Food Code* provisions.
- **N.O.** meant the data item was Not Observed during the inspection. The N.O. notation was used when a data item was a usual practice in the food service operation, but the practice was not observed during the time of the inspection.
- **N.A.** meant the data item was Not Applicable. The N.A. notation was used when a data item was not part of the food service operation.

APPENDIX A – HOSPITALS

PART I

ORIGINAL 42 DATA ITEMS WITH TEN-YEAR CLASSIFICATION SORTED BY RISK FACTOR CATEGORY (page 1 of 3)

DATA ITEM #	DATA ITEM	DATA ITEM CLASSIFICATION
FOODS FROM UNSAFE SOURCES		
1A	All food from Regulated Food Processing Plants/ No home prepared/canned foods	No material change
1B	All Shellfish from NSSP listed sources. No recreationally caught shellfish received or sold	Insufficient sample size
1C	Game, wild mushrooms harvested with approval of Regulatory Authority	Insufficient sample size
2A	Food received at proper temperatures/ protected from contamination during transportation and receiving/food is safe, unadulterated	Regressed but not statistically significant
3A	Shellstock tags/labels retained for 90 days from the date the container is emptied	Insufficient sample size
3B	As required, written documentation of parasite destruction maintained for 90 days for Fish products	Insufficient sample size
3C	CCP monitoring records maintained in accordance with HACCP plan when required	Insufficient sample size
INADEQUATE COOKING		
4A	Raw shell eggs broken for immediate service cooked to 145°F (63°C) for 15 seconds. Raw shell eggs broken but not prepared for immediate service cooked to 155°F (68°C) for 15 seconds	Insufficient sample size
4B	Comminuted Fish, Meats, Game animals cooked to 155°F (68°C) for 15 seconds	No material change
4C	Roasts, including formed roasts, are cooked to 130°F (54°C) for 112 minutes or as Chart specified and according to oven parameters per Chart	Insufficient sample size
4D	Poultry; stuffed fish, stuffed meat, stuffed pasta, stuffed poultry, stuffed ratites, or stuffing containing fish, meat, poultry or ratites cooked to 165°F (74°C) for 15 seconds	No material change
4E	Wild game animals cooked to 165°F (74°C) for 15 seconds	Insufficient sample size
4F	Raw animal foods cooked in microwave are rotated, stirred, covered, and heated to 165°F (74°C). Food is allowed to stand covered for 2 minutes after cooking	Insufficient sample size
4G	Pork, ratites, injected meats are cooked to 155°F (68°C) for 15 seconds	Insufficient sample size
4H	All other PHF/TCS Food cooked to 145°F (63°C) for 15 seconds	Improved but not statistically significant
5A	PHF/TCS Food that is cooked and cooled on premises is rapidly reheated to 165°F (74°C) for 15 seconds for hot holding	Improved but not statistically significant
5B	Food reheated in a microwave is heated to 165°F (74°C) or higher	Insufficient sample size
5C	Commercially processed ready-to-eat food, reheated to 140°F (60°C) or above for hot holding	No material change
5D	Remaining unsliced portions of roasts are reheated for hot holding using minimum oven parameters	Insufficient sample size

APPENDIX A – HOSPITALS

PART I

ORIGINAL 42 DATA ITEMS WITH TEN-YEAR CLASSIFICATION SORTED BY RISK FACTOR CATEGORY (page 2 of 3)

DATA ITEM #	DATA ITEM	DATA ITEM CLASSIFICATION
IMPROPER HOLDING/TIME AND TEMPERATURE		
6A	Cooked PHF/TCS food is cooled from 140°F (60°C) to 70°F (21°C) within 2 hours and from 140°F (60°C) to 41°F (5°C) or below within 6 hours	No material change
6B	PHF/TCS food (prepared from ingredients at ambient temperature) is cooled to 41°F (5°C) or below within 4 hours	Regressed but not statistically significant
6C	Foods received at a temperature according to Law are cooled to 41°F (5°C) within 4 hours.	Insufficient sample size
7A	PHF/TCS food is maintained at 41°F (5°C) or below, except during preparation, cooking, cooling or when time is used as a public health control	No material change
8A	PHF/TCS food is maintained at 140°F (60°C) or above, except during preparation, cooking, or cooling or when time is used as a public health control	Regressed but not statistically significant
8B	Roasts are held at a temperature of 130°F (54°C) or above	Insufficient sample size
9A	**Ready-to-eat PHF/TCS food held for more than 24 hours is date marked as required (prepared on-site)**	**Statistically significant and IMPROVED**
9B	**Discard RTE PHF/TCS food and/or opened commercial container exceeding 7 days at ≤ 41°F (5°C) or 4 days at ≤ 45°F (7°C)**	**Statistically significant and IMPROVED**
9C	Opened Commercial container of prepared ready-to-eat PHF/TCS food is date marked	No material change
9D	When time only is used as a public health control, food is cooked & served within 4 hours	Insufficient sample size
CONTAMINATED EQUIPMENT/PROTECTION FROM CONTAMINATION		
10A	Food is protected from cross contamination by separating raw animal foods from raw ready-to-eat food and by separating raw animal foods from cooked ready-to-eat food	No material change
10B	Raw animal foods are separated from each other during storage, preparation, holding, and display	No material change
10C	Food is protected from environmental contamination – critical items	No material change
10D	After being served or sold to a consumer, food is not re-served	No material change
11A	Food-contact surfaces and utensils are clean to sight and touch and sanitized before use	No material change

APPENDIX A – HOSPITALS

PART I

ORIGINAL 42 DATA ITEMS WITH TEN-YEAR CLASSIFICATION SORTED BY RISK FACTOR CATEGORY (page 3 of 3)

DATA ITEM #	DATA ITEM	DATA ITEM CLASSIFICATION
POOR PERSONAL HYGIENE		
12A	Hands are clean and properly washed when and as required	No material change
13A	Food Employees eat, drink, and use tobacco only in designated areas / do not use a utensil more than once to taste food that is sold or served / do not handle or care for animals present. Food employees experiencing persistent sneezing, coughing, or runny nose do not work with exposed food, clean equipment, utensils, linens, unwrapped single-service or single-use articles	No material change
14A	**Employees do not contact exposed, ready-to-eat food with their bare hands**	**Statistically significant and IMPROVED**
15A	Handwash facilities conveniently located and accessible for employees	Regressed but not statistically significant
15B	Handwash facilities supplied with hand cleanser / sanitary towels / hand drying devices	No material change
OTHER/CHEMICAL		
16A	If used, only approved food or color additives. Sulfites are not applied to fresh fruits and vegetables intended for raw consumption	Insufficient sample size
16B	Poisonous or toxic materials, chemicals, lubricants, pesticides, medicines, first aid supplies, and other personal care items are properly identified, stored and used	Improved but not statistically significant
16C	Poisonous or toxic materials held for retail sale are properly stored	Insufficient sample size

APPENDIX A – HOSPITALS

PART II

DATA SUMMARY – TOTAL MARKINGS FOR EACH CATEGORY
1998, 2003, and 2008 DATA COLLECTION PERIODS (page 1 of 2)

Data Item Number	1998				2003				2008			
	# IN	# OUT	# NO	# NA	# IN	# OUT	# NO	# NA	# IN	# OUT	# NO	# NA
FOOD FROM UNSAFE SOURCES												
1A	90	1	0	1	90	0	0	0	89	1	0	0
1B	1	0	2	89	0	0	0	90	7	0	0	83
1C	1	0	3	88	0	0	1	89	1	0	0	89
2A	89	2	0	1	89	1	0	0	85	5	0	0
3A	1	0	0	91	0	0	0	90	1	1	1	87
3B	0	1	0	91	0	0	0	90	1	1	0	88
3C	10	2	0	80	0	0	0	90	0	1	0	89
INADEQUATE COOKING												
4A	13	2	64	13	9	0	53	28	6	1	42	41
4B	55	0	36	1	37	1	50	2	40	0	46	4
4C	16	0	70	6	7	1	71	11	6	0	68	16
4D	49	3	37	3	36	6	46	2	46	0	40	4
4E	0	0	6	86	0	0	1	89	0	0	1	89
4F	1	0	18	73	0	0	6	84	0	0	0	90
4G	19	1	66	6	17	1	62	10	20	0	63	7
4H	66	3	21	2	38	0	50	2	33	0	54	3
5A	37	6	48	1	27	1	59	3	25	1	54	10
5B	9	3	52	28	5	1	23	61	0	0	21	69
5C	48	5	35	4	42	2	43	3	39	3	38	10
5D	9	0	69	14	2	0	63	25	2	0	44	44
IMPROPER HOLDING/TIME AND TEMPERATURE												
6A	9	25	54	4	15	20	54	1	13	19	53	5
6B	27	9	50	6	19	8	54	9	14	11	61	4
6C	20	0	65	7	12	2	75	1	9	0	77	4
7A	34	54	2	2	38	52	0	0	40	50	0	0
8A	57	32	3	0	55	33	2	0	43	37	7	3
8B	18	0	66	8	4	0	67	19	6	0	50	34
9A	52	36	0	4	57	29	2	2	67	20	2	1
9B	55	21	10	6	53	11	25	1	61	10	17	2
9C	45	32	13	2	41	37	10	2	55	28	6	1
9D	5	2	8	77	2	0	3	85	0	0	3	87

APPENDIX A – HOSPITALS

PART II

DATA SUMMARY – TOTAL MARKINGS FOR EACH CATEGORY
1998, 2003, and 2008 DATA COLLECTION PERIODS (page 2 of 2)

Data Item Number	1998				2003				2008			
	# IN	# OUT	# NO	# NA	# IN	# OUT	# NO	# NA	# IN	# OUT	# NO	# NA
CONTAMINATED EQUIPMENT/PROTECTION FROM CONTAMINATION												
10A	71	20	0	1	70	20	0	0	61	26	0	3
10B	80	10	1	1	78	11	1	0	79	7	1	3
10C	81	10	0	1	80	10	0	0	77	13	0	0
10D	92	0	0	0	89	1	0	0	90	0	0	0
11A	59	32	0	1	58	32	0	0	58	32	0	0
POOR PERSONAL HYGIENE												
12A	56	36	0	0	60	28	2	0	58	32	0	0
13A	81	11	0	0	74	15	1	0	78	12	0	0
14A	73	18	1	0	81	7	2	0	81	8	1	0
15A	79	13	0	0	76	14	0	0	69	21	0	0
15B	84	8	0	0	81	9	0	0	86	4	0	0
OTHER CHEMICAL												
16A	63	0	3	26	25	0	0	65	5	1	0	84
16B	71	20	0	1	77	13	0	0	77	13	0	0
16C	0	0	0	92	0	0	0	90	0	0	0	90

APPENDIX B – NURSING HOMES

PART I

ORIGINAL 42 DATA ITEMS WITH TEN-YEAR CLASSIFICATION SORTED BY RISK FACTOR CATEGORY (page 1 of 3)

DATA ITEM #	DATA ITEM	DATA ITEM CLASSIFICATION
FOODS FROM UNSAFE SOURCES		
1A	All food from Regulated Food Processing Plants/ No home prepared/canned foods	No material change
1B	All Shellfish from NSSP listed sources. No recreationally caught shellfish received or sold	Insufficient sample size
1C	Game, wild mushrooms harvested with approval of Regulatory Authority	Insufficient sample size
2A	Food received at proper temperatures/ protected from contamination during transportation and receiving/food is safe, unadulterated	No material change
3A	Shellstock tags/labels retained for 90 days from the date the container is emptied	Insufficient sample size
3B	As required, written documentation of parasite destruction maintained for 90 days for Fish products	Insufficient sample size
3C	CCP monitoring records maintained in accordance with HACCP plan when required	Insufficient sample size
INADEQUATE COOKING		
4A	Raw shell eggs broken for immediate service cooked to 145°F (63°C) for 15 seconds. Raw shell eggs broken but not prepared for immediate service cooked to 155°F (68°C) for 15 seconds	Insufficient sample size
4B	Comminuted Fish, Meats, Game animals cooked to 155°F (68°C) for 15 seconds	No material change
4C	Roasts, including formed roasts, are cooked to 130°F (54°C) for 112 minutes or as Chart specified and according to oven parameters per Chart	Insufficient sample size
4D	Poultry; stuffed fish, stuffed meat, stuffed pasta, stuffed poultry, stuffed ratites, or stuffing containing fish, meat, poultry or ratites cooked to 165°F (74°C) for 15 seconds	No material change
4E	Wild game animals cooked to 165°F (74°C) for 15 seconds	Insufficient sample size
4F	Raw animal foods cooked in microwave are rotated, stirred, covered, and heated to 165°F (74°C). Food is allowed to stand covered for 2 minutes after cooking	Insufficient sample size
4G	Pork, ratites, injected meats are cooked to 155°F (68°C) for 15 seconds	Insufficient sample size
4H	All other PHF/TCS Food cooked to 145°F (63°C) for 15 seconds	No material change
5A	PHF/TCS Food that is cooked and cooled on premises is rapidly reheated to 165°F (74°C) for 15 seconds for hot holding	Insufficient sample size
5B	Food reheated in a microwave is heated to 165°F (74°C) or higher	Insufficient sample size
5C	**Commercially processed ready-to-eat food, reheated to 140°F (60°C) or above for hot holding**	**Statistically significant and REGRESSED**
5D	Remaining unsliced portions of roasts are reheated for hot holding using minimum oven parameters	Insufficient sample size

APPENDIX B – NURSING HOMES

PART I

ORIGINAL 42 DATA ITEMS WITH TEN-YEAR CLASSIFICATION SORTED BY RISK FACTOR CATEGORY (page 2 of 3)

