

Food Safety Practices in Summer Food Service Programs



The Center of Excellence for
**FOOD SAFETY RESEARCH IN
CHILD NUTRITION PROGRAMS**

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Food Safety Practices in Summer Food Service Programs Summary Report

The Center of Excellence for Food Safety Research in Child Nutrition Programs

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Executive Summary

During the summer months, millions of low-income children no longer have access to school breakfast and lunch programs. The United States Department of Agriculture Summer Food Service Program provides an opportunity for those children to receive a nutritious meal when school is out. To date, little research has focused on food safety practices at the various sites providing food for the Summer Food Service Program.

The purpose of this project was to identify current food safety practices implemented at the Summer Food Service Program sites, specifically the types of food offered, time and temperature control, and where and how food was served. Observations were conducted during July and August 2015 at 28 Summer Food Service Program sites across the United States. A convenience sample of four sites from one state in each of the seven United States Department of Agriculture Food and Nutrition Service regions was selected based on program service dates.

Researchers found food safety practices involving use of gloves and utensils, adequate cooling methods, and single-service utensils complied with food safety standards. However, practices such as handwashing, temperature control, and documentation of temperatures needed improvement.

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Background

The USDA Food and Nutrition Service (FNS) administers the Summer Food Service Program (SFSP) to provide meals for children (18 years and younger) in low-income areas during the summer months when they are not attending school (USDA, 2015). The SFSP started in 1968 as a pilot program, and in 1975, it was authorized as a permanent program (Gordon & Briefel, 2003). Recently, legislation, policy, and outreach have begun a concerted effort to increase participation in the program (USDA, 2015). In July 2014, the program's peak month, more than 3.2 million children received meals through the SFSP at 45,170 sites (Food Research & Action Center, 2015).

The SFSP is administered by State agencies that contract with authorized sponsors across each state to provide the meals to children within the community (Gordon & Briefel, 2003). USDA, State agencies, sponsors, and sites all collaborate to provide healthy meals to low-income children (Food Research & Action Center, 2015). Sponsors are responsible for recruiting and training personnel, monitoring each site, and reporting meal counts to the State agency. The five major types of sponsors are School Food Authorities, government agencies, residential camps, national youth programs, and other nonprofit organizations (Gordon & Briefel, 2003). Sites are responsible for preparing and/or serving food and supervising children during meal times. Meal sites can be any safe supervised location in the community such as schools, parks, churches, community centers, and migrant centers (Gordon & Briefel, 2003). In July 2014, 5,499 sponsors and 45,872 sites participated in the program.

Specific challenges associated with operating an SFSP can increase food safety risks such as temperature control, cleaning and sanitizing, and personal hygiene. All of these factors can contribute to the introduction of pathogens or pathogen growth. Summer feeding hours often

occur when ambient temperatures are high, this can make controlling food temperatures difficult which can increase pathogen growth. The logistics of summer feeding differ among sponsors and sites. Some sites prepare and serve food in a single location, while other sites require transportation of food to a service site that may or may not have adequate kitchen equipment. These scenarios introduce additional food safety challenges such as time/temperature control and handwashing facility access. Staff and/or volunteer turnover throughout the summer poses challenges to sponsors regarding training requirements for food safety practices (USDA, 2015a).

The purpose of this study was to identify current food safety practices in SFSP sites across the United States. Results will serve as baseline data for future research and program education development.

Objectives

The goal of this study was to identify current food safety practices in SFSP sites. Specific objectives were to:

1. Determine current food safety practices at SFSP sites;
2. Identify types of food served at the sites and collect associated temperature;
3. Establish recommendations for developing educational materials for SFSP operators.

Definition of Terms

Data Logger: Electronic device that records temperature continuously over time. This study used data loggers manufactured by Lascar Electronics, Inc.

Site: A location where community children can obtain meals that are both safe and supervised. Sites include, among others, schools, parks, community centers, churches, and migrant centers (Gordon & Briefel, 2003).

Sponsor: An organization that administers the SFSP and communicates with the State agency. Sponsors can include schools, non-profits, and camps (Gordon & Briefel, 2003).

Staff members: The employees and/or volunteers that work at a preparation and/or service site.

State Agency: The agency of State government which has the responsibility for the administration of the SFSP (7 C.F.R. § 210.2, 1988).

School Food Authority: The governing body which is responsible for the administration of one or more schools; and has the legal authority to operate the program therein or be otherwise approved by FNS to operate the program (7 C.F.R. § 210.2, 1988).

Temperature Danger Zone (TDZ): Temperature range where bacteria multiply rapidly, and may increase risks of foodborne illness in TCS foods. The TDZ falls between 41.0°F and 135.0°F (Food and Drug Administration, 2013).

Time as a Public Health Control: The length of time certain foods spend in the TDZ should not exceed four hours. If the warmest portion of the food never exceeds 70°F, then it can be held for no more than six hours. Any food held in the TDZ must be discarded if the temperature of the food exceeds 70°F, if it is in an unmarked package, or at the end of the four or six hour period (Food and Drug Administration, 2013).

Time/Temperature Control for Safety (TCS) Food: Food that requires time and temperature controls to limit the growth of pathogens or the formation of toxins (Food and Drug Administration, 2013).

Methods

This research was a collaborative effort between The Center of Excellence for Food Safety Research in Child Nutrition Programs (Center of Excellence) and the Institute of Child Nutrition. On-site observations were conducted to obtain information concerning food safety practices of staff members at SFSP sites. An observation form and research protocol were developed based on the study objectives.

Research Approval

Institutional Review Boards at Kansas State University and the University of Mississippi approved the research protocol before data collection began. All researchers involved in the study completed human subjects training.

Sample

The sample for this study consisted of 28 SFSP sites, four SFSP sites from one state in each of the seven USDA regions. Different types of sponsors were included in an effort to find sites not administered by or associated with School Food Authorities. Sites were convenience samples, based on location and program service dates. Information about sponsors and/or sites was obtained through each State agency. Researchers identified potential sites using a web application that featured a searchable map for SFSP sites developed by the USDA FNS (USDA, 2015b).

Data Collection Instruments

A research protocol document was developed to provide guidelines for data collection (Appendix A). The research protocol included seven sections: purpose of the study, data collectors, site information, logistics, materials, observation protocol, and instructions for

collecting temperature data. Each section included a description and additional information for each specific step.

An observation form was developed using a reference form previously created by the Center of Excellence in cooperation with USDA FNS Office of Food Safety and ICN (ICN, 2015) (Appendix B). The observation form included 11 sections comprised of open-ended and multiple-choice questions. Data loggers were used to record the temperature of TCS foods, and the first section of the form included information on start and end time of data loggers use. The second section included questions on the site itself. Sections 3 to 11 included food safety practices to be observed, specifically:

- employee hygiene
- time/temperature control
- cold storage
- cleaning and sanitizing work surfaces
- preparation facilities
- transportation of food
- service
- service facilities.

Specific instructions were provided to explain how to complete the fields in the observation form (Appendix C). A description of some sections and recommended procedures were provided to ensure consistency in observations. For example, the appropriate procedure for handwashing as specified in the FDA Food Code was included.

A materials checklist for observations was completed before each site visit (Appendix D). The document consisted of a comprehensive list of all items and quantities needed for each observation.

Data Collection

Training and Pilot Test

Seven researchers collected the data; each had experience in foodservice and observational research. Efforts were made to standardize the data collection process to minimize differences among data collectors. As each data collection form was developed, the research team reviewed and discussed the form to clarify meaning and interpretation of areas to be observed. Data collection forms were modified based on these discussions.

Once data collection forms were finalized, all researchers participated in a one-and-a-half day training session to ensure inter-observer reliability. During the first part of the training session, data collection procedures were explained in detail, and forms were reviewed. A pilot test was then conducted. During the pilot test, the trained researchers went in pairs to visit school kitchens participating in the SFSP and independently collected data using the forms. After the site visits, each pair of researchers compared the information and discussed differences between the two observations. All researchers met an additional time after the pilot test observations to discuss challenges encountered while collecting data and changes to the data collection form. The data collection form was revised again to incorporate these recommendations.

Site Visits

Each researcher contacted SFSP sites, sponsors, and/or State agencies to recruit potential observation sites. A contact script explaining the purpose of the study was used (Appendix E). The principal investigator sent a letter to those contacts who asked for more information about the project (Appendix F).

Four site visits were scheduled during a single seven-day period in each of the seven states. Data collection took place during the months of July and August. Researchers visited site preparation and service locations, if different. Arrival time varied depending on the production time at the site; researchers stayed throughout the service time, including clean up where applicable.

Upon arrival at a facility, researchers introduced themselves to the person in charge and explained the purpose and procedures of the study. All staff members present during the observation period completed a consent form that provided them information about the study and the confidentiality notice approved by Kansas State University and the University of Mississippi IRB offices (Appendix G). A Spanish translation of the consent form was available (Appendix H).

To identify temperature fluctuations and determine whether the food was exposed to the TDZ, thermocouple USB data loggers model EL-USB-TC-LCD recorded the temperatures of chosen food items every five minutes from preparation to service. Researchers selected TCS foods, where possible, from the menus and then collected temperature data. The researcher explained the procedure to the person responsible for food preparation to ensure that the data logger was placed in the food as soon as it was ready and remained there throughout service.

Where applicable, a “test meal” was purchased at the preparation site. The data logger’s probe was inserted into the center of selected test meal foods after preparation or assembly. The test meal food was labeled “*Do not consume,*” as appropriate, to avoid confusion with food to be served. The researchers explained to staff members that the test meal food needed to be treated the same as the other food products being served. When the service period ended at the site, the data loggers were removed from the test meal foods.

Data Analysis

Data were entered into Microsoft Excel. Descriptive statistics, including frequencies, percentages, and means, were calculated. Summaries of specific comments collected during observations were recorded in a Microsoft Word document. Temperature data were imported into Microsoft Excel.

Results and Discussion

Site Characteristics

Data on preparation and/or service were collected at 28 sites. Table 1 summarizes the characteristics of these sites. Twenty-five of the sponsors were non-profit organizations; the other three were School Foodservice Authorities. Some observations were done at multiple sites, under one sponsor which accounts for a total number of sites of more than 28; for example, during some observations, the food was served at more than one location, such as a park and a housing complex. Central kitchens (n=12), satellite sites (n=9), self-prep on-site (n=6), commercially vended (n=4), and donated food (n=2) were the types of SFSP foodservice facilities observed. Moreover, some foodservice types were classified as multiple types because

of the operational characteristics of the site; for example, during some observations, the food was prepared at one location and served at two or more different locations.

Table 1. Characteristics of Observed Summer Food Service Program Sites (N=28)	
Characteristic	Frequency
SFSP Site	
Community Center	12
Park	6
Housing Complex	5
Church	5
School	2
Other ¹	5
Foodservice Type²	
Central Kitchen	12
Satellite	9
Self-Prep On-Site	6
Commercially Vended	4
Other ³	2
Food Served by:	
Employees	25
Volunteers	8
Children (18 and under)	2
Other ⁴	3
Food Served as:⁵	
Plated from serving line	16
Box lunches	9
Sponsor pre-packaged items	6
Commercially packaged	1

¹Camp, library, recreation center, and town hall

²28 sites were observed, but some of those sites were documented as more than one foodservice type so total exceeds number of sites observed.

³ Residential kitchen and local businesses: Donated food from these foodservice types.

⁴Teachers, food bank staff, combination of staff, volunteers, and children

⁵Some sites used multiple serving methods.

The total number of staff members at sites ranged from one to 28. The number of employees observed during observations ranged from one to 14, and the total number of volunteers ranged from zero to seven. All but three sites had at least one staff member with some food safety training. The trainings included both on and off site programs such as summer feeding training, health department trainings, food handler cards, and ServSafe® Certification.

The average number of meals prepared during the observations ranged from 20 to 5,000 meals per day at the production centers. The meals were served mainly by staff members. Most of the food served was plated on a serving line (n=16).

Allergy management is a challenge in all foodservice operations and the SFSP is no exception. One instance of cross contact was observed at a single serving location. In this occurrence, a known allergen was accidentally plated on an allergic child's tray. While the mistake was caught before the tray was served, the substitute food was plated on the same tray. Several instances of no hand washing between tasks and glove re-use were observed at multiple locations which could easily lead to allergen cross contact incidents. The observation form did not include a section on allergy management, but because allergy management is a food safety concern, these observations were noted.