DATA ITEM #	DATA ITEM	DATA ITEM CLASSIFICATION
IMPROPER HOLDING/TIME AND TEMPERATURE		
6A	Cooked PHF/TCS food is cooled from 140°F (60°C) to 70°F (21°C) within 2 hours and from 140°F (60°C) to 41°F (5°C) or below within 6 hours	No material change
6B	PHF/TCS food (prepared from ingredients at ambient temperature) is cooled to 41°F (5°C) or below within 4 hours	Insufficient sample size
6C	Foods received at a temperature according to Law are cooled to 41°F (5°C) within 4 hours.	Insufficient sample size
7A	PHF/TCS food is maintained at 41°F (5°C) or below, except during preparation, cooking, cooling or when time is used as a public health control	Improved but not statistically significant
8A	PHF/TCS food is maintained at 140°F (60°C) or above, except during preparation, cooking, or cooling or when time is used as a public health control	Regressed but not statistically significant
8B	Roasts are held at a temperature of 130°F (54°C) or above	Insufficient sample size
9A	**Ready-to-eat PHF/TCS food held for more than 24 hours is date marked as required (prepared on-site)**	**Statistically significant and IMPROVED**
9B	Discard RTE PHF/TCS food and/or opened commercial container exceeding 7 days at ≤ 41°F (5°C) or 4 days at ≤ 45°F (7°C)	Improved but not statistically significant
9C	Opened Commercial container of prepared ready-to-eat PHF/TCS food is date marked	No material change
9D	When time only is used as a public health control, food is cooked & served within 4 hours	Insufficient sample size
CONTAMINATED EQUIPMENT/PROTECTION FROM CONTAMINATION		
10A	**Food is protected from cross contamination by separating raw animal foods from raw ready-to-eat food and by separating raw animal foods from cooked ready-to-eat food**	**Statistically significant and REGRESSED**
10B	Raw animal foods are separated from each other during storage, preparation, holding, and display	No material change
10C	Food is protected from environmental contamination – critical items	No material change
10D	After being served or sold to a consumer, food is not re-served	No material change
11A	Food-contact surfaces and utensils are clean to sight and touch and sanitized before use	No material change

APPENDIX B – NURSING HOMES

PART I

ORIGINAL 42 DATA ITEMS WITH TEN-YEAR CLASSIFICATION SORTED BY RISK FACTOR CATEGORY (page 3 of 3)

DATA ITEM #	DATA ITEM	DATA ITEM CLASSIFICATION
POOR PERSONAL HYGIENE		
12A	Hands are clean and properly washed when and as required	No material change
13A	Food Employees eat, drink, and use tobacco only in designated areas / do not use a utensil more than once to taste food that is sold or served / do not handle or care for animals present. Food employees experiencing persistent sneezing, coughing, or runny nose do not work with exposed food, clean equipment, utensils, linens, unwrapped single-service or single-use articles	No material change
14A	Employees do not contact exposed, ready-to-eat food with their bare hands	No material change
15A	Handwash facilities conveniently located and accessible for employees	No material change
15B	Handwash facilities supplied with hand cleanser / sanitary towels / hand drying devices	No material change
OTHER/CHEMICAL		
16A	If used, only approved food or color additives. Sulfites are not applied to fresh fruits and vegetables intended for raw consumption	Insufficient sample size
16B	Poisonous or toxic materials, chemicals, lubricants, pesticides, medicines, first aid supplies, and other personal care items are properly identified, stored and used	No material change
16C	Poisonous or toxic materials held for retail sale are properly stored	Insufficient sample size

APPENDIX B – NURSING HOMES

PART II

DATA SUMMARY

1998, 2003, and 2008 DATA COLLECTION PERIODS (page 1 of 2)

Data Item Number	1998				2003				2008			
	# IN	# OUT	# NO	# NA	# IN	# OUT	# NO	# NA	# IN	# OUT	# NO	# NA
FOOD FROM UNSAFE SOURCES												
1A	88	2	0	0	93	0	0	0	92	1	0	0
1B	1	0	3	86	1	0	0	92	4	0	0	89
1C	0	0	1	89	0	0	1	92	1	0	0	92
2A	87	2	0	1	87	6	0	0	90	3	0	0
3A	0	0	1	89	0	0	3	90	1	0	0	92
3B	0	0	0	90	0	0	2	91	0	0	0	93
3C	6	1	0	83	1	0	0	92	0	0	0	93
INADEQUATE COOKING												
4A	22	8	56	4	6	3	65	19	6	1	46	40
4B	43	2	44	1	25	0	65	3	23	3	66	1
4C	11	0	75	4	4	0	80	9	7	0	68	18
4D	22	3	64	1	22	1	66	4	19	2	68	4
4E	0	0	4	86	0	0	2	91	0	0	0	93
4F	1	0	17	72	0	0	3	90	0	0	1	92
4G	19	0	70	1	14	0	71	8	13	3	68	9
4H	56	4	29	1	31	0	57	5	27	1	65	0
5A	21	1	65	3	12	3	63	15	17	1	69	6
5B	5	0	48	37	1	0	25	67	1	1	24	67
5C	37	0	53	0	32	1	49	11	33	4	52	4
5D	6	0	71	13	3	0	65	25	4	0	50	39
IMPROPER HOLDING/TIME AND TEMPERATURE												
6A	7	15	64	4	9	17	57	10	6	23	59	5
6B	13	5	68	4	7	7	71	8	7	12	69	5
6C	19	1	68	2	24	2	66	1	10	1	82	0
7A	58	31	1	0	60	33	0	0	72	21	0	0
8A	65	12	13	0	54	17	16	6	54	22	17	0
8B	12	1	75	2	5	1	68	19	3	1	54	35
9A	46	32	5	7	62	26	1	4	69	19	5	0
9B	47	18	17	8	55	6	30	2	69	12	12	0
9C	43	30	14	3	42	33	11	7	52	30	11	0
9D	1	0	4	85	2	0	3	88	0	0	2	91

APPENDIX B – NURSING HOMES

PART II

DATA SUMMARY

1998, 2003, and 2008 DATA COLLECTION PERIODS (page 2 of 2)

Data Item Number	1998				2003				2008			
	# IN	# OUT	# NO	# NA	# IN	# OUT	# NO	# NA	# IN	# OUT	# NO	# NA
CONTAMINATED EQUIPMENT/PROTECTION FROM CONTAMINATION												
10A	74	16	0	0	64	23	2	4	64	28	0	1
10B	82	6	2	0	73	14	3	3	79	9	3	2
10C	78	12	0	0	79	14	0	0	82	11	0	0
10D	89	1	0	0	92	1	0	0	93	0	0	0
11A	60	30	0	0	59	34	0	0	64	29	0	0
POOR PERSONAL HYGIENE												
12A	55	34	1	0	49	35	9	0	59	31	3	0
13A	77	13	0	0	75	12	6	0	80	11	2	0
14A	70	16	4	0	70	18	5	0	77	11	5	0
15A	75	15	0	0	78	15	0	0	81	12	0	0
15B	77	13	0	0	81	12	0	0	85	8	0	0
OTHER CHEMICAL												
16A	71	0	2	17	22	0	0	71	3	0	0	90
16B	73	17	0	0	73	20	0	0	81	12	0	0
16C	0	0	0	90	0	0	0	93	0	0	0	93

APPENDIX C – ELEMENTARY SCHOOLS

PART I

ORIGINAL 42 DATA ITEMS WITH TEN-YEAR CLASSIFICATION SORTED BY RISK FACTOR CATEGORY (page 1 of 3)

DATA ITEM #	DATA ITEM	DATA ITEM CLASSIFICATION
FOODS FROM UNSAFE SOURCES		
1A	All food from Regulated Food Processing Plants/ No home prepared/canned foods	No material change
1B	All Shellfish from NSSP listed sources. No recreationally caught shellfish received or sold	Insufficient sample size
1C	Game, wild mushrooms harvested with approval of Regulatory Authority	Insufficient sample size
2A	Food received at proper temperatures/ protected from contamination during transportation and receiving/food is safe, unadulterated	No material change
3A	Shellstock tags/labels retained for 90 days from the date the container is emptied	Insufficient sample size
3B	As required, written documentation of parasite destruction maintained for 90 days for Fish products	Insufficient sample size
3C	CCP monitoring records maintained in accordance with HACCP plan when required	Insufficient sample size
INADEQUATE COOKING		
4A	Raw shell eggs broken for immediate service cooked to 145°F (63°C) for 15 seconds. Raw shell eggs broken but not prepared for immediate service cooked to 155°F (68°C) for 15 seconds	Insufficient sample size
4B	Comminuted Fish, Meats, Game animals cooked to 155°F (68°C) for 15 seconds	Insufficient sample size
4C	Roasts, including formed roasts, are cooked to 130°F (54°C) for 112 minutes or as Chart specified and according to oven parameters per Chart	Insufficient sample size
4D	Poultry; stuffed fish, stuffed meat, stuffed pasta, stuffed poultry, stuffed ratites, or stuffing containing fish, meat, poultry or ratites cooked to 165°F (74°C) for 15 seconds	Insufficient sample size
4E	Wild game animals cooked to 165°F (74°C) for 15 seconds	Insufficient sample size
4F	Raw animal foods cooked in microwave are rotated, stirred, covered, and heated to 165°F (74°C). Food is allowed to stand covered for 2 minutes after cooking	Insufficient sample size
4G	Pork, ratites, injected meats are cooked to 155°F (68°C) for 15 seconds	Insufficient sample size
4H	All other PHF/TCS Food cooked to 145°F (63°C) for 15 seconds	Insufficient sample size
5A	PHF/TCS Food that is cooked and cooled on premises is rapidly reheated to 165°F (74°C) for 15 seconds for hot holding	Insufficient sample size
5B	Food reheated in a microwave is heated to 165°F (74°C) or higher	Insufficient sample size
5C	Commercially processed ready-to-eat food, reheated to 140°F (60°C) or above for hot holding	No material change
5D	Remaining unsliced portions of roasts are reheated for hot holding using minimum oven parameters	Insufficient sample size

APPENDIX C – ELEMENTARY SCHOOLS

PART I

ORIGINAL 42 DATA ITEMS WITH TEN-YEAR CLASSIFICATION SORTED BY RISK FACTOR CATEGORY (page 2 of 3)

DATA ITEM #	DATA ITEM	DATA ITEM CLASSIFICATION
IMPROPER HOLDING/TIME AND TEMPERATURE		
6A	Cooked PHF/TCS food is cooled from 140°F (60°C) to 70°F (21°C.) within 2 hours and from 140°F (60°C) to 41°F (5°C) or below within 6 hours	Insufficient sample size
6B	PHF/TCS food (prepared from ingredients at ambient temperature) is cooled to 41°F (5°C) or below within 4 hours	Insufficient sample size
6C	Foods received at a temperature according to Law are cooled to 41°F. (5°C) within 4 hours	Insufficient sample size
7A	**PHF/TCS food is maintained at 41°F (5°C) or below, except during preparation, cooking, cooling or when time is used as a public health control**	**Statistically significant and IMPROVED**
8A	PHF/TCS food is maintained at 140°F (60°C) or above, except during preparation, cooking, or cooling or when time is used as a public health control	No material change
8B	Roasts are held at a temperature of 130°F (54°C) or above	Insufficient sample size
9A	**Ready-to-eat PHF/TCS food held for more than 24 hours is date marked as required (prepared on-site)**	**Statistically significant and IMPROVED**
9B	Discard RTE PHF/TCS food and/or opened commercial container exceeding 7 days at ≤ 41°F (5°C) or 4 days at ≤ 45°F (7°C)	Improved but not statistically significant
9C	Opened Commercial container of prepared ready-to-eat PHF/TCS food is date marked	No material change
9D	When time only is used as a public health control, food is cooked & served within 4 hours	Insufficient sample size
CONTAMINATED EQUIPMENT/PROTECTION FROM CONTAMINATION		
10A	**Food is protected from cross contamination by separating raw animal foods from raw ready-to-eat food and by separating raw animal foods from cooked ready-to-eat food**	**Statistically significant and REGRESSED**
10B	Raw animal foods are separated from each other during storage, preparation, holding, and display	No material change
10C	Food is protected from environmental contamination – critical items	No material change
10D	After being served or sold to a consumer, food is not re-served	No material change
11A	Food-contact surfaces and utensils are clean to sight and touch and sanitized before use	No material change

APPENDIX C – ELEMENTARY SCHOOLS

PART I

ORIGINAL 42 DATA ITEMS WITH TEN-YEAR CLASSIFICATION SORTED BY RISK FACTOR CATEGORY (page 3 of 3)

DATA ITEM #	DATA ITEM	DATA ITEM CLASSIFICATION
POOR PERSONAL HYGIENE		
12A	**Hands are clean and properly washed when and as required**	**Statistically significant and IMPROVED**
13A	Food Employees eat, drink, and use tobacco only in designated areas / do not use a utensil more than once to taste food that is sold or served / do not handle or care for animals present. Food employees experiencing persistent sneezing, coughing, or runny nose do not work with exposed food, clean equipment, utensils, linens, unwrapped single-service or single-use articles	Improved but not statistically significant
14A	**Employees do not contact exposed, ready-to-eat food with their bare hands**	**Statistically significant and IMPROVED**
15A	Handwash facilities conveniently located and accessible for employees	No material change
15B	Handwash facilities supplied with hand cleanser / sanitary towels / hand drying devices	No material change
OTHER/CHEMICAL		
16A	If used, only approved food or color additives. Sulfites are not applied to fresh fruits and vegetables intended for raw consumption	Insufficient sample size
16B	Poisonous or toxic materials, chemicals, lubricants, pesticides, medicines, first aid supplies, and other personal care items are properly identified, stored and used	Improved but not statistically significant
16C	Poisonous or toxic materials held for retail sale are properly stored	Insufficient sample size

APPENDIX C – ELEMENTARY SCHOOLS

PART II

DATA SUMMARY

1998, 2003, and 2008 DATA COLLECTION PERIODS (page 1 of 2)

Data Item Number	1998				2003				2008			
	# IN	# OUT	# NO	# NA	# IN	# OUT	# NO	# NA	# IN	# OUT	# NO	# NA
FOOD FROM UNSAFE SOURCES												
1A	93	1	0	0	93	0	0	0	93	0	0	0
1B	2	0	0	92	0	3	0	90	1	0	0	92
1C	0	0	0	94	0	0	2	91	0	0	0	93
2A	86	6	0	2	87	6	0	0	86	7	0	0
3A	0	0	0	94	0	0	2	91	0	0	0	93
3B	0	0	0	94	0	0	2	91	0	0	0	93
3C	0	1	0	93	0	0	0	93	0	0	0	93
INADEQUATE COOKING												
4A	6	0	27	61	1	0	18	74	0	0	14	79
4B	24	0	46	24	8	0	28	57	1	0	24	68
4C	1	0	28	65	0	0	21	72	0	0	4	89
4D	18	1	48	27	2	0	37	54	3	0	34	56
4E	0	0	1	93	0	0	0	93	0	0	0	93
4F	0	0	16	78	0	0	0	93	0	0	0	93
4G	3	0	53	38	0	0	15	78	0	0	6	87
4H	38	2	33	21	16	0	20	57	2	0	16	75
5A	24	5	47	18	9	1	44	39	8	2	45	38
5B	2	0	24	68	0	1	12	80	0	0	6	87
5C	39	4	36	15	55	1	25	12	53	7	25	8
5D	5	0	23	66	0	0	12	81	0	0	3	90
IMPROPER HOLDING/TIME AND TEMPERATURE												
6A	2	8	51	33	2	3	57	31	2	3	59	29
6B	4	7	53	30	6	1	57	29	9	7	59	18
6C	21	5	53	15	24	1	63	5	11	0	66	16
7A	50	41	3	0	69	24	0	0	66	27	0	0
8A	60	22	10	2	57	21	13	2	52	26	13	2
8B	6	0	20	68	0	0	19	74	0	0	2	91
9A	17	30	14	33	29	19	12	33	41	8	15	29
9B	25	12	25	32	36	8	29	20	42	8	20	23
9C	25	20	24	25	32	28	9	24	37	20	7	29
9D	10	1	6	77	4	0	0	89	4	1	1	87

APPENDIX C – ELEMENTARY SCHOOLS

PART II

DATA SUMMARY

1998, 2003, and 2008 DATA COLLECTION PERIODS (page 2 of 2)

Data Item Number	1998				2003				2008			
	# IN	# OUT	# NO	# NA	# IN	# OUT	# NO	# NA	# IN	# OUT	# NO	# NA
CONTAMINATED EQUIPMENT/PROTECTION FROM CONTAMINATION												
10A	70	5	1	18	40	7	4	42	29	7	6	51
10B	65	4	5	20	34	1	2	56	21	3	5	64
10C	84	10	0	0	83	10	0	0	83	10	0	0
10D	93	1	0	0	92	1	0	0	91	2	0	0
11A	67	25	2	0	70	23	0	0	65	28	0	0
POOR PERSONAL HYGIENE												
12A	52	42	0	0	59	30	4	0	66	25	2	0
13A	75	19	0	0	78	13	2	0	82	11	0	0
14A	61	33	0	0	73	14	6	0	85	8	0	0
15A	77	17	0	0	81	12	0	0	73	20	0	0
15B	86	8	0	0	87	6	0	0	88	5	0	0
OTHER CHEMICAL												
16A	66	0	0	28	12	0	0	81	4	0	0	89
16B	70	24	0	0	72	21	0	0	80	13	0	0
16C	0	0	0	94	0	0	0	93	0	0	0	93

APPENDIX D – FAST FOOD RESTAURANTS

PART I

ORIGINAL 42 DATA ITEMS WITH TEN-YEAR CLASSIFICATION SORTED BY RISK FACTOR CATEGORY (page 1 of 3)

DATA ITEM #	DATA ITEM	DATA ITEM CLASSIFICATION
FOODS FROM UNSAFE SOURCES		
1A	All food from Regulated Food Processing Plants/ No home prepared/canned foods	Regressed but not statistically significant
1B	All Shellfish from NSSP listed sources. No recreationally caught shellfish received or sold	Insufficient sample size
1C	Game, wild mushrooms harvested with approval of Regulatory Authority	Insufficient sample size
2A	Food received at proper temperatures/ protected from contamination during transportation and receiving/food is safe, unadulterated	Improved but not statistically significant
3A	Shellstock tags/labels retained for 90 days from the date the container is emptied	Insufficient sample size
3B	As required, written documentation of parasite destruction maintained for 90 days for Fish products	Insufficient sample size
3C	CCP monitoring records maintained in accordance with HACCP plan when required	Insufficient sample size
INADEQUATE COOKING		
4A	Raw shell eggs broken for immediate service cooked to 145°F (63°C) for 15 seconds. Raw shell eggs broken but not prepared for immediate service cooked to 155°F (68°C) for 15 seconds	Insufficient sample size
4B	Comminuted Fish, Meats, Game animals cooked to 155°F (68°C) for 15 seconds	No material change
4C	Roasts, including formed roasts, are cooked to 130°F (54°C) for 112 minutes or as Chart specified and according to oven parameters per Chart	Insufficient sample size
4D	Poultry; stuffed fish, stuffed meat, stuffed pasta, stuffed poultry, stuffed ratites, or stuffing containing fish, meat, poultry or ratites cooked to 165°F (74°C) for 15 seconds	No material change
4E	Wild game animals cooked to 165°F (74°C) for 15 seconds	Insufficient sample size
4F	Raw animal foods cooked in microwave are rotated, stirred, covered, and heated to 165°F (74°C). Food is allowed to stand covered for 2 minutes after cooking	Insufficient sample size
4G	Pork, ratites, injected meats are cooked to 155°F (68°C) for 15 seconds	Insufficient sample size
4H	All other PHF/TCS Food cooked to 145°F (63°C) for 15 seconds	No material change
5A	PHF/TCS Food that is cooked and cooled on premises is rapidly reheated to 165°F (74°C) for 15 seconds for hot holding	Insufficient sample size
5B	Food reheated in a microwave is heated to 165°F (74°C) or higher	Insufficient sample size
5C	Commercially processed ready-to-eat food, reheated to 140°F (60°C) or above for hot holding	No material change
5D	Remaining unsliced portions of roasts are reheated for hot holding using minimum oven parameters	Insufficient sample size

APPENDIX D – FAST FOOD RESTAURANTS

PART I

ORIGINAL 42 DATA ITEMS WITH TEN-YEAR CLASSIFICATION SORTED BY RISK FACTOR CATEGORY (page 2 of 3)

DATA ITEM #	DATA ITEM	DATA ITEM CLASSIFICATION
IMPROPER HOLDING/TIME AND TEMPERATURE		
6A	Cooked PHF/TCS food is cooled from 140°F (60°C) to 70°F (21°C.) within 2 hours and from 140°F (60°C) to 41°F (5°C) or below within 6 hours	Insufficient sample size
6B	PHF/TCS food (prepared from ingredients at ambient temperature) is cooled to 41°F (5°C) or below within 4 hours	Insufficient sample size
6C	Foods received at a temperature according to Law are cooled to 41°F (5°C) within 4 hours.	Insufficient sample size
7A	PHF/TCS food is maintained at 41°F (5°C) or below, except during preparation, cooking, cooling or when time is used as a public health control	No material change
8A	PHF/TCS food is maintained at 140°F (60°C) or above, except during preparation, cooking, or cooling or when time is used as a public health control	No material change
8B	Roasts are held at a temperature of 130°F (54°C) or above	Insufficient sample size
9A	**Ready-to-eat PHF/TCS food held for more than 24 hours is date marked as required (prepared on-site)**	**Statistically significant and IMPROVED**
9B	**Discard RTE PHF/TCS food and/or opened commercial container exceeding 7 days at ≤ 41°F (5°C) or 4 days at ≤ 45°F (7°C)**	**Statistically significant and IMPROVED**
9C	Opened Commercial container of prepared ready-to-eat PHF/TCS food is date marked	Improved but not statistically significant
9D	When time only is used as a public health control, food is cooked & served within 4 hours	Insufficient sample size
CONTAMINATED EQUIPMENT/PROTECTION FROM CONTAMINATION		
10A	Food is protected from cross contamination by separating raw animal foods from raw ready-to-eat food and by separating raw animal foods from cooked ready-to-eat food	No material change
10B	Raw animal foods are separated from each other during storage, preparation, holding, and display	No material change
10C	Food is protected from environmental contamination – critical items	No material change
10D	After being served or sold to a consumer, food is not re-served	No material change
11A	Food-contact surfaces and utensils are clean to sight and touch and sanitized before use	No material change

APPENDIX D – FAST FOOD RESTAURANTS

PART I

ORIGINAL 42 DATA ITEMS WITH TEN-YEAR CLASSIFICATION SORTED BY RISK FACTOR CATEGORY (page 3 of 3)

DATA ITEM #	DATA ITEM	DATA ITEM CLASSIFICATION
POOR PERSONAL HYGIENE		
12A	**Hands are clean and properly washed when and as required**	**Statistically significant and IMPROVED**
13A	Food Employees eat, drink, and use tobacco only in designated areas / do not use a utensil more than once to taste food that is sold or served / do not handle or care for animals present. Food employees experiencing persistent sneezing, coughing, or runny nose do not work with exposed food, clean equipment, utensils, linens, unwrapped single-service or single-use articles	Improved but not statistically significant
14A	**Employees do not contact exposed, ready-to-eat food with their bare hands**	**Statistically significant and IMPROVED**
15A	Handwash facilities conveniently located and accessible for employees	No material change
15B	Handwash facilities supplied with hand cleanser / sanitary towels / hand drying devices	No material change
OTHER/CHEMICAL		
16A	If used, only approved food or color additives. Sulfites are not applied to fresh fruits and vegetables intended for raw consumption	Insufficient sample size
16B	Poisonous or toxic materials, chemicals, lubricants, pesticides, medicines, first aid supplies, and other personal care items are properly identified, stored and used	No material change
16C	Poisonous or toxic materials held for retail sale are properly stored	Insufficient sample size

APPENDIX D – FAST FOOD RESTAURANTS

PART II

DATA SUMMARY

1998, 2003, and 2008 DATA COLLECTION PERIODS (page 1 of 2)

Data Item Number	1998				2003				2008			
	# IN	# OUT	# NO	# NA	# IN	# OUT	# NO	# NA	# IN	# OUT	# NO	# NA
FOOD FROM UNSAFE SOURCES												
1A	99	0	0	1	101	0	0	0	100	3	0	0
1B	2	0	2	96	0	0	0	101	2	0	0	101
1C	0	0	2	98	0	0	2	99	0	0	0	103
2A	94	5	0	1	96	5	0	0	102	1	0	0
3A	2	1	0	97	0	0	1	100	0	0	0	103
3B	0	0	0	100	0	0	0	101	0	0	0	103
3C	5	0	1	94	0	0	0	101	0	1	0	102
INADEQUATE COOKING												
4A	7	1	19	73	8	0	16	77	6	0	22	75
4B	40	2	18	40	39	7	15	40	43	4	10	46
4C	7	1	8	84	4	0	6	91	2	0	7	94
4D	44	4	28	24	46	1	26	28	43	3	19	38
4E	0	0	2	98	0	0	0	101	0	0	0	103
4F	2	1	17	80	0	0	4	97	2	1	2	98
4G	12	1	24	63	4	0	34	63	7	0	18	78
4H	49	4	24	23	23	0	33	45	20	1	30	52
5A	21	8	41	30	6	4	33	58	8	2	29	64
5B	9	3	31	57	3	0	20	78	4	1	22	76
5C	44	5	22	29	28	4	33	36	28	1	45	29
5D	0	0	10	90	0	0	7	94	0	0	3	100
IMPROPER HOLDING/TIME AND TEMPERATURE												
6A	3	13	57	27	2	9	52	38	7	11	39	46
6B	5	8	41	46	7	4	33	57	6	5	41	51
6C	11	4	70	15	12	2	70	17	1	0	64	38
7A	36	61	2	1	44	57	0	0	33	70	0	0
8A	57	30	2	11	63	24	3	11	63	26	4	10
8B	6	1	7	86	3	3	3	92	4	1	5	93
9A	17	42	7	34	35	21	4	41	47	19	4	33
9B	24	15	23	38	38	4	41	18	54	7	24	18
9C	31	29	15	25	28	32	8	33	42	23	13	25
9D	14	3	4	79	14	3	1	83	15	6	0	82

APPENDIX D – FAST FOOD RESTAURANTS

PART II

DATA SUMMARY

1998, 2003, and 2008 DATA COLLECTION PERIODS (page 2 of 2)

Data Item Number	1998				2003				2008			
	# IN	# OUT	# NO	# NA	# IN	# OUT	# NO	# NA	# IN	# OUT	# NO	# NA
CONTAMINATED EQUIPMENT/PROTECTION FROM CONTAMINATION												
10A	80	7	0	13	68	16	0	17	69	10	0	24
10B	75	4	2	19	70	5	0	26	61	6	0	36
10C	80	20	0	0	84	17	0	0	83	20	0	0
10D	100	0	0	0	101	0	0	0	103	0	0	0
11A	59	38	3	0	48	53	0	0	60	43	0	0
POOR PERSONAL HYGIENE												
12A	45	54	1	0	44	53	4	0	60	38	5	0
13A	67	33	0	0	74	23	4	0	79	23	1	0
14A	42	56	2	0	47	51	3	0	73	26	4	0
15A	78	22	0	0	87	14	0	0	84	19	0	0
15B	79	20	0	1	85	16	0	0	87	16	0	0
OTHER CHEMICAL												
16A	78	0	2	20	12	0	0	89	1	1	0	101
16B	64	35	0	1	70	31	0	0	71	32	0	0
16C	0	0	0	100	0	0	0	101	0	0	0	103