Personal Hygiene

Personal hygiene refers to several practices including proper handwashing, proper glove usage, adequate handwashing facilities, and using hair restraint (Table 2). Most sites where the practice was observed (18 of 27) were out-of-compliance with at least one staff member or volunteer not wearing a hair restraint. Changing gloves and utensils as needed was out of compliance with 16 of the 25 sites.

Most of the observed sites (21 of 26) had handwashing facilities accessible at the production location. More than half of the observed sites (10 of 25) had access to proper handwashing facilities at the service location. At 15 of the sites, at least one staff member did not wash their hands at the appropriate times. Staff members did not follow proper handwashing procedures at 14 sites.

Table 2. Personal Hygiene Practices and Availability of Facilities at Observed Summer Food Service Program Sites

Observed Practice	Total Observations ¹	Number	
		In-Compliance	Out-of-Compliance
Staff members wear hair restraints	27	9	18
Staff members use proper handwashing procedure	25	11	14
Staff members wash hands as needed	26	11	15
Staff members used gloves/utensils as needed	27	24	3
Staff members properly changed gloves/utensils	25	9	16
Staff members changed gloves/utensils as needed	25	12	13
Proper handwashing facilities available and accessible at preparation facilities	26	21	5
Proper handwashing facilities available and accessible at service facilities	25	15	10

¹The number did not always equal 28 because the practice was not observed/not applicable at some sites.

Time/Temperature Control

Time and temperature control practices observed included properly using a thermometer, correctly taking and recording internal end-point hot preparation temperatures, and adequately cooling hot foods (Table 3). Use of thermometers to check temperatures was observed at 16 sites. The internal end-point hot preparation temperatures were checked at most of the sites (13 of 19) and nine of 15 sites recorded the temperatures of food products. All of the sites (4 of 4) that cooled foods followed safe cooling methods. Cold storage facilities and practices were also observed. Staff members at 18 sites checked the refrigerator temperatures; staff members at 17 sites were observed recording ambient refrigerator temperatures. Food that was wrapped, labeled, and dated properly was observed at 16 sites.

Table 3. Practices Related to Time/Temperature Control

Observed Practice	Total Observations¹	Number	
		In-Compliance	Out-of-Compliance
Thermometers are used to check temperatures	26	16	10
Thermometers are calibrated	11	3	8
Thermometers are washed, rinsed, sanitized and air dried before and after use	15	6	9
Internal cooking temperatures are checked	19	13	6
Internal cooking temperatures are recorded ²	13	9	4
Adequate cooling method used	4	4	0

¹The number did not always equal 28 because the practice was not observed/not applicable in some sites.

²Total observations represent the number of sites where internal end-point hot preparation temperatures were checked and in-compliance.

Temperatures from Data Loggers

Data loggers were used to record the temperature of 23 hot food items and 29 cold food items. Six hot foods and three cold foods spent no time in the TDZ. Overall, fewer hot food items were held in the TDZ and spent less cumulative time in the TDZ than cold food items. Two hot food items and eight cold food items were held in the TDZ for longer than two hours, with one of the cold food items remaining in the TDZ for longer than four hours.

SFSP sites used a variety of equipment for hot and cold holding. Some sites used more than one type of equipment. The hot holding equipment most commonly used was the insulated portable warmers (n=8) and electric hot boxes (n=8). Most of the sites used walk-ins coolers (n=11), residential refrigerators (n=10), hard sided coolers (n=10), and reach-in refrigerators (n=6) for cold holding.

The lowest temperatures for hot food items ranged from 44.5°F to 166.0°F with an average low temperature of 112.0°F (Table 4). The highest temperatures of hot foods ranged from 109.0°F to 201.0°F, with an average high temperature of 163.0°F. The average number of

minutes hot foods remained in the TDZ was 45 minutes. Food items spending the most time in the TDZ during the observations were pork roast (190 minutes), cheeseburger (165 minutes), and corn (90 minutes).

Table 4. Recorded Temperatures for Hot Food Items and Time in the Temperature Danger Zone

Food Item	Highest Temperature °F²	Lowest Temperature °F²	Time in minutes in TDZ
Breaded chicken patty	187.5	135.0	0
Cheeseburger	109.0	90.5	190
Chicken	170.5	100.0	5
Chicken fried steak	199.0	112.5	20
Chicken strips ³	140.5	44.5	80
Chili mac	169.0	150.0	0
Corn A ¹	116.0	82.5	90
Corn B ^{1,3}	175.5	145.5	0
Corn dog	148.5	75.0	35
Green Beans ³	146.0	100.5	5
Hot dogs	134.0	118.0	80
Meatballs A ¹	181.5	81.5	20
Meatballs B ¹	142.0	83.0	80
Pizza A ¹	155.5	144.5	0
Pizza B ¹	168.0	145.5	0
Pizza C ¹	173.5	74.5	65
Pork roast ³	172.5	80.5	165
Sausage ³	179.5	159.0	0
Spiced apples ³	195.0	117.5	15
Stew ³	196.0	100.5	30
Sweet peas ³	170.0	101.5	85
Sweet potato casserole	132.5	118.5	45
Taco meat [†]	201.5	109.0	5

¹Several food items were served at multiple locations. To differentiate them, a letter was designated to those food products.

²These temperatures were individually the highest and lowest temperature recorded for a single food.

³Temperatures for these food items did not follow the trend of starting with the highest and ending with the lowest temperatures.

The lowest temperatures of cold foods ranged from 16.0° F to 71.5° F with an average low temperature of 45.0° F (Table 5). The highest temperatures of cold foods ranged from 21.5° F to 94.5° F, with an average high temperature of 58.0° F. The average number of minutes cold foods

remained in the TDZ was 90 minutes. Cold food items spending the longest time in the TDZ were potato salad (260 minutes), sack lunch (235 minutes), and fruit B (190 minutes).