APPENDIX E – FULL SERVICE RESTAURANTS

PART I

ORIGINAL 42 DATA ITEMS WITH TEN-YEAR CLASSIFICATION SORTED BY RISK FACTOR CATEGORY (page 1 of 3)

DATA ITEM #	DATA ITEM	DATA ITEM CLASSIFICATION
FOODS FROM UNSAFE SOURCES		
1A	All food from Regulated Food Processing Plants/ No home prepared/canned foods	No material change
1B	All Shellfish from NSSP listed sources. No recreationally caught shellfish received or sold	No material change
1C	Game, wild mushrooms harvested with approval of Regulatory Authority	Insufficient sample size
2A	Food received at proper temperatures/ protected from contamination during transportation and receiving/food is safe, unadulterated	No material change
3A	Shellstock tags/labels retained for 90 days from the date the container is emptied	Insufficient sample size
3B	As required, written documentation of parasite destruction maintained for 90 days for Fish products	Insufficient sample size
3C	CCP monitoring records maintained in accordance with HACCP plan when required	Insufficient sample size
INADEQUATE COOKING		
4A	Raw shell eggs broken for immediate service cooked to 145°F (63°C) for 15 seconds. Raw shell eggs broken but not prepared for immediate service cooked to 155°F (68°C) for 15 seconds	Insufficient sample size
4B	Comminuted Fish, Meats, Game animals cooked to 155°F (68°C) for 15 seconds	No material change
4C	Roasts, including formed roasts, are cooked to 130°F (54°C) for 112 minutes or as Chart specified and according to oven parameters per Chart	Insufficient sample size
4D	Poultry; stuffed fish, stuffed meat, stuffed pasta, stuffed poultry, stuffed ratites, or stuffing containing fish, meat, poultry or ratites cooked to 165°F (74°C) for 15 seconds	No material change
4E	Wild game animals cooked to 165°F (74°C) for 15 seconds	Insufficient sample size
4F	Raw animal foods cooked in microwave are rotated, stirred, covered, and heated to 165°F (74°C). Food is allowed to stand covered for 2 minutes after cooking	Insufficient sample size
4G	Pork, ratites, injected meats are cooked to 155°F (68°C) for 15 seconds	Insufficient sample size
4H	All other PHF/TCS Food cooked to 145°F (63°C) for 15 seconds	Regressed but not statistically significant
5A	PHF/TCS Food that is cooked and cooled on premises is rapidly reheated to 165°F (74°C) for 15 seconds for hot holding	No material change
5B	Food reheated in a microwave is heated to 165°F (74°C) or higher	Insufficient sample size
5C	Commercially processed ready-to-eat food, reheated to 140°F (60°C) or above for hot holding	No material change
5D	Remaining unsliced portions of roasts are reheated for hot holding using minimum oven parameters	Insufficient sample size

APPENDIX E – FULL SERVICE RESTAURANTS

PART I

ORIGINAL 42 DATA ITEMS WITH TEN-YEAR CLASSIFICATION SORTED BY RISK FACTOR CATEGORY (page 2 of 3)

DATA ITEM #	DATA ITEM	DATA ITEM CLASSIFICATION
IMPROPER HOLDING/TIME AND TEMPERATURE		
6A	Cooked PHF/TCS food is cooled from 140°F (60°C) to 70°F (21°C) within 2 hours and from 140°F (60°C) to 41°F (5°C) or below within 6 hours	No material change
6B	PHF/TCS food (prepared from ingredients at ambient temperature) is cooled to 41°F (5°C) or below within 4 hours	Insufficient sample size
6C	Foods received at a temperature according to Law are cooled to 41°F (5°C) within 4 hours.	Insufficient sample size
7A	PHF/TCS food is maintained at 41°F (5°C) or below, except during preparation, cooking, cooling or when time is used as a public health control	Improved but not statistically significant
8A	PHF/TCS food is maintained at 140°F (60°C) or above, except during preparation, cooking, or cooling or when time is used as a public health control	No material change
8B	Roasts are held at a temperature of 130°F (54°C) or above	Insufficient sample size
9A	**Ready-to-eat PHF/TCS food held for more than 24 hours is date marked as required (prepared on-site)**	**Statistically significant and IMPROVED**
9B	**Discard RTE PHF/TCS food and/or opened commercial container exceeding 7 days at ≤ 41°F (5°C) or 4 days at ≤ 45°F (7°C)**	**Statistically significant and IMPROVED**
9C	Opened Commercial container of prepared ready-to-eat PHF/TCS food is date marked	Improved but not statistically significant
9D	When time only is used as a public health control, food is cooked & served within 4 hours	Insufficient sample size
CONTAMINATED EQUIPMENT/PROTECTION FROM CONTAMINATION		
10A	Food is protected from cross contamination by separating raw animal foods from raw ready-to-eat food and by separating raw animal foods from cooked ready-to-eat food	Improved but not statistically significant
10B	Raw animal foods are separated from each other during storage, preparation, holding, and display	Improved but not statistically significant
10C	Food is protected from environmental contamination – critical items	No material change
10D	After being served or sold to a consumer, food is not re-served	No material change
11A	Food-contact surfaces and utensils are clean to sight and touch and sanitized before use	No material change

APPENDIX E – FULL SERVICE RESTAURANTS

PART I

ORIGINAL 42 DATA ITEMS WITH TEN-YEAR CLASSIFICATION SORTED BY RISK FACTOR CATEGORY (page 3 of 3)

DATA ITEM #	DATA ITEM	DATA ITEM CLASSIFICATION
POOR PERSONAL HYGIENE		
12A	Hands are clean and properly washed when and as required	No material change
13A	**Food Employees eat, drink, and use tobacco only in designated areas / do not use a utensil more than once to taste food that is sold or served / do not handle or care for animals present. Food employees experiencing persistent sneezing, coughing, or runny nose do not work with exposed food, clean equipment, utensils, linens, unwrapped single-service or single-use articles**	**Statistically significant and IMPROVED**
14A	**Employees do not contact exposed, ready-to-eat food with their bare hands**	**Statistically significant and IMPROVED**
15A	Handwash facilities conveniently located and accessible for employees	No material change
15B	Handwash facilities supplied with hand cleanser / sanitary towels / hand drying devices	No material change
OTHER/CHEMICAL		
16A	If used, only approved food or color additives. Sulfites are not applied to fresh fruits and vegetables intended for raw consumption	Insufficient sample size
16B	Poisonous or toxic materials, chemicals, lubricants, pesticides, medicines, first aid supplies, and other personal care items are properly identified, stored and used	Improved but not statistically significant
16C	Poisonous or toxic materials held for retail sale are properly stored	Insufficient sample size

APPENDIX E – FULL SERVICE RESTAURANTS

PART II

DATA SUMMARY

1998, 2003, and 2008 DATA COLLECTION PERIODS (page 1 of 2)

Data Item Number	1998				2003				2008			
	# IN	# OUT	# NO	# NA	# IN	# OUT	# NO	# NA	# IN	# OUT	# NO	# NA
FOOD FROM UNSAFE SOURCES												
1A	101	2	0	0	97	1	0	0	93	3	0	0
1B	22	2	4	75	23	4	0	71	20	2	0	74
1C	5	0	5	93	2	0	2	94	4	1	1	90
2A	98	5	0	0	90	8	0	0	88	8	0	0
3A	17	5	1	80	6	12	4	76	7	7	0	82
3B	1	3	1	98	0	6	1	91	1	4	0	91
3C	1	3	0	99	0	1	0	97	0	4	0	92
INADEQUATE COOKING												
4A	20	7	47	29	21	3	53	21	16	2	45	33
4B	55	4	33	11	41	3	42	12	43	2	39	12
4C	13	2	39	49	2	0	42	54	2	2	25	67
4D	48	10	41	4	38	9	48	3	39	5	49	3
4E	0	0	3	100	0	1	3	94	0	0	2	94
4F	1	1	25	76	0	0	1	97	1	0	1	94
4G	27	1	53	22	10	2	59	27	22	5	44	25
4H	72	4	24	3	41	5	48	4	34	5	51	6
5A	42	18	39	4	25	11	53	9	13	9	62	12
5B	6	5	50	42	3	1	22	72	2	2	20	72
5C	34	7	39	23	19	2	45	32	19	2	48	27
5D	4	0	39	60	1	1	30	66	1	1	20	74
IMPROPER HOLDING/TIME AND TEMPERATURE												
6A	10	53	37	3	10	35	49	4	9	33	52	2
6B	6	16	65	16	9	8	59	22	10	6	65	15
6C	22	4	74	3	12	6	79	1	1	0	84	11
7A	19	80	3	1	21	77	0	0	27	69	0	0
8A	59	38	5	1	45	41	11	1	52	35	6	3
8B	11	0	31	61	2	3	31	62	4	2	20	70
9A	22	65	3	13	24	68	2	4	39	53	2	2
9B	26	29	34	14	20	16	58	4	38	18	38	2
9C	23	49	16	15	24	42	10	22	33	40	12	11
9D	4	2	5	92	2	3	3	90	3	5	1	87

APPENDIX E – FULL SERVICE RESTAURANTS

PART II

DATA SUMMARY

1998, 2003, and 2008 DATA COLLECTION PERIODS (page 2 of 2)

Data Item Number	1998				2003				2008			
	# IN	# OUT	# NO	# NA	# IN	# OUT	# NO	# NA	# IN	# OUT	# NO	# NA
CONTAMINATED EQUIPMENT/PROTECTION FROM CONTAMINATION												
10A	48	53	2	0	51	44	1	2	53	40	1	2
10B	64	38	1	0	70	23	1	4	65	25	3	3
10C	55	48	0	0	64	34	0	0	58	38	0	0
10D	102	1	0	0	95	3	0	0	95	1	0	0
11A	31	71	1	0	43	55	0	0	35	61	0	0
POOR PERSONAL HYGIENE												
12A	19	84	0	0	26	72	0	0	23	72	1	0
13A	55	47	1	0	64	32	2	0	72	23	1	0
14A	24	78	1	0	39	53	6	0	51	44	1	0
15A	70	33	0	0	76	22	0	0	68	28	0	0
15B	70	33	0	0	76	22	0	0	68	28	0	0
OTHER CHEMICAL												
16A	87	0	0	16	25	0	0	73	7	0	0	89
16B	63	39	1	0	61	37	0	0	70	26	0	0
16C	0	0	0	103	0	0	0	98	0	0	0	96

APPENDIX F – DELI DEPARTMENTS/STORES

PART I

ORIGINAL 42 DATA ITEMS WITH TEN-YEAR CLASSIFICATION SORTED BY RISK FACTOR CATEGORY (page 1 of 3)

DATA ITEM #	DATA ITEM	DATA ITEM CLASSIFICATION
FOODS FROM UNSAFE SOURCES		
1A	All food from Regulated Food Processing Plants/ No home prepared/canned foods	No material change
1B	All Shellfish from NSSP listed sources. No recreationally caught shellfish received or sold	Insufficient sample size
1C	Game, wild mushrooms harvested with approval of Regulatory Authority	Insufficient sample size
2A	Food received at proper temperatures/ protected from contamination during transportation and receiving/food is safe, unadulterated	No material change
3A	Shellstock tags/labels retained for 90 days from the date the container is emptied	Insufficient sample size
3B	As required, written documentation of parasite destruction maintained for 90 days for Fish products	Insufficient sample size
3C	CCP monitoring records maintained in accordance with HACCP plan when required	Insufficient sample size
INADEQUATE COOKING		
4A	Raw shell eggs broken for immediate service cooked to 145°F (63°C) for 15 seconds. Raw shell eggs broken but not prepared for immediate service cooked to 155°F (68°C) for 15 seconds	Insufficient sample size
4B	Comminuted Fish, Meats, Game animals cooked to 155°F (68°C) for 15 seconds	Insufficient sample size
4C	Roasts, including formed roasts, are cooked to 130°F (54°C) for 112 minutes or as Chart specified and according to oven parameters per Chart	Insufficient sample size
4D	Poultry; stuffed fish, stuffed meat, stuffed pasta, stuffed poultry, stuffed ratites, or stuffing containing fish, meat, poultry or ratites cooked to 165°F (74°C) for 15 seconds	No material change
4E	Wild game animals cooked to 165°F (74°C) for 15 seconds	Insufficient sample size
4F	Raw animal foods cooked in microwave are rotated, stirred, covered, and heated to 165°F (74°C). Food is allowed to stand covered for 2 minutes after cooking	Insufficient sample size
4G	Pork, ratites, injected meats are cooked to 155°F (68°C) for 15 seconds	Insufficient sample size
4H	All other PHF/TCS Food cooked to 145°F (63°C) for 15 seconds	Insufficient sample size
5A	PHF/TCS Food that is cooked and cooled on premises is rapidly reheated to 165°F (74°C) for 15 seconds for hot holding	Insufficient sample size
5B	Food reheated in a microwave is heated to 165°F (74°C) or higher	Insufficient sample size
5C	Commercially processed ready-to-eat food, reheated to 140°F (60°C) or above for hot holding	No material change
5D	Remaining unsliced portions of roasts are reheated for hot holding using minimum oven parameters	Insufficient sample size

APPENDIX F – DELI DEPARTMENTS/STORES

PART I

ORIGINAL 42 DATA ITEMS WITH TEN-YEAR CLASSIFICATION SORTED BY RISK FACTOR CATEGORY (page 2 of 3)