Table 5. Recorded Temperatures for Cold Food Items and Time in the Temperature Danger Zone

Food Item	Lowest Temperature °F²	Highest Temperature °F²	Time in minutes in TDZ
Applesauce ⁴	45.0	61.5	50
Baby carrots ⁴	47.0	63.5	160
Cantaloupe	43.5	47.0	85
Carrots	57.0	76.0	85
Cheese ⁴	36.0	57.0	50
Chicken salad ⁴	49.0	55.0	85
Cucumber slices ⁴	44.0	67.0	115
Fajita chicken ⁴	37.5	66.0	40
Fruit A ²	48.5	56.0	70
Fruit B ^{2, 4}	71.5	94.5	190
Ham and cheese sandwich A ^{2, 4}	58.0	60.5	70
Ham and cheese sandwich B ^{2, 4}	42.0	52.0	160
Lettuce ⁴	39.0	55.0	60
Milk A ²	33.5	35.5	0
Milk B ²	33.0	39.5	0
Milk C ²	39.0	45.5	15
Milk D ²	54.5	56.5	65
Milk E ²	61.0	66.0	40
Milk F ^{2, 4}	33.0	46.5	30
Peaches, canned A ²	43.0	52.0	160
Peaches, canned B ^{2, 4}	34.5	76.0	85
Pears, canned ⁴	41.0	68.0	145
Potato salad	37.5	70.0	260
Sack lunch ³	48.0	57.0	235
Shredded cheese ⁴	39.0	51.0	85
Tuna salad	46.0	64.0	90
Turkey cranberry	35.0	66.0	100
Turkey sandwich A ²	62.5	68.0	35
Turkey sandwich B ²	50.0	67.5	130

¹Several food items were served at multiple locations. To differentiate them, a letter was designated to those food products.

²These temperatures were individually the highest and lowest temperature recorded for a single food.

³The sack lunch included a small container of non-commercially prepared tuna salad. The container did not allow for the use of the data logger probe in the tuna salad.

⁴Temperatures for these food items did not follow the trend of starting with the lowest and ending with the highest temperatures.

Transportation of Food

When food was transported, staff members at seven sites checked the temperature of food when received; however, staff at 14 sites did not check the temperature of food when received (Table 6). Only five of 21 sites recorded the temperatures when the food was received. Hot meals were delivered at the correct temperature to 11 sites while three sites did not receive food at the correct temperatures. Cold meals were delivered at the correct temperature for five of the 15 sites. Refrigerated trucks were used for transporting food to only three sites.

Table 6. Transportation Practices of Observed Summer Food Service Program Sites (N=28)

Practice	Number			
	Yes	No	Not Applicable	Not Observed
Temperature of food is checked when received	7	14	5	2
Temperatures of food recorded when received	5	2	19	2
Hot meals delivered at 135°F or more	11	3	12	2
Cold meals delivered at 41°F or less	5	10	10	3
Refrigerated trucks are used to deliver food	3	19	5	1
Food transportation containers are in good condition	22	0	5	1

Eighteen sites used hard-sided coolers to transport food, while seven sites used soft-sided coolers. Hot insulated food carriers were also used by 11 sites for hot foods. Other methods used to retain temperature included ice packs/sheets (n=11), ice in coolers (n=7), and hot packs/sheets (n=3).

Service

Observed service practices are presented in Table 7. Of the sites observed serving hot meals (n=16), 12 sites served them at the correct temperature. Half (11 of 22) of the observed sites served cold meals at the correct temperature. Single-service utensils were used at 25 sites. Share tables were used at six sites.

Table 7. Service Practices of Observed Summer Food Service Program Sites (N=28)

Practice	Number			
	Yes	No	Not Applicable	Not Observed
Hot meals served at 135°F or more	12	4	9	1
Cold meals served at 41°F or less	11	11	5	1
Single-service utensils used at the feeding sites	25	0	3	0
Share tables used	6	18	1	3

Cleaning and Sanitizing Work Surfaces

Table 8 summarizes the results of observed cleaning and sanitizing practices. Sanitizing and cleaning solutions were underutilized. Only 11 of 23 observed sites were in compliance when using cleaning solutions. Most of the sites (16 of 25) used sanitizing solutions. Half of the sites (10 of 20) that tested sanitizing solutions were using the sanitizing solutions at correct concentrations. Only one of 19 observed sites was in compliance for documenting of sanitizer concentrations.

Table 8. Cleaning and Sanitizing Practices of Work Surfaces in Observed Summer Food Service Program Sites

Practice	Total Observations ¹	Number	
		In-compliance	Out-of-Compliance
Food contact surfaces and utensils are clean to sight and sanitized before use	23	17	6
Cleaning solutions are used	23	11	12
Sanitizing solutions are used	25	16	9
Sanitizing solutions are at correct concentrations	20	10	10
Sanitizing concentrations are documented	20	1	19
Cleaning/Sanitizing solutions are changed as needed	14	6	8

¹The number did not always equal 28 because the practice was not observed/not applicable in some sites.

Conclusions and Recommendations

Conclusions

Participation in the SFSP has increased over the last several years; ensuring the safety of food served in the SFSP is critical to protecting the health of the children participating in the program. Observations of food safety practices revealed a need for improvement in all areas: personal hygiene, time/temperature control, transportation of food, service practices, and cleaning and sanitizing practices. In particular, documenting temperature and sanitizing solution concentrations was minimal.

Sponsors determine the characteristics of their SFSP, particularly organization, size, preparation, and service type. Food preparation and delivery systems varied widely at the sites selected for this study. In some of the observed sites, food was prepared and served on-site while at other sites, food was prepared in a central kitchen and transported to different service locations.

The differences between sites illustrate a need for educational materials and training sessions targeted to the type of food production and service systems used, although most of the sites (25 of 28) had at least one staff member with some type of food safety training.

Temperature data indicated that most of hot and cold food items spent at least 45 minutes in the TDZ, with hot food items remaining in the TDZ less time cumulatively than cold food items. Potato salad was one cold food item that showed time and temperature abuse, with the product remaining in the TDZ for more than four hours (4 hours and 20 minutes).

Recommendations

Based on this research, the Center has several recommendations to enhance food safety in the SFSP:

1. Conduct a study to identify sponsor food safety training needs and to assess the best training methods and materials to be used when training SFSP employees and volunteers respectively.
2. Develop the following audience specific (sponsors, employees, and volunteers) educational materials to improve food safety in the SFSP:

a) General Recommendations

- All training materials should emphasize the importance of following food safety practices.
- Develop a task force comprising sponsors, site operators, staff members, school district representatives, health inspectors, and community stakeholders to discuss food safety challenges and reasonable solutions that consider the scope of this program.
- Provide a comprehensive food safety best practices packet to all sponsors specific to the SFSP (including standard operating procedures for personal hygiene, cleaning and sanitizing, allergy management, hot/cold food management, and thermometer use).
- Training materials should provide corrective actions for common challenges of following food safety practices.

- Develop either one comprehensive SFSP food safety online module (no more than 45-60 minutes) or a series of short online modules (each 3-5 minutes) specifically for short-term staff members.
- Although food safety training is available in a general sense in several electronic locations, consider having these resources (as well as SFSP specific resources) linked on USDA's and ICN's websites using a page specifically titled SFSP. Sponsors may be more likely to use the materials if they are available in a single location.
- Provide posters for use in kitchens to reinforce solutions to common food safety concerns specific to the SFSP.
- Customize food safety training to address learning styles and generational differences among staff members.

b) Personal Hygiene

- Develop online training modules and an associated quick reference resource for staff members, using specific SFSP characteristics, including emphasizing proper personal hygiene such as when/how to wash hands, proper glove use, and using hair restraints.
- Develop a resource (poster or handout) for sponsors to identify how to set up a temporary handwashing station for service locations with no ready access to adequate handwashing facilities.

c) Time/Temperature Control

- Develop online training modules specifically for SFSP staff members demonstrating proper thermometer use (including information on the

differences between thermometer types such as digital and bimetallic thermometers; how to calibrate a bimetallic thermometer; how to take temperatures of foods commonly served in the SFSP; and how to clean and sanitize the thermometer before and between uses).

- Make posters, stickers, and/or magnets available to SFSP sponsors for production kitchens with final internal cooking/reheating temperatures for foods commonly served in the SFSP as well as for service sites with instructions for managing time/temperature of hot and cold foods. Include best practices for corrective actions.

Example:

Category	Temperature Requirements	Foods in this category
Hot foods	135°F or above	Mac & cheese, pizza, chili
Cold foods & milk	41°F or below	Cut fruit, lunchmeat, milk
Shelf stable	Any temp	Whole fruit, PB & J, crackers
Time as public health control	Any temp Discard at end of service Requires discard label	Cut fruit, mac & cheese, lunchmeat sandwiches,

- Develop training materials for sponsors identifying best practices (methods and equipment) for transporting hot and cold foods from production sites to service sites. For example, a short video could demonstrate these best practices.

d) Service

- Develop a simple, yet comprehensive, step-by-step checklist for staff members to ensure that proper food safety practices are followed before, during, and after service that can be kept with other records like number of meals served.

e) Cleaning and Sanitizing Work Surfaces

- Develop recommendations for sponsors for a cleaning and sanitizing kit for use at non-traditional serving sites. Each sponsor should have such a kit(s) available to use at unconventional service areas like parks.

f) Other: Specific Requests from Sponsors and Sites

- Quick start guide for new sites (including general environmental health requirements).
- List of key food safety behaviors for new staff members.
- Template for a manual detailing general policies and procedures that can be adapted by sponsors.
- Supply list for serving locations (including gloves, resources for a temporary handwashing station, cleaning and sanitizing materials, and sanitizer test strips).
- Information on common chemicals used in cleaning/sanitizing.
- Accessible signage with safe temperatures listed for use in kitchens.

References

7 C.F.R. § 210.2 (1988)

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Appendices

Appendix A:
Research Protocol

Summer Foodservice Program

Protocol for Data Collection

1. Purpose:

The goal of this study is to capture the food handling practices used to prepare, transport, store, and serve meals in the Summer Foodservice Program. Both qualitative and quantitative data will be collected in the form of observations related to employee practices, cleaning processes, and how food is held, as well as temperature data. A total of 24 sites will be visited over the summer, and convenience sampling will be used to select the study sites.

2. Data Collectors

The data collectors will be trained by researchers from The Center of Excellence for Food Safety Research in Child Nutrition Programs. Each observer should complete the training session, including a site observation to ensure inter-observer reliability.

3. Sites of Data Collection

The observations will take place in 28 Summer Foodservice Programs within the 7 USDA regions of the United States.

4. Logistics

Site visits will take place during June, July, and August of 2015. Each observer will schedule the visit with the site from provided list of pre-contacted sites. Researchers will visit the site preparation location and the service location, if different. Each site visit will be observed during the period when food is prepared and served although observation times might differ, depending on site logistics.

5. Materials needed

Each observer will need to take the following materials:

- Clipboard
- Pen
- Markers
- Observation form
- Thermometer
- Data loggers
- Alcohol swaps
- Testing strips
- Consent forms (Each employee should complete the consent form before starting observation)

6. Observation Protocol

Each observer will arrive at the site and introduce himself/herself to the person in charge. Upon entering the kitchen, the observer should wash his/her hands, following the proper procedure.

Provide a consent form to each one of the employees/volunteers.

Select the TCS food or foods from the menu that will be used for temperature data collection.

Explain the procedure to the person responsible for preparation to ensure that you will be notified when the food is ready for the data logger (follow the temperature data collection instructions).

The data collector will fill out the observation form for each site visited. The researchers should try to be as unobtrusive as possible. The first page addresses the number of meals served, number of employees, menu items, the type of site, and other general characteristics. The remaining data collection form requires the data collector to check a box indicating whether a specific practice is in compliance with Food Code requirements, or whether it was not observed or not applicable. At several points during the site visit, the data collector will record the temperature of a food product or storage space.

For the employee hygiene portion, the observation protocol focuses on general observation of the operation rather than observation of a particular employee.

There are spaces on the form in each category where additional notes about the operation can be recorded.

Attire:

- Wear a Center or Institute shirt and slacks or khakis, no jeans.
- Closed-toe shoes
- Hair restraint
- Name Badge

Before leaving the site, the observer should review the form to make sure all information has been recorded.

7. Temperature data collection instructions

Data loggers will be used to record the temperature of foods at several points from preparation to service to determine temperature fluctuations and whether food is subject to temperature abuse.

- Download data logger software and activate data loggers before leaving for the collection site (directions for activation included with data logger). Data loggers will be set to record the temperature of the food product every 5 minutes.
- At the preparation site, purchase “test meal” and insert data logger probe into the center of the pre-determined TCS food once the food has been prepared (for example, once the sandwich has been assembled).
- To avoid confusion with food that will actually be served, label the test product “DO NOT CONSUME”. Data collectors will explain to employees that the test food products must be handled and follow the same path as food products that are actually served.
- Remove data logger from food product at food service site when food is being served. Discard the food after removing the data logger.
- After returning to KSU/Institute, the data logger will be plugged into the computer, deactivated, and the data downloaded and saved.