DATA ITEM #	DATA ITEM	DATA ITEM CLASSIFICATION
IMPROPER HOLDING/TIME AND TEMPERATURE		
6A	Cooked PHF/TCS food is cooled from 140°F (60°C) to 70°F (21°C) within 2 hours and from 140°F (60°C) to 41°F (5°C) or below within 6 hours	No material change
6B	PHF/TCS food (prepared from ingredients at ambient temperature) is cooled to 41°F (5°C) or below within 4 hours	Insufficient sample size
6C	Foods received at a temperature according to Law are cooled to 41°F (5°C) within 4 hours	Insufficient sample size
7A	PHF/TCS food is maintained at 41°F (5°C) or below, except during preparation, cooking, cooling or when time is used as a public health control	Improved but not statistically significant
8A	PHF/TCS food is maintained at 140°F (60°C) or above, except during preparation, cooking, or cooling or when time is used as a public health control	No material change
8B	Roasts are held at a temperature of 130°F (54°C) or above	Insufficient sample size
9A	**Ready-to-eat PHF/TCS food held for more than 24 hours is date marked as required (prepared on-site)**	**Statistically significant and IMPROVED**
9B	Discard RTE PHF/TCS food and/or opened commercial container exceeding 7 days at ≤ 41°F (5°C) or 4 days at ≤ 45°F (7°C)	Improved but not statistically significant
9C	Opened Commercial container of prepared ready-to-eat PHF/TCS food is date marked	No material change
9D	When time only is used as a public health control, food is cooked & served within 4 hours	Insufficient sample size
CONTAMINATED EQUIPMENT/PROTECTION FROM CONTAMINATION		
10A	Food is protected from cross contamination by separating raw animal foods from raw ready-to-eat food and by separating raw animal foods from cooked ready-to-eat food	No material change
10B	Raw animal foods are separated from each other during storage, preparation, holding, and display	No material change
10C	Food is protected from environmental contamination – critical items	Improved but not statistically significant
10D	After being served or sold to a consumer, food is not re-served	No material change
11A	Food-contact surfaces and utensils are clean to sight and touch and sanitized before use	No material change

APPENDIX F – DELI DEPARTMENTS/STORES

PART 1

ORIGINAL 42 DATA ITEMS WITH TEN-YEAR CLASSIFICATION SORTED BY RISK FACTOR CATEGORY (page 3 of 3)

DATA ITEM #	DATA ITEM	DATA ITEM CLASSIFICATION
POOR PERSONAL HYGIENE		
12A	Hands are clean and properly washed when and as required	No material change
13A	Food Employees eat, drink, and use tobacco only in designated areas / do not use a utensil more than once to taste food that is sold or served / do not handle or care for animals present. Food employees experiencing persistent sneezing, coughing, or runny nose do not work with exposed food, clean equipment, utensils, linens, unwrapped single-service or single-use articles	Improved but not statistically significant
14A	**Employees do not contact exposed, ready-to-eat food with their bare hands**	**Statistically significant and IMPROVED**
15A	Handwash facilities conveniently located and accessible for employees	No material change
15B	Handwash facilities supplied with hand cleanser / sanitary towels / hand drying devices	Improved but not statistically significant
OTHER/CHEMICAL		
16A	If used, only approved food or color additives. Sulfites are not applied to fresh fruits and vegetables intended for raw consumption	Insufficient sample size
16B	Poisonous or toxic materials, chemicals, lubricants, pesticides, medicines, first aid supplies, and other personal care items are properly identified, stored and used	No material change
16C	Poisonous or toxic materials held for retail sale are properly stored	Insufficient sample size

APPENDIX F – DELI DEPARTMENTS/STORES

PART II

DATA SUMMARY

1998, 2003, and 2008 DATA COLLECTION PERIODS (page 1 of 2)

Data Item Number	1998				2003				2008			
	# IN	# OUT	# NO	# NA	# IN	# OUT	# NO	# NA	# IN	# OUT	# NO	# NA
FOOD FROM UNSAFE SOURCES												
1A	96	1	0	0	99	0	0	0	98	0	0	0
1B	6	0	2	89	0	0	0	99	5	0	0	93
1C	7	0	0	90	0	0	0	99	1	0	2	95
2A	93	2	0	2	95	4	0	0	95	3	0	0
3A	5	0	1	91	0	0	0	99	2	2	0	94
3B	0	0	2	95	0	1	0	98	0	1	0	97
3C	5	3	0	89	0	3	0	96	0	3	0	95
INADEQUATE COOKING												
4A	6	0	32	59	4	0	18	77	2	0	18	78
4B	16	0	38	43	7	1	23	68	8	0	29	61
4C	8	0	17	72	2	0	15	82	3	0	13	82
4D	61	8	20	8	62	4	28	5	60	4	32	2
4E	1	0	1	95	0	0	0	99	0	0	0	98
4F	6	0	9	82	0	1	2	96	0	1	0	97
4G	10	0	36	51	13	1	26	59	5	1	32	60
4H	32	2	39	24	11	0	30	58	9	1	40	48
5A	20	5	44	28	8	1	29	61	4	1	36	57
5B	8	1	36	52	0	0	17	82	2	1	17	78
5C	33	10	31	23	21	5	44	29	22	3	48	25
5D	5	0	22	70	0	0	12	87	0	0	10	88
IMPROPER HOLDING/TIME AND TEMPERATURE												
6A	14	16	47	20	12	13	59	15	16	14	52	16
6B	4	7	53	33	7	6	41	45	11	9	54	24
6C	22	1	54	20	8	1	38	52	3	0	48	47
7A	25	70	1	1	34	65	0	0	39	59	0	0
8A	42	44	5	6	37	52	5	5	43	49	2	4
8B	6	1	14	76	2	2	11	84	2	0	10	86
9A	26	52	4	15	29	45	3	22	48	43	3	4
9B	31	32	26	8	21	25	50	3	41	22	34	1
9C	31	57	2	7	19	73	3	4	36	51	5	6
9D	11	0	3	83	2	0	4	93	2	2	0	94

APPENDIX F – DELI DEPARTMENTS/STORES

PART II

DATA SUMMARY

1998, 2003, and 2008 DATA COLLECTION PERIODS (page 2 of 2)

Data Item Number	1998				2003				2008			
	# IN	# OUT	# NO	# NA	# IN	# OUT	# NO	# NA	# IN	# OUT	# NO	# NA
CONTAMINATED EQUIPMENT/PROTECTION FROM CONTAMINATION												
10A	79	14	0	4	77	19	0	3	78	19	0	1
10B	81	5	2	9	71	4	2	22	65	8	1	24
10C	74	23	0	0	88	11	0	0	83	15	0	0
10D	97	0	0	0	99	0	0	0	98	0	0	0
11A	46	51	0	0	42	57	0	0	53	45	0	0
POOR PERSONAL HYGIENE												
12A	44	52	1	0	39	54	6	0	47	51	0	0
13A	75	21	1	0	89	8	2	0	85	13	0	0
14A	80	16	1	0	86	10	2	1	90	6	1	1
15A	79	18	0	0	80	19	0	0	81	17	0	0
15B	75	22	0	0	81	18	0	0	85	13	0	0
OTHER CHEMICAL												
16A	76	0	0	21	22	0	0	77	1	3	0	94
16B	64	33	0	0	73	26	0	0	72	26	0	0
16C	0	0	0	97	0	0	0	99	0	0	0	98

APPENDIX G – MEAT AND POULTRY MARKETS/DEPARTMENTS

PART I

ORIGINAL 42 DATA ITEMS WITH TEN-YEAR CLASSIFICATION SORTED BY RISK FACTOR CATEGORY (page 1 of 3)

DATA ITEM #	DATA ITEM	DATA ITEM CLASSIFICATION
FOODS FROM UNSAFE SOURCES		
1A	All food from Regulated Food Processing Plants/ No home prepared/canned foods	No material change
1B	All Shellfish from NSSP listed sources. No recreationally caught shellfish received or sold	Insufficient sample size
1C	Game, wild mushrooms harvested with approval of Regulatory Authority	Insufficient sample size
2A	Food received at proper temperatures/ protected from contamination during transportation and receiving/food is safe, unadulterated	No material change
3A	Shellstock tags/labels retained for 90 days from the date the container is emptied	Insufficient sample size
3B	As required, written documentation of parasite destruction maintained for 90 days for Fish products	Insufficient sample size
3C	CCP monitoring records maintained in accordance with HACCP plan when required	Insufficient sample size
INADEQUATE COOKING		
4A	Raw shell eggs broken for immediate service cooked to 145°F (63°C) for 15 seconds. Raw shell eggs broken but not prepared for immediate service cooked to 155°F (68°C) for 15 seconds	Insufficient sample size
4B	Comminuted Fish, Meats, Game animals cooked to 155°F (68°C) for 15 seconds	Insufficient sample size
4C	Roasts, including formed roasts, are cooked to 130°F (54°C) for 112 minutes or as Chart specified and according to oven parameters per Chart	Insufficient sample size
4D	Poultry; stuffed fish, stuffed meat, stuffed pasta, stuffed poultry, stuffed ratites, or stuffing containing fish, meat, poultry or ratites cooked to 165°F (74°C) for 15 seconds	Insufficient sample size
4E	Wild game animals cooked to 165°F (74°C) for 15 seconds	Insufficient sample size
4F	Raw animal foods cooked in microwave are rotated, stirred, covered, and heated to 165°F (74°C). Food is allowed to stand covered for 2 minutes after cooking	Insufficient sample size
4G	Pork, ratites, injected meats are cooked to 155°F (68°C) for 15 seconds	Insufficient sample size
4H	All other PHF/TCS Food cooked to 145°F (63°C) for 15 seconds	Insufficient sample size
5A	PHF/TCS Food that is cooked and cooled on premises is rapidly reheated to 165°F (74°C) for 15 seconds for hot holding	Insufficient sample size
5B	Food reheated in a microwave is heated to 165°F (74°C) or higher	Insufficient sample size
5C	Commercially processed ready-to-eat food, reheated to 140°F (60°C) or above for hot holding	Insufficient sample size
5D	Remaining unsliced portions of roasts are reheated for hot holding using minimum oven parameters	Insufficient sample size

APPENDIX G – MEAT AND POULTRY MARKETS/DEPARTMENTS

PART I

ORIGINAL 42 DATA ITEMS WITH TEN-YEAR CLASSIFICATION SORTED BY RISK FACTOR CATEGORY (page 2 of 3)

DATA ITEM #	DATA ITEM	DATA ITEM CLASSIFICATION
IMPROPER HOLDING/TIME AND TEMPERATURE		
6A	Cooked PHF/TCS food is cooled from 140°F (60°C) to 70°F (21°C.) within 2 hours and from 140°F (60°C) to 41°F (5°C) or below within 6 hours	Insufficient sample size
6B	PHF/TCS food (prepared from ingredients at ambient temperature) is cooled to 41°F (5°C) or below within 4 hours	Insufficient sample size
6C	Foods received at a temperature according to Law are cooled to 41°F (5°C) within 4 hours	Insufficient sample size
7A	**PHF/TCS food is maintained at 41°F (5°C) or below, except during preparation, cooking, cooling or when time is used as a public health control**	**Statistically significant and IMPROVED**
8A	PHF/TCS food is maintained at 140°F (60°C) or above, except during preparation, cooking, or cooling or when time is used as a public health control	Insufficient sample size
8B	Roasts are held at a temperature of 130°F (54°C) or above	Insufficient sample size
9A	Ready-to-eat PHF/TCS food held for more than 24 hours is date marked as required (prepared on-site)	Insufficient sample size
9B	Discard RTE PHF/TCS food and/or opened commercial container exceeding 7 days at ≤ 41°F (5°C) or 4 days at ≤ 45°F (7°C)	Insufficient sample size
9C	Opened Commercial container of prepared ready-to-eat PHF/TCS food is date marked	Insufficient sample size
9D	When time only is used as a public health control, food is cooked & served within 4 hours	Insufficient sample size
CONTAMINATED EQUIPMENT/PROTECTION FROM CONTAMINATION		
10A	Food is protected from cross contamination by separating raw animal foods from raw ready-to-eat food and by separating raw animal foods from cooked ready-to-eat food	No material change
10B	Raw animal foods are separated from each other during storage, preparation, holding, and display	No material change
10C	Food is protected from environmental contamination – critical items	Improved but not statistically significant
10D	After being served or sold to a consumer, food is not re-served	No material change
11A	**Food-contact surfaces and utensils are clean to sight and touch and sanitized before use**	**Statistically significant and IMPROVED**

APPENDIX G – MEAT AND POULTRY MARKETS/DEPARTMENTS

PART I

ORIGINAL 42 DATA ITEMS WITH TEN-YEAR CLASSIFICATION SORTED BY RISK FACTOR CATEGORY (page 3 of 3)

DATA ITEM #	DATA ITEM	DATA ITEM CLASSIFICATION
POOR PERSONAL HYGIENE		
12A	**Hands are clean and properly washed when and as required**	**Statistically significant and IMPROVED**
13A	**Food Employees eat, drink, and use tobacco only in designated areas / do not use a utensil more than once to taste food that is sold or served / do not handle or care for animals present. Food employees experiencing persistent sneezing, coughing, or runny nose do not work with exposed food, clean equipment, utensils, linens, unwrapped single-service or single-use articles**	**Statistically significant and IMPROVED**
14A	Employees do not contact exposed, ready-to-eat food with their bare hands	No material change
15A	**Handwash facilities conveniently located and accessible for employees**	**Statistically significant and IMPROVED**
15B	Handwash facilities supplied with hand cleanser / sanitary towels / hand drying devices	Improved but not statistically significant
OTHER/CHEMICAL		
16A	If used, only approved food or color additives. Sulfites are not applied to fresh fruits and vegetables intended for raw consumption	Insufficient sample size
16B	Poisonous or toxic materials, chemicals, lubricants, pesticides, medicines, first aid supplies, and other personal care items are properly identified, stored and used	Improved but not statistically significant
16C	Poisonous or toxic materials held for retail sale are properly stored	Insufficient sample size

APPENDIX G – MEAT and POULTRY MARKETS/DEPARTMENTS

PART II

DATA SUMMARY

1998, 2003, and 2008 DATA COLLECTION PERIODS (page 1 of 2)

Data Item Number	1998				2003				2008			
	# IN	# OUT	# NO	# NA	# IN	# OUT	# NO	# NA	# IN	# OUT	# NO	# NA
FOOD FROM UNSAFE SOURCES												
1A	99	2	0	0	101	1	0	0	99	0	0	0
1B	6	0	3	92	11	3	0	88	8	1	0	90
1C	3	0	2	96	4	0	0	98	6	1	0	92
2A	98	3	0	0	98	4	0	0	99	0	0	0
3A	2	3	0	96	2	3	6	91	2	2	2	93
3B	0	0	0	101	0	0	0	102	0	0	1	98
3C	0	3	0	98	0	1	0	101	1	1	0	97
INADEQUATE COOKING												
4A	0	0	1	100	0	0	0	102	0	0	0	99
4B	1	0	3	97	0	0	3	99	0	0	3	96
4C	0	0	1	100	0	0	1	101	0	0	0	99
4D	4	0	3	94	1	1	3	97	0	0	2	97
4E	0	0	0	101	0	0	0	102	0	0	0	99
4F	0	0	0	101	0	0	0	102	0	0	0	99
4G	2	0	2	97	0	0	2	100	1	0	4	94
4H	0	0	3	98	0	0	5	97	0	0	2	97
5A	0	0	1	100	0	0	0	102	0	0	2	97
5B	0	0	0	101	0	0	0	102	0	0	0	99
5C	0	0	1	100	0	0	0	102	0	0	1	98
5D	0	0	0	101	0	0	0	102	0	0	0	99
IMPROPER HOLDING/TIME AND TEMPERATURE												
6A	1	1	9	90	0	1	3	98	0	0	5	94
6B	2	0	15	84	2	0	6	94	11	1	21	66
6C	17	1	43	40	1	0	13	88	2	0	27	70
7A	64	34	2	1	85	17	0	0	80	19	0	0
8A	2	2	1	96	0	2	3	97	0	2	1	96
8B	0	0	1	100	0	0	0	102	0	0	0	99
9A	8	9	1	83	6	9	0	87	14	3	1	81
9B	8	9	7	77	7	5	13	77	13	2	5	79
9C	19	10	3	69	5	11	3	83	5	4	3	87
9D	1	1	0	99	0	0	1	101	0	0	0	99

APPENDIX G – MEAT and POULTRY MARKETS/DEPARTMENTS

PART II

DATA SUMMARY

1998, 2003, and 2008 DATA COLLECTION PERIODS (page 2 of 2)

Data Item Number	1998				2003				2008			
	# IN	# OUT	# NO	# NA	# IN	# OUT	# NO	# NA	# IN	# OUT	# NO	# NA
CONTAMINATED EQUIPMENT/PROTECTION FROM CONTAMINATION												
10A	73	18	0	10	57	23	0	22	58	16	0	25
10B	78	23	0	0	76	24	0	2	74	25	0	0
10C	83	18	0	0	94	8	0	0	89	10	0	0
10D	101	0	0	0	102	0	0	0	99	0	0	0
11A	56	45	0	0	60	42	0	0	70	29	0	0
POOR PERSONAL HYGIENE												
12A	62	37	1	1	52	27	23	0	71	16	12	0
13A	88	11	2	0	74	6	22	0	93	1	5	0
14A	66	2	12	21	33	3	20	46	50	0	7	42
15A	82	19	0	0	84	18	0	0	93	6	0	0
15B	85	16	0	0	75	27	0	0	93	6	0	0
OTHER CHEMICAL												
16A	74	0	0	27	10	0	0	92	0	0	0	99
16B	75	25	0	1	85	17	0	0	85	14	0	0
16C	0	0	0	101	0	0	0	102	0	0	0	99

APPENDIX H – SEAFOOD MARKETS/DEPARTMENTS

PART I

ORIGINAL 42 DATA ITEMS WITH TEN-YEAR CLASSIFICATION SORTED BY RISK FACTOR CATEGORY (page 1 of 3)

DATA ITEM #	DATA ITEM	DATA ITEM CLASSIFICATION
FOODS FROM UNSAFE SOURCES		
1A	All food from Regulated Food Processing Plants/ No home prepared/canned foods	Regressed but not statistically significant
1B	All Shellfish from NSSP listed sources. No recreationally caught shellfish received or sold	Improved but not statistically significant
1C	Game, wild mushrooms harvested with approval of Regulatory Authority	Insufficient sample size
2A	**Food received at proper temperatures/ protected from contamination during transportation and receiving/food is safe, unadulterated**	**Statistically significant and REGRESSED**
3A	**Shellstock tags/labels retained for 90 days from the date the container is emptied**	**Statistically significant and IMPROVED**
3B	As required, written documentation of parasite destruction maintained for 90 days for Fish products	Insufficient sample size
3C	CCP monitoring records maintained in accordance with HACCP plan when required	Insufficient sample size
INADEQUATE COOKING		
4A	Raw shell eggs broken for immediate service cooked to 145°F (63°C) for 15 seconds. Raw shell eggs broken but not prepared for immediate service cooked to 155°F (68°C) for 15 seconds	Insufficient sample size
4B	Comminuted Fish, Meats, Game animals cooked to 155°F (68°C) for 15 seconds	Insufficient sample size
4C	Roasts, including formed roasts, are cooked to 130°F (54°C) for 112 minutes or as Chart specified and according to oven parameters per Chart	Insufficient sample size
4D	Poultry; stuffed fish, stuffed meat, stuffed pasta, stuffed poultry, stuffed ratites, or stuffing containing fish, meat, poultry or ratites cooked to 165°F (74°C) for 15 seconds	Insufficient sample size
4E	Wild game animals cooked to 165°F (74°C) for 15 seconds	Insufficient sample size
4F	Raw animal foods cooked in microwave are rotated, stirred, covered, and heated to 165°F (74°C). Food is allowed to stand covered for 2 minutes after cooking	Insufficient sample size
4G	Pork, ratites, injected meats are cooked to 155°F (68°C) for 15 seconds	Insufficient sample size
4H	All other PHF/TCS Food cooked to 145°F (63°C) for 15 seconds	Insufficient sample size
5A	PHF/TCS Food that is cooked and cooled on premises is rapidly reheated to 165°F (74°C) for 15 seconds for hot holding	Insufficient sample size
5B	Food reheated in a microwave is heated to 165°F (74°C) or higher	Insufficient sample size
5C	Commercially processed ready-to-eat food, reheated to 140°F (60°C) or above for hot holding	Insufficient sample size
5D	Remaining unsliced portions of roasts are reheated for hot holding using minimum oven parameters	Insufficient sample size

APPENDIX H – SEAFOOD MARKETS/DEPARTMENTS

PART I

ORIGINAL 42 DATA ITEMS WITH TEN-YEAR CLASSIFICATION SORTED BY RISK FACTOR CATEGORY (page 2 of 3)

DATA ITEM #	DATA ITEM	DATA ITEM CLASSIFICATION
IMPROPER HOLDING/TIME AND TEMPERATURE		
6A	Cooked PHF/TCS food is cooled from 140°F (60°C) to 70°F (21°C.) within 2 hours and from 140°F (60°C) to 41°F (5°C) or below within 6 hours	Insufficient sample size
6B	PHF/TCS food (prepared from ingredients at ambient temperature) is cooled to 41°F (5°C) or below within 4 hours	Insufficient sample size
6C	Foods received at a temperature according to Law are cooled to 41°F (5°C) within 4 hours	Insufficient sample size
7A	PHF/TCS food is maintained at 41°F (5°C) or below, except during preparation, cooking, cooling or when time is used as a public health control	No material change
8A	PHF/TCS food is maintained at 140°F (60°C) or above, except during preparation, cooking, or cooling or when time is used as a public health control	Insufficient sample size
8B	Roasts are held at a temperature of 130°F (54°C) or above	Insufficient sample size
9A	Ready-to-eat PHF/TCS food held for more than 24 hours is date marked as required (prepared on-site)	Insufficient sample size
9B	Discard RTE PHF/TCS food and/or opened commercial container exceeding 7 days at ≤ 41°F (5°C) or 4 days at ≤ 45°F (7°C)	Insufficient sample size
9C	Opened Commercial container of prepared ready-to-eat PHF/TCS food is date marked	No material change
9D	When time only is used as a public health control, food is cooked & served within 4 hours	Insufficient sample size
CONTAMINATED EQUIPMENT/PROTECTION FROM CONTAMINATION		
10A	**Food is protected from cross contamination by separating raw animal foods from raw ready-to-eat food and by separating raw animal foods from cooked ready-to-eat food**	**Statistically significant and REGRESSED**
10B	Raw animal foods are separated from each other during storage, preparation, holding, and display	No material change
10C	Food is protected from environmental contamination – critical items	No material change
10D	After being served or sold to a consumer, food is not re-served	No material change
11A	**Food-contact surfaces and utensils are clean to sight and touch and sanitized before use**	**Statistically significant and IMPROVED**

APPENDIX H – SEAFOOD MARKETS/DEPARTMENTS

PART I

ORIGINAL 42 DATA ITEMS WITH TEN-YEAR CLASSIFICATION SORTED BY RISK FACTOR CATEGORY (page 3 of 3)

DATA ITEM #	DATA ITEM	DATA ITEM CLASSIFICATION
POOR PERSONAL HYGIENE		
12A	Hands are clean and properly washed when and as required	Improved but not statistically significant
13A	Food Employees eat, drink, and use tobacco only in designated areas / do not use a utensil more than once to taste food that is sold or served / do not handle or care for animals present. Food employees experiencing persistent sneezing, coughing, or runny nose do not work with exposed food, clean equipment, utensils, linens, unwrapped single-service or single-use articles	No material change
14A	Employees do not contact exposed, ready-to-eat food with their bare hands	No material change
15A	Handwash facilities conveniently located and accessible for employees	No material change
15B	Handwash facilities supplied with hand cleanser / sanitary towels / hand drying devices	Improved but not statistically significant
OTHER/CHEMICAL		
16A	If used, only approved food or color additives. Sulfites are not applied to fresh fruits and vegetables intended for raw consumption	Insufficient sample size
16B	Poisonous or toxic materials, chemicals, lubricants, pesticides, medicines, first aid supplies, and other personal care items are properly identified, stored and used	No material change
16C	Poisonous or toxic materials held for retail sale are properly stored	Insufficient sample size

APPENDIX H – SEAFOOD MARKETS/DEPARTMENTS

PART II

DATA SUMMARY

1998, 2003, and 2008 DATA COLLECTION PERIODS (page 1 of 2)

Data Item Number	1998				2003				2008			
	# IN	# OUT	# NO	# NA	# IN	# OUT	# NO	# NA	# IN	# OUT	# NO	# NA
FOOD FROM UNSAFE SOURCES												
1A	93	0	1	0	86	0	0	0	80	2	0	0
1B	64	14	1	15	58	3	0	25	57	7	0	18
1C	2	0	1	91	0	0	0	86	0	0	0	82
2A	94	0	0	0	86	0	0	0	79	3	0	0
3A	39	32	3	20	32	21	4	29	44	16	1	21
3B	6	3	2	83	2	5	0	79	3	3	0	76
3C	7	7	1	79	0	4	0	82	2	3	0	77
INADEQUATE COOKING												
4A	1	0	1	92	0	0	0	86	0	0	0	82
4B	0	0	10	84	0	0	2	84	0	0	1	81
4C	0	0	2	92	0	0	0	86	0	0	0	82
4D	1	0	6	87	0	0	3	83	0	0	1	81
4E	0	0	2	92	0	0	0	86	0	0	0	82
4F	0	0	4	90	0	0	1	85	0	0	6	76
4G	0	0	5	89	0	0	0	86	0	0	0	82
4H	4	0	38	52	3	0	37	46	3	0	27	52
5A	0	0	4	90	0	1	0	85	0	0	1	81
5B	0	0	3	91	0	0	0	86	0	0	1	81
5C	1	0	5	88	1	1	2	82	0	0	1	81
5D	0	0	2	92	0	0	0	86	0	0	0	82
IMPROPER HOLDING/TIME AND TEMPERATURE												
6A	5	1	17	71	0	1	16	69	3	0	9	70
6B	6	2	17	69	3	2	12	69	5	4	18	55
6C	22	0	56	16	8	0	35	43	3	0	46	33
7A	76	18	0	0	71	15	0	0	67	15	0	0
8A	4	1	7	82	3	3	1	79	0	1	1	80
8B	0	0	0	94	0	0	0	86	0	0	0	82
9A	22	24	3	45	5	11	1	69	15	8	0	59
9B	25	15	17	37	7	9	38	32	18	8	23	33
9C	27	37	3	27	7	36	9	34	20	26	3	33
9D	0	0	3	91	0	0	1	85	0	1	0	81

APPENDIX H – SEAFOOD MARKETS/DEPARTMENTS

PART II

DATA SUMMARY

1998, 2003, and 2008 DATA COLLECTION PERIODS (page 2 of 2)