Appendix B:
Observation Form

Summer Foodservice Program Observation Form

I. Data Logger Information			
Data Logger 1 Start Recording Time:		Data Logger 1 End Recording Time:	
Food 1:			
Data Logger 2 Start Recording Time:		Data Logger 2 End Recording Time:	
Food 2:			

II. SITE INFORMATION			
Site Code Number:	Sponsor:	Date of observation:	
Observation time period:	Average number of meals served:	Total number of employees: Total number of volunteers:	
Number of employees observed:	Number of employees with food safety training:	Number of employees with food safety certifications:	
	Type/Hours of Training	Types of food safety certification:	
Type of Site:		Foodservice Type:	
<input type="checkbox"/>	Housing Complex	<input type="checkbox"/>	Commercially vended
<input type="checkbox"/>	School	<input type="checkbox"/>	Self-Prep On-Site
<input type="checkbox"/>	Central Kitchen	<input type="checkbox"/>	Central Kitchen
<input type="checkbox"/>	Restaurant	<input type="checkbox"/>	Satellite with preparation
<input type="checkbox"/>	Church	<input type="checkbox"/>	Satellite:
<input type="checkbox"/>	Camp	<input type="checkbox"/>	Other
<input type="checkbox"/>	Community Center	<input type="checkbox"/>	
<input type="checkbox"/>	Park	If food is delivered, how long before service?	
<input type="checkbox"/>	School Bus		
<input type="checkbox"/>	Food Bank	Time food is loaded	
<input type="checkbox"/>	Other:	Time food is delivered	

Food served by:		Food served as:	
	Staff		Box lunches
	Volunteers		Plated from serving line
	Children (18 and under)		Commercially packaged
	Other:		Sponsor pre-packaged items
			Other:
Food transported with/in:		Foods Served (Be as specific as possible, attach menu if available)	
	Ice		
	Ice packs or sheets		
	Hot packs or sheets		
	Hard sided cooler, brand:		
	Soft sided cooler, brand:		
	Hot insulated food carrier, brand:		

List of equipment observed in use for holding hot food:	List of equipment observed in use for holding cold food:

III. Employee Hygiene	Yes	No	NA	NO	Notes
1.No food employees exhibiting illness symptoms observed in the food preparation areas of the facility					
2. Employees wear hair restraints					__ # employees, __ # IC
3. Employees wear beard restraints					__ # employees, __ # IC
4. Employees observed washing hands properly					__ # employees, __ # IC
5. Employees observed washing hands as needed					__ # employees, __ # IC
6. Gloves/utensils used as needed					
7. Gloves/utensils changed properly					__ # employees, __ # IC
8. Gloves/utensils changed as needed					__ # employees, __ # IC
9. Employees' uncovered beverages and foods are excluded from the food production area					
10. Employees follow correct sneezing and coughing procedures					
11. Open sores and cuts are completely covered when handling food					

IV. Time/Temperature Control	Yes	No	NA	NO	
1. TCS foods cooked to required internal temperature					___ °F _____ Food ___ °F _____ Food ___ °F _____ Food
2. Thermometers are used to check temperatures. Type of thermometer: _____					
3. Thermometers are calibrated					
4. Wash, rinse, sanitize, and air-dry thermometers before and after use					
5. Internal cooking temperatures are checked					
6. Internal cooking temperatures are recorded					
7. Internal temperature of food is checked following the appropriate procedure					
8. Cold foods are held at 41°F or below					___ °F _____ Food
9. Cold temperatures are recorded					___ °F _____ Food ___ °F _____ Food ___ °F _____ Food ___ °F Milk _____
10. Hot foods held at 135°F or above					
11. Hot temperatures are recorded					___ °F _____ Food ___ °F _____ Food ___ °F _____ Food
12. Adequate cooling method of cooked food					
13. TCS food that is cooked and cooled on premises is rapidly reheated to 165°F for 15 seconds for hot holding					
14. Check temperature of food at the completion of reheating					
V. Cold Storage	Yes	No	NA	NO	
1. Refrigeration temperatures are checked at least daily					___ °F Internal Temperature ___ °F Internal Temperature ___ °F Internal Temperature
2. Refrigeration temperatures are recorded					
3. Raw and RTE foods are stored to prevent cross contamination					
4. Food in units is stored at least 6" off floor					
5. Units are clean					___ # of units ___ # IC
6. Food is wrapped, labeled, and dated					
VI. Cleaning and Sanitizing Work Surfaces	Yes	No	NA	NO	
1. Food contact surfaces and utensils are clean to sight and sanitized before use					
2. Clean, designated wiping cloths					
3. Wiping cloths are stored in cleaning/sanitizing solution while in use					
4. Cleaning solutions are used					
5. Sanitizing solutions are used					
6. Sanitizing solutions at correct concentrations					Type of sanitizer: _____ Concentration: _____ ppm
7. Sanitizing concentrations are documented					
8. Cleaning/Sanitizing solutions are changed as needed					
9. Separate wiping cloths are used for food and nonfood surfaces					
10. Dishes/Utensils are washed & sanitized using proper procedure					___ Manual Procedure ___ Dish Machine

VII. Preparation Facilities					Yes	No	NA	NO	
1. Proper handwashing facilities are available and accessible									____ # of units ____ # IC (_____)
2. Food contact surfaces made of appropriate materials									
3. Non-food contact surfaces are clean and maintained									
4. Adequate walls, floors, ceiling, lighting in food production area									
5. All areas are properly ventilated and clean									
6. Facility maintained inside and outside									
7. Restroom facilities with adequate supplies are available									
VIII. Transportation of Food					Yes	No	NA	NO	
1. Temperature of foods is checked when received									
2. Temperatures of food recorded when received									
3. Hot meals delivered at correct temperature									____ °F _____ Food
4. Cold meals delivered at correct temperature									____ °F _____ Food
5. Refrigerated trucks are used to deliver food									
6. Food transportation containers are in good condition									
IX. Service					Yes	No	NA	NO	
1. Hot meals served at correct temperature									
2. Cold meals served at correct temperatures									
3. Single-service utensils used at the feeding sites									
4. Share tables used									
X. Service Facilities					Yes	No	NA	NO	
1. Proper handwashing facilities are available and are accessible									____ # of units ____ # IC (_____)
2. Food contact surfaces made of appropriate materials									
3. Non-food contact surfaces are clean and maintained									
4. Adequate walls, floors, ceiling									
5. Adequate lighting									
6. Facility maintained inside and outside									
7. Restroom facilities with adequate supplies are available									

XI. Comments									

Appendix C:
Instructions Observation Form

Observation Form Instructions

The information included in this document serves as a guide to complete the Observation Form. A description of each section and adequate procedures are provided.