Data Item Number	1998				2003				2008			
	# IN	# OUT	# NO	# NA	# IN	# OUT	# NO	# NA	# IN	# OUT	# NO	# NA
CONTAMINATED EQUIPMENT/PROTECTION FROM CONTAMINATION												
10A	80	11	0	3	60	21	2	3	55	19	0	8
10B	78	10	0	6	59	12	0	15	50	11	0	21
10C	86	8	0	0	79	7	0	0	75	7	0	0
10D	94	0	0	0	86	0	0	0	82	0	0	0
11A	61	33	0	0	54	32	0	0	67	15	0	0
POOR PERSONAL HYGIENE												
12A	58	31	5	0	38	25	23	0	58	16	8	0
13A	81	8	4	1	67	6	13	0	72	4	6	0
14A	77	5	9	3	49	5	18	14	66	2	7	7
15A	84	10	0	0	72	14	0	0	76	6	0	0
15B	78	16	0	0	71	15	0	0	76	6	0	0
OTHER CHEMICAL												
16A	61	0	0	33	9	0	0	77	0	1	0	81
16B	84	9	0	1	67	19	0	0	75	7	0	0
16C	0	0	0	94	0	0	0	86	0	0	0	82

APPENDIX I – PRODUCE MARKETS/DEPARTMENTS

PART I

ORIGINAL 42 DATA ITEMS WITH TEN-YEAR CLASSIFICATION SORTED BY RISK FACTOR CATEGORY (page 1 of 3)

DATA ITEM #	DATA ITEM	DATA ITEM CLASSIFICATION
FOODS FROM UNSAFE SOURCES		
1A	All food from Regulated Food Processing Plants/ No home prepared/canned foods	No material change
1B	All Shellfish from NSSP listed sources. No recreationally caught shellfish received or sold	Insufficient sample size
1C	Game, wild mushrooms harvested with approval of Regulatory Authority	Insufficient sample size
2A	Food received at proper temperatures/ protected from contamination during transportation and receiving/food is safe, unadulterated	No material change
3A	Shellstock tags/labels retained for 90 days from the date the container is emptied	Insufficient sample size
3B	As required, written documentation of parasite destruction maintained for 90 days for Fish products	Insufficient sample size
3C	CCP monitoring records maintained in accordance with HACCP plan when required	Insufficient sample size
INADEQUATE COOKING		
4A	Raw shell eggs broken for immediate service cooked to 145°F (63°C) for 15 seconds. Raw shell eggs broken but not prepared for immediate service cooked to 155°F (68°C) for 15 seconds	Insufficient sample size
4B	Comminuted Fish, Meats, Game animals cooked to 155°F (68°C) for 15 seconds	Insufficient sample size
4C	Roasts, including formed roasts, are cooked to 130°F (54°C) for 112 minutes or as Chart specified and according to oven parameters per Chart	Insufficient sample size
4D	Poultry; stuffed fish, stuffed meat, stuffed pasta, stuffed poultry, stuffed ratites, or stuffing containing fish, meat, poultry or ratites cooked to 165°F (74°C) for 15 seconds	Insufficient sample size
4E	Wild game animals cooked to 165°F (74°C) for 15 seconds	Insufficient sample size
4F	Raw animal foods cooked in microwave are rotated, stirred, covered, and heated to 165°F (74°C). Food is allowed to stand covered for 2 minutes after cooking	Insufficient sample size
4G	Pork, ratites, injected meats are cooked to 155°F (68°C) for 15 seconds	Insufficient sample size
4H	All other PHF/TCS Food cooked to 145°F (63°C) for 15 seconds	Insufficient sample size
5A	PHF/TCS Food that is cooked and cooled on premises is rapidly reheated to 165°F (74°C) for 15 seconds for hot holding	Insufficient sample size
5B	Food reheated in a microwave is heated to 165°F (74°C) or higher	Insufficient sample size
5C	Commercially processed ready-to-eat food, reheated to 140°F (60°C) or above for hot holding	Insufficient sample size
5D	Remaining unsliced portions of roasts are reheated for hot holding using minimum oven parameters	Insufficient sample size

APPENDIX I – PRODUCE MARKETS/DEPARTMENTS

PART 1

ORIGINAL 42 DATA ITEMS WITH TEN-YEAR CLASSIFICATION SORTED BY RISK FACTOR CATEGORY (page 2 of 3)

DATA ITEM #	DATA ITEM	DATA ITEM CLASSIFICATION
IMPROPER HOLDING/TIME AND TEMPERATURE		
6A	Cooked PHF/TCS food is cooled from 140°F (60°C) to 70°F (21°C) within 2 hours and from 140°F (60°C) to 41°F (5°C) or below within 6 hours	Insufficient sample size
6B	PHF/TCS food (prepared from ingredients at ambient temperature) is cooled to 41°F (5°C) or below within 4 hours	Insufficient sample size
6C	Foods received at a temperature according to Law are cooled to 41°F (5°C) within 4 hours	Insufficient sample size
7A	**PHF/TCS food is maintained at 41°F (5°C) or below, except during preparation, cooking, cooling or when time is used as a public health control**	**Statistically significant and IMPROVED**
8A	PHF/TCS food is maintained at 140°F (60°C) or above, except during preparation, cooking, or cooling or when time is used as a public health control	Insufficient sample size
8B	Roasts are held at a temperature of 130°F (54°C) or above	Insufficient sample size
9A	**Ready-to-eat PHF/TCS food held for more than 24 hours is date marked as required (prepared on-site)**	**Statistically significant and IMPROVED**
9B	Discard RTE PHF/TCS food and/or opened commercial container exceeding 7 days at ≤ 41°F (5°C) or 4 days at ≤ 45°F (7°C)	No material change
9C	Opened Commercial container of prepared ready-to-eat PHF/TCS food is date marked	Insufficient sample size
9D	When time only is used as a public health control, food is cooked & served within 4 hours	Insufficient sample size
CONTAMINATED EQUIPMENT/PROTECTION FROM CONTAMINATION		
10A	Food is protected from cross contamination by separating raw animal foods from raw ready-to-eat food and by separating raw animal foods from cooked ready-to-eat food	Insufficient sample size
10B	Raw animal foods are separated from each other during storage, preparation, holding, and display	Insufficient sample size
10C	Food is protected from environmental contamination – critical items	No material change
10D	After being served or sold to a consumer, food is not re-served	No material change
11A	**Food-contact surfaces and utensils are clean to sight and touch and sanitized before use**	**Statistically significant and IMPROVED**

APPENDIX I – PRODUCE MARKETS/DEPARTMENTS

PART I

ORIGINAL 42 DATA ITEMS WITH TEN-YEAR CLASSIFICATION SORTED BY RISK FACTOR CATEGORY (page 3 of 3)

DATA ITEM #	DATA ITEM	DATA ITEM CLASSIFICATION
POOR PERSONAL HYGIENE		
12A	**Hands are clean and properly washed when and as required**	**Statistically significant and IMPROVED**
13A	Food Employees eat, drink, and use tobacco only in designated areas / do not use a utensil more than once to taste food that is sold or served / do not handle or care for animals present. Food employees experiencing persistent sneezing, coughing, or runny nose do not work with exposed food, clean equipment, utensils, linens, unwrapped single-service or single-use articles	No material change
14A	**Employees do not contact exposed, ready-to-eat food with their bare hands**	**Statistically significant and IMPROVED**
15A	**Handwash facilities conveniently located and accessible for employees**	**Statistically significant and IMPROVED**
15B	Handwash facilities supplied with hand cleanser / sanitary towels / hand drying devices	Improved but not statistically significant
OTHER/CHEMICAL		
16A	If used, only approved food or color additives. Sulfites are not applied to fresh fruits and vegetables intended for raw consumption	Insufficient sample size
16B	Poisonous or toxic materials, chemicals, lubricants, pesticides, medicines, first aid supplies, and other personal care items are properly identified, stored and used	Improved but not statistically significant
16C	Poisonous or toxic materials held for retail sale are properly stored	No material change

APPENDIX I – PRODUCE MARKETS/DEPARTMENTS

PART II

DATA SUMMARY

1998, 2003, and 2008 DATA COLLECTION PERIODS (page 1 of 2)

Data Item Number	1998				2003				2008			
	# IN	# OUT	# NO	# NA	# IN	# OUT	# NO	# NA	# IN	# OUT	# NO	# NA
FOOD FROM UNSAFE SOURCES												
1A	102	0	0	0	99	1	0	0	96	0	0	0
1B	1	0	1	100	0	0	0	100	0	0	0	96
1C	19	0	0	83	4	0	1	95	2	0	2	92
2A	100	1	0	1	97	3	0	0	93	3	0	0
3A	0	0	0	102	1	0	0	99	0	0	0	96
3B	0	0	0	102	1	0	0	99	0	0	0	96
3C	0	0	0	102	1	0	0	99	0	0	0	96
INADEQUATE COOKING												
4A	0	0	2	100	0	0	0	100	0	0	0	96
4B	1	0	2	99	0	0	0	100	0	0	2	94
4C	0	0	1	101	0	0	0	100	0	0	0	96
4D	1	0	2	99	0	0	0	100	0	0	1	95
4E	0	0	1	101	0	0	0	100	0	0	0	96
4F	0	0	1	101	0	0	0	100	0	1	0	95
4G	0	0	3	99	0	0	0	100	0	0	0	96
4H	1	0	3	98	0	0	0	100	0	0	0	96
5A	1	0	2	99	0	0	3	97	0	0	1	95
5B	1	0	2	99	0	0	2	98	0	0	6	90
5C	3	0	2	97	1	0	5	94	1	0	3	92
5D	0	0	1	101	1	0	0	99	0	1	0	95
IMPROPER HOLDING/TIME AND TEMPERATURE												
6A	0	0	6	96	0	0	6	94	0	0	2	94
6B	5	13	25	59	5	4	20	71	7	10	45	34
6C	14	0	40	48	0	0	10	90	1	1	20	74
7A	23	76	2	1	29	67	0	0	46	50	0	0
8A	5	1	0	96	6	0	0	94	9	0	1	86
8B	0	0	1	101	0	0	0	100	0	0	0	96
9A	23	33	13	33	29	16	5	50	43	13	5	35
9B	35	7	22	38	26	3	27	44	43	5	17	31
9C	25	11	7	59	3	3	3	91	13	7	6	70
9D	2	0	3	97	0	0	0	100	0	0	0	96

APPENDIX I – PRODUCE MARKETS/DEPARTMENTS

PART II

DATA SUMMARY

1998, 2003, and 2008 DATA COLLECTION PERIODS (page 2 of 2)

Data Item Number	1998				2003				2008			
	# IN	# OUT	# NO	# NA	# IN	# OUT	# NO	# NA	# IN	# OUT	# NO	# NA
CONTAMINATED EQUIPMENT/PROTECTION FROM CONTAMINATION												
10A	65	2	0	35	17	2	0	81	6	1	1	88
10B	46	0	1	55	9	0	0	91	4	0	0	92
10C	83	18	0	1	94	6	0	0	84	12	0	0
10D	102	0	0	0	100	0	0	0	96	0	0	0
11A	37	63	0	2	56	44	0	0	61	35	0	0
POOR PERSONAL HYGIENE												
12A	51	36	13	2	20	10	70	0	49	16	31	0
13A	80	11	10	1	38	8	54	0	64	7	25	0
14A	64	17	18	3	27	4	66	3	60	4	28	4
15A	71	29	0	2	72	27	0	0	81	15	0	0
15B	71	29	0	2	77	22	0	0	79	17	0	0
OTHER CHEMICAL												
16A	82	0	0	20	9	0	0	91	3	1	0	92
16B	74	28	0	0	81	19	0	0	78	18	0	0
16C	102	0	0	0	97	3	0	0	95	1	0	0

APPENDIX J – DIRECTORY

FDA NATIONAL RETAIL FOOD TEAM (page 1 of 8)

ORA Regional Retail Food Specialists

NORTHEAST REGION

RI, MA, ME	New England District Office One Montvale Avenue Stoneham, MA 02180 HFR-NE26	**Raymond A. Duffill, Jr.** (781) 596-7725 Fax: (781) 596-7894 Raymond.Duffill@fda.hhs.gov
NH, VT	HFR-NE26	**Alfred P. Pistorio** (781) 596-7789 Fax: (781) 596-7894 Alfred.Pistorio@fda.hhs.gov
CT, NY	Hartford Resident Post 35 High Street, Rm. 371 Hartford, CT 06103 HFR-NE2530	**Steven Nattrass** (860) 240-4289 ext. 18 Fax: (860) 240-4313 Steven.Nattrass@fda.hhs.gov
NYC, NY Health	158-15 Liberty Avenue 5th Floor Jamaica, NY 11433-1034 HFR-NE4	**Mary Leong** (718) 662-5536 Fax: (718) 662-5434 Mary.Leong@fda.hhs.gov

CENTRAL REGION

IL, MI, WI	Gurnee Resident Post 501 N. Riverside Drive Suite 203 Gurnee, IL 60031 HFR-CE1505	**John Powell** (847) 249-8632 ext. 27 Fax: (847) 249-0175 John.Powell@fda.hhs.gov
MN, ND, SD	Minnesota District Office 212 Third Avenue South Suite 600 Minneapolis, MN 55401 HFR-CE850	**Greg Abel** (612) 758-7199 Fax: (612) 334-4134 Greg.Abel@fda.hhs.gov

APPENDIX J – DIRECTORY

FDA NATIONAL RETAIL FOOD TEAM (page 2 of 8)

CENTRAL REGION

IN, KY, OH, WV	Louisville Resident Post 9600 Brownsboro Road Suite 302 Louisville, KY 40241 HFR-CE4550	**Kris Moore** (502) 425-0069 ext. 13 Fax: (502) 425-0450 Kris.Moore@fda.hhs.gov
MD, VA, DC	Northern Virginia Resident Post 101 W. Broad St. Suite 400 Falls Church, VA 22046 HFR-CE2535	**Lawrence Edwards** (703) 538-2176 ext. 104 Fax: (703) 538-2628 Larry.Edwards@fda.hhs.gov
PA, NJ, DE	Regional Field Office 200 Chestnut Street Room 902 Philadelphia, PA 19106 HFR-CE1500	**Lawrence Edwards (temporarily)** (703) 538-2176 ext. 104 Fax: (703) 538-2628 Larry.Edwards@fda.hhs.gov

SOUTHEAST REGION

AL, MS, TN PR, VI	Southeast Regional Office 60 8th Street, N.E. Atlanta, GA 30309 HFR-SE 14	**J. Daniel Redditt** (404) 253-1265 Fax: (404) 253-2257 Daniel.Redditt@fda.hhs.gov
FL, LA	HFR-SE14	**Alan M. Tart** (404) 253-1267 Fax: (404) 253-2257 Alan.Tart@fda.hhs.gov
GA	HFR-SE14	**Chris Smith** (404) 253-1274 Fax: (404) 253-2257 Chris.Smith@fda.hhs.gov

APPENDIX J – DIRECTORY

FDA NATIONAL RETAIL FOOD TEAM (page 3 of 8)

SOUTHEAST REGION

NC, SC	Charlotte Resident Post 5701 Executive Center Drive Suite 104 Charlotte, NC 28212 HFR-SE1510	**Donna Wanucha** (704) 344-6116 Fax: (704) 344-6402 Donna.Wanucha@fda.hhs.gov

SOUTHWEST REGION

OK, AR,	Southwest Regional Office 4040 N. Central Expressway Suite 900 Dallas, TX 75204 HFR-SW16	**Dennis Eastin** (214) 253-4947 Fax: (214) 253-4960 Dennis.Eastin@fda.hhs.gov
TX, NM,	HFR-SW16	**Linda Collins** (214) -253-4945 Fax: (214) 253-4960 Linda.Collins@fda.hhs.gov
	HFR-SW16	**Scott Krause** (214) 253-4948 Fax: (214) 253-4960 Scott.Krause@fda.hhs.gov
UT, CO, WY	Denver District Office Denver Federal Center Building 20 P.O. Box 25087 Denver, CO 80225 HFR-SW26	**Mario Seminara** (303) 236-3026 Fax: (303) 236-3551 Mario.Seminara@fda.hhs.gov
KS, IA, MO, NE	Kansas City District Office 11630 West 80th Street Lenexa, KS 66214 HFR-SW36	**Cindy Kunkel** (913) 752-2401 Fax: (913) 752-2487 Cindy.Kunkel@fda.hhs.gov

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FDA NATIONAL RETAIL FOOD TEAM (page 4 of 8)

PACIFIC REGION

CA, HI	Pacific Regional Office Oakland Federal Building 1301 Clay Street Suite 1180N Oakland, CA 94612 HFR-PA16	**Lisa Whitlock** (510) 637-3960 ext. 127 Fax: (510) 637-3976 Lisa.Whitlock@fda.hhs.gov
CA, Guam	Los Angeles District Office 19706 Fairchild, Suite 1179 Irvine, CA 92612-2506 HFR-PA260	**Richard Ramirez** (949) 608-4475 Fax: (949) 608-4498 Richard.Ramirez@fda.hhs.gov
AK, OR	Portland Resident Post 9708 SW Nimbus Avenue Building 16 Beaverton, OR 97008 HFR-PA3515	**Kathryn Kennedy** (503) 671-9711 ext. 16 Fax: (503) 671-9445 Kathryn.Kennedy@fda.hhs.gov
AZ, NV	Phoenix Resident Post 51 West Third Street Suite 265 Tempe, AZ 85281 HFR-PA2530	**John Marcello** (480) 829-7396 ext. 35 Fax: (480) 829-7677 John.Marcello@fda.hhs.gov
WA	Puget Sound Resident Post 1000 2nd Avenue Suite 2400 Seattle, WA 98104 HFR-PA36	**Sharon K. Ferguson** (206) 553-7001 ext. 41 Fax: (206) 553-7020 Sharon.Smith@fda.hhs.gov
ID, MT,	Spokane Resident Post 1000 N. Argonne Suite 105 Spokane, WA 99212 HFR-PA36	**Bradley Tufto** (509) 353-2554 Fax: (509) 353-2746 Bradley.Tufto@fda.hhs.gov

APPENDIX J – DIRECTORY

FDA NATIONAL RETAIL FOOD TEAM (page 5 of 8)

COOPERATIVE PROGRAM DIRECTORS

NORTHEAST REGION

Elizabeth O'Malley
Cooperative Programs Director
FDA Northeast Region
158-15 Liberty Avenue, Room 5017
Jamaica, NY 11433
Phone: (718) 622-5621
Fax: (718) 622-5434
E-mail: Elizabeth.Omalley@fda.hhs.gov

CENTRAL REGION

Larry Stringer
Cooperative Programs Director
FDA Central Region
20 N. Michigan, Suite 510
Chicago, IL 60602
Phone: (312) 596-6523
Fax: (312) 596-1682
E-mail: Larry.Stringer@fda.hhs.gov

SOUTHEAST REGION

Laurie Farmer
Cooperative Programs Director
FDA Southeast Region
60 8th Street, NE
Atlanta, GA 30309
Phone: (404) 253-1175
Fax: (404) 253-1207
E-mail: Laurie.Farmer@fda.hhs.gov

SOUTHWEST REGION

Elaine Crosby
Cooperative Programs Director
FDA Southwest Region
4040 Central
Dallas, TX 75204
Phone: (214) 253-4940
Fax: (214) 253-4960
Elaine.Crosby@fda.hhs.gov

PACIFIC REGION

Jim Wyman
Cooperative Programs Director
FDA Pacific Region
1301 Clay Street, Suite 1180N
Oakland, CA 94612-5217
Phone: (510) 637-3960 x 29
Fax: (510) 637-3976
E-mail: James.Wyman@fda.hhs.gov

APPENDIX J – DIRECTORY

FDA NATIONAL RETAIL FOOD TEAM (page 6 of 8)

ORA HEADQUARTERS

Joseph Reardon, Acting Director, (HFC-150)
Division of Federal-State Relations
Food and Drug Administration
5600 Fishers Lane, Room 1207
Rockville, MD 20857
Phone: (301) 827-9508
Fax: (301) 443-2143
E-mail: Joseph.Reardon@fda.hhs.gov

Ellen Laymon, Lead Consumer Safety Officer (HFC-150)
Division of Federal-State Relations
Food and Drug Administration
5600 Fishers Lane, Room 1207
Rockville, MD 20857
Phone: (301) 827-2908
Fax : (301) 443-2143
E-mail : Ellen.Laymon@fda.hhs.gov

James Fear, Manager, (HFC-60)
State Training Team
Div. of Human Resource Development
11919 Rockville Pike
Rockville, MD 20852
Phone: (301) 827-8725
Fax: (301) 827-8708
E-mail: James.Fear@fda.hhs.gov

Allen Gelfius, Trng. Officer (HFC-60)
State Training Team
Div. of Human Resource Development
11919 Rockville Pike
Rockville, MD 20852
Phone: (301) 796-4517
Fax: (301) 827-8708
Allen.Gelfius@fda.hhs.gov

Jonathan Gardner, Trng. Officer (HFC-150)
State Training Team
Div. of Human Resource Development
11919 Rockville Pike
Rockville, MD 20852
Phone: (301) 796-4526
Fax: (301) 827-8707
E-mail: Jonathan.Gardner@fda.hhs.gov

Janet Williams, Trng. Officer (HFC-60)
State Training Team
Div. of Human Resource Development
11919 Rockville Pike
Rockville, MD 20852
Phone: (301) 796-4534
Fax: (301) 827-8707
Janet.Williams@fda.hhs.gov

Tim Weigner, Trng. Officer (HFC-60)
State Training Team
Div. of Human Resource Development
11919 Rockville Pike
Rockville, MD 20852
Phone: (301) 796-4536
Fax: (301) 827-8708
E-mail: Timothy.Weigner@fda.hhs.gov

APPENDIX J – DIRECTORY

FDA NATIONAL RETAIL FOOD TEAM (page 7 of 8)

CENTER FOR FOOD SAFETY & APPLIED NUTRITION (CFSAN) TEAM

Kevin Smith, Director
Retail Food & Cooperative Programs Coordination Staff
FDA/Center for Food Safety & Applied Nutrition (CFSAN)
Office of Food Safety (OFS)
5100 Paint Branch Parkway
Room 3B-004 / Mail Stop: HFS-320
College Park, MD 20740
Phone: (301) 436-2149
Fax: (301) 436-2672
E-mail: Kevin.Smith@fda.hhs.gov

Glenda R. Lewis, Team Leader
Supervisory Consumer Safety Officer, Retail Food Protection Team
FDA/CFSAN/Office of Food Safety
Retail Food & Cooperative Programs Coordination Staff
5100 Paint Branch Parkway
Room 3B-002 / Mail Stop: HFS-320
College Park, MD 20740
Phone: (301) 436-2150
Fax: (301) 436-2672
E-mail: Glenda.Lewis@fda.hhs.gov

Veronica S. Moore
Consumer Safety Officer, Retail Food Protection Team
FDA/CFSAN/Office of Food Safety
Retail Food & Cooperative Programs Coordination Staff
5100 Paint Branch Parkway
Room 3B-035 / Mail Stop: HFS-320
College Park, MD 20740
Phone: (301) 436-1409
Fax: (301) 436-2672
E-mail: Veronica.Moore@fda.hhs.gov

APPENDIX J – DIRECTORY

FDA NATIONAL RETAIL FOOD TEAM (page 8 of 8)

CENTER FOR FOOD SAFETY & APPLIED NUTRITION (CFSAN) TEAM

Mary Cartagena
Consumer Safety Officer, Retail Food Protection Team
FDA/CFSAN/Office of Food Safety
Retail Food & Cooperative Programs Coordination Staff
5100 Paint Branch Parkway
Room 3B-039 / Mail Stop: HFS-320
College Park, MD 20740
Phone: (301) 436-2937
Fax: (301) 436-2672
E-mail: Mary.Cartagena@fda.hhs.gov

Rebecca L. Vigue
Consumer Safety Officer, Retail Food Protection Team
FDA/CFSAN/Office of Food Safety
Retail Food & Cooperative Programs Coordination Staff
5100 Paint Branch Parkway
Room 3B-038 / Mail Stop: HFS-320
College Park, MD 20740
Phone: (301) 436-2130
Fax: (301) 436-2672
E-mail: Rebecca.Vigue@fda.hhs.gov

Laurie Williams
Consumer Safety Officer, Retail Food Protection Team
FDA/CFSAN/Office of Food Safety
Retail Food & Cooperative Programs Coordination Staff
5100 Paint Branch Parkway
Room 3B-018 / Mail Stop: HFS-320
College Park, MD 20740
Phone: (301) 436-2938
Fax: (301) 436-2672
E-mail: Laurie.Williams@fda.hhs.gov

APPENDIX K – RESOURCES

WEB SITE LOCATIONS FOR REFERENCED DOCUMENTS

1997 FDA Food Code
http://www.fda.gov/Food/FoodSafety/RetailFoodProtection/FoodCode/FoodCode1997/default.htm

2001 FDA Food Code
http://www.fda.gov/Food/FoodSafety/RetailFoodProtection/FoodCode/FoodCode2001/default.htm

2003 Supplement to the 2001 FDA Food Code
http://www.fda.gov/Food/FoodSafety/RetailFoodProtection/FoodCode/FoodCode2001/ucm089117.htm

2005 FDA Food Code
http://www.fda.gov/Food/FoodSafety/RetailFoodProtection/FoodCode/FoodCode2005/default.htm

Supplement to the 2005 FDA Food Code
http://www.fda.gov/Food/FoodSafety/RetailFoodProtection/FoodCode/FoodCode2005/ucm124080.htm

FDA CFSAN Retail Food Protection
http://www.fda.gov/Food/FoodSafety/RetailFoodProtection/default.htm

FDA Report on the Occurrence of Foodborne Illness Risk Factors in Selected Institutional Foodservice, Restaurant, and Retail Food Store Facility Types (2004)
http://www.fda.gov/Food/FoodSafety/RetailFoodProtection/FoodborneIllnessandRiskFactorReduction/RetailFoodRiskFactorStudies/ucm089696.htm

FDA Voluntary National Retail Food Regulatory Program Standards
http://www.fda.gov/Food/FoodSafety/RetailFoodProtection/ProgramStandards/ucm180269.htm

Gateway to Government Food Safety Information
www.foodsafety.gov

Government Performance and Results Act of 1993
www.whitehouse.gov/omb/mgmt-gpra/gplaw2m.html

Managing Food Safety: A Manual for the Voluntary Use of HACCP Principles for Operators of Food Service and Retail Establishments
http://www.fda.gov/Food/FoodSafety/RetailFoodProtection/ManagingFoodSafetyHACCPPrinciples/Operators/default.htm

APPENDIX K – RESOURCES

WEB SITE LOCATIONS FOR REFERENCED DOCUMENTS

Managing Food Safety: A Regulator's Manual for Applying HACCP Principles to Risk-Based Retail and Food Service Inspections and Evaluating Voluntary Food Safety Management Systems
http://www.fda.gov/Food/FoodSafety/RetailFoodProtection/ManagingFoodSafetyHACCPPrinciples/Operators/default.htm

***Reinventing Food Regulations (1996)*, National Performance Report**
http://govinfo.library.unt.edu/npr/library/rsreport/foodreg.html

Report of the FDA Retail Food Program Database of Foodborne Illness Risk Factors (2000)
http://www.fda.gov/Food/FoodSafety/RetailFoodProtection/FoodborneIllnessandRiskFactorReduction/RetailFoodRiskFactorStudies/ucm123544.htm

***Surveillance for Foodborne Disease Outbreaks --- United States, 1988—1992*, Center for Disease Control and Prevention**
www.cdc.gov/mmwr/preview/mmwrhtml/0004424/.htm