I. Site Information

Site Code Number: Each site will be given an ID number.

Average number of meals served: Average number of meals served at that site.

II. Employee Hygiene

➤ Employees observed washing hands properly.

As specified in Food Code 2013, "FOOD EMPLOYEES shall use the following cleaning procedure in the order stated to clean their hands and exposed portions of their arms, including surrogate prosthetic devices for hands and arms:

- Rinse under clean, running warm water;
- Apply an amount of cleaning compound recommended by the cleaning compound manufacturer;
- Rub together vigorously for at least 10 to 15 seconds while: (a) Paying particular attention to removing soil from underneath the fingernails during the cleaning procedure, and creating friction on the surfaces of the hands and arms or surrogate prosthetic devices for hands and arms, finger tips, and areas between the fingers;
- Thoroughly rinse under clean, running warm water;
- Immediately follow the cleaning procedure with thorough drying using single-use disposable towels or a heated-air hand drying device;
- A disposable paper towels or similar clean barriers may be used when touching surfaces such as manually operated faucet handles on a handwashing sink or the handle of a restroom door". (FDA, 2013)

➤ Employees observed washing hands as needed:

- Immediately before engaging in food prep
- Switching between handling raw animal foods and ready-to-eat foods
- After soiling hands during food prep or service activities
- Before donning new gloves or changing gloves
- After touching body parts, coughing /sneezing; blowing nose; eating or drinking
- After handling soiled equipment, dishes, or utensils
- Other (describe in comment section below)

➤ Gloves/utensils used as needed:

- Food employees may not contact READY-TO-EAT FOOD with their bare hands and shall use suitable utensils such as deli tissue, spatulas, tongs, single-use gloves, or dispensing equipment.

➤ Gloves/utensils changed as needed:

- Single-use gloves shall be used for only one task such as working with READY-TO-EAT FOOD or with raw animal food, used for no other purpose, and discarded when damaged or soiled, or when interruptions occur in the operation. Hands should be washed before donning gloves.
- Correct sneezing/coughing procedure:
 - Coughing or sneezing should be done into the upper sleeve, not the hands. Wash hands after coughing or sneezing.

III. Time and Temperature Control

- Internal temperature of food is checked following the appropriate procedure:
 - Insert the thermometer stem or probe into the thickest part of the product.
- Adequate cooling method should be used for food:
 - Rapid cooling methods should achieve 135°F to 70°F in 2 hours and 70°F to 41°F in 4 additional hours.

IV. Cleaning and Sanitizing Work Surfaces

- Sanitizing solutions should be at correct concentrations:
 - Check sanitizer with test strip and record PPM (Chlorine should be 50 PPM and Quat should be 200 PPM or use manufacturer's recommendation).

V. Facilities

- Proper handwashing facilities should have the proper equipment:
 - Handwashing sink with hot water, at a temperature of at least 100°F;
 - Recommended cleaning compound;
 - Single-use disposable towels or a heated-air hand drying device;
 - Waste container if individual disposable towels are used;
 - A sign notifying food employees to wash their hands.

Appendix D:
Materials Checklist

**Summer Foodservice Program Project
Observation Checklist**

Date: _____

Location: _____

Pencils	4	<input type="checkbox"/>
Pens	6	<input type="checkbox"/>
Clipboard	1	<input type="checkbox"/>
Consent Forms	15	<input type="checkbox"/>
Observation Form	2	<input type="checkbox"/>
Thermometer	1	<input type="checkbox"/>
Data Logger	1	<input type="checkbox"/>
Hair Net	2	<input type="checkbox"/>
Alcohol Pads	10	<input type="checkbox"/>
Chlorine Test Strips	1	<input type="checkbox"/>
Quats Test Strips	1	<input type="checkbox"/>
Rubberbands	6	<input type="checkbox"/>
Markers	2	<input type="checkbox"/>

Appendix E:
Initial Contact Script

Summer foodservice Program

Initial Contact Script

Good Morning/Afternoon, my name is _____, and I work for the Center of Excellence for Food Safety Research in Child Nutrition Programs/Institute of Child Nutrition. During June, July, and August, the Center and the Institute for Child Nutrition will be working on a research project about food safety practices in summer foodservice programs. We would like to know if you are willing to participate by letting us visit some of the foodservice programs in your area to observe.

For the observations, one or two researchers will visit each site to observe meal preparation and service. The observer will fill out an observation form. Researchers will remain as unobtrusive as possible. We will need a sample meal that must be handled and follow the path of one of the regular meals. This meal cannot be consumed. We will pay for that meal so the operation does not have to cover the cost. A tool called a data logger will be used on the sample meal. Thermometers and concentration test strips will also be used during the observation period.

Do you have any questions?

Appendix F:
Letter to Sites

Dear ,

More than 200 million free meals are served to children 18 years and under as part of the Summer Food Service Program. These programs ensure that low-income children continue to receive healthy meals when school is not in session. Considering the number of children served, large-scale foodborne outbreaks could occur, with potentially serious results. Our group has begun a study that should help prevent such an outbreak, and we ask for your participation.

The goal of this study is to identify the food handling practices used to prepare, transport, store, and serve meals in the Summer Foodservice Program. Both qualitative and quantitative data will be collected in the form of observations of employee practices, cleaning processes, and how food is held, as well as temperature data. Your participation is completely voluntary, and you may discontinue at any time. All results will be reported as group data, so individual observations will not be identifiable.

Site visits will take place during July and August of 2015. Each researcher will visit the site preparation location and, if the service location is different, that location as well. Each site visit will occur during the time when food is prepared and served. The researcher will be as unobtrusive as possible.

A food item will be selected so the observer can monitor the temperature from preparation to service to identify temperature fluctuations; the observer will also purchase a meal to track the temperature from preparation to service. Data loggers will be used to record temperatures. Digital thermometers will be used to sample temperatures of food and equipment.

Your participation is very important to the success of this study and to the quality of future food safety education, as well as the safety of the children served by this program. Should you have any questions about the study, please contact Ellen Thomas at (785) 532-2394. If you have any questions about the rights of individuals in this study or about the way the study is conducted, you may contact the University Research Compliance Office at (785) 532-3224. Thank you for your interest in this research project.



Cordially,

Ellen Thomas, PhD
Research Assistant Professor
Center of Excellence for Food Safety Research in Child Nutrition Programs
Kansas State University

Appendix G:
Consent Form

**KANSAS STATE UNIVERSITY
CONSENT FORM**

Summer Food Service Observation Study

APPROVAL DATE: June 2015

EXPIRATION DATE: June 2016

PRINCIPAL INVESTIGATOR: Ellen Thomas, PhD

CO-INVESTIGATOR(S):	Michelle Alcorn, MS	Kevin Roberts, PhD
	Kerri Cole	Kevin Sauer, PhD, RD
	Elizabeth Dixon, MS	Emily Vaterlaus Patten
	Paola Paez, PhD	Tracee Watkins
	Pat Richardson	Deborah Winans

CONTACT NAME AND PHONE FOR ANY PROBLEMS/QUESTIONS:

Ellen Thomas
152 Justin Hall
Manhattan, KS 66506
(785) 532-2394

IRB CHAIR CONTACT/PHONE INFORMATION:

- Rick Scheidt, Chair, Committee on Research Involving Human Subjects, 1 Fairchild Hall, Kansas State University, Manhattan, KS 66506, (785) 532-3224.
- Jerry Jaax, Associate Vice Provost for Research Compliance and University Veterinarian, 1 Fairchild Hall, Kansas State University, Manhattan, KS 66506, (785) 532-3224.

SPONSOR OF PROJECT: United States Department of Agriculture/Food and Nutrition Services

PURPOSE OF THE RESEARCH: The purpose this project is to identify current food safety practices employed in Summer Food Service Program sites, with emphasis being given to the foods served, temperature control, and where and how food is served.

PROCEDURES OR METHODS TO BE USED: Trained observers will identify what foods are served, where and how they are served, and how temperature is controlled for hot and cold foods. Temperatures of foods at high risk for pathogen growth will be recorded.

LENGTH OF STUDY: 5-7 hours per observation

RISKS OR DISCOMFORTS ANTICIPATED: No known risks to health or mental capacity are expected.

EXTENT OF CONFIDENTIALITY: Information provided will be confidential and anonymous. You will never be identified by name or sponsor that you work for.

I understand this project is research, and that my participation is completely voluntary. I also understand that if I decide to participate in this study, I may withdraw my consent at any time, and stop participating at any time without explanation, penalty, or loss of benefits, or academic standing to which I may otherwise be entitled.

I verify that my signature below indicates that I have read and understand this consent form, and willingly agree to participate in this study under the terms described, and that my signature acknowledges that I have received a signed and dated copy of this consent form.

Participant Name: _____

Participant Signature: _____

Date: _____

Witness to Signature: (project staff) _____

Date: _____

Appendix H:
Spanish Version of Consent Form

KANSAS STATE UNIVERSITY
FORMULARIO DE CONSENTIMIENTO
Observacion de los Programas de Alimentación en el Verano

FECHA DE APROBACION: 02 de Junio de 2015

FECHA DE EXPIRACION: 02 de Junio de 2016

INVESTIGADOR PRINCIPAL: Ellen Thomas, PhD

CO-INVESTIGADORES:

Michelle Alcorn, MS	Kevin Roberts, PhD
Kerri Cole	Kevin Sauer, PhD, RD
Elizabeth Dixon, MS	Emily Vaterlaus Patten
Paola Paez, PhD	Tracee Watkins
Pat Richardson	Deborah Winans

CONTACTO Y NUMERO DE TELEFONO PARA PREGUNTAS/PROBLEMAS:

Ellen Thomas
152 Justin Hall
Manhattan, KS 66506
(785) 532-2394

INFORMACION Y NUMERO DE TELEFONO DEL PRESIDENTE DEL IRB:

- Rick Scheidt, Presidente, Comité de Investigación con la Participación de Seres Humanos, 1 Fairchild Hall, Kansas State University, Manhattan, KS 66506, (785) 532-3224.
- Jerry Jaax, Vice Rector de Conformidad en Investigación y Veterinario Universitario, 1 Fairchild Hall, Kansas State University, Manhattan, KS 66506, (785) 532-3224.

PATROCINADOR DEL PROYETO: Departamento de Agricultura de los Estados Unidos/ Servicio de Nutrición
PROPOSITO DE LA INVESTIGACION: El propósito de este proyecto es identificar prácticas actuales, sobre inocuidad de los alimentos, utilizadas en sitios participantes del Programa de Alimentación en el Verano; con énfasis en los alimentos servidos, control de temperaturas y el cómo y dónde se sirven los alimentos.

METODOS O PROCEDIMIENTOS A SER UTILIZADOS: Se utilizará la observación para determinar los alimentos que se sirven, cómo y dónde se sirven y cómo se controla la temperatura en alimentos fríos y/o calientes. Se registraran las temperaturas de aquellos alimentos de alto riesgo para el crecimiento de patógenos.

DURACION DEL ESTUDIO: 5-7 horas

RIESGO O DISCONFORMIDAD ASOCIADA: No se esperan riesgos a la salud o capacidad mental de los participantes.

CONFIDENCIALIDAD: La información proporcionada será confidencial y anónima. A usted no se le identificará por nombre o lugar de trabajo.

Comprendo que mi participación en este estudio es voluntaria. Tengo el derecho de negarme a participar o discontinuar mi participación en cualquier momento sin tener que proporcionar explicación alguna, penalidad o pérdida de beneficios o rango académico al cual tengo derecho.

Mi firma en este documento indica que he leído y comprendido la información en este formulario y deseo participar bajo los términos descritos. He recibido una copia firmada y con la fecha para mi uso personal.

Nombre del Participante: _____

Firma del Participante: _____

Fecha: _____

Firma del Testigo: (Personal del Proyecto) _____

Fecha: _____