FOOD SAFETY KNOWLEDGE AND ATTITUDES: INVESTIGATING THE POTENTIAL BENEFITS OF ON-SITE FOOD SAFETY TRAINING FOR FOLKLORAMA, A TEMPORARY FOOD SERVICE EVENT

by

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Abstract

Folklorama in Winnipeg, Manitoba, Canada is a 14-day temporary food service event that explores the many different cultural realms of food, food preparation, and entertainment. The ethnic nature and diversity of foods prepared within each pavilion presents a unique problem for food inspectors as each culture prepares food in their own very unique way. In 2010, the Russian pavilion at Folklorama was implicated in a foodborne outbreak of *E.coli* O157 causing 37 illnesses and 18 hospitalizations. Both the Department of Health and Folklorama Board of Directors realized a need for implementation of a food safety delivery program that would be more effective than a simple 2-hour food safety course delivered via PowerPoint slides. Until 2011, the 2-hour food safety course delivered to event co-ordinators and food operators for Folklorama pavilions was not mandatory. The course is now mandatory in 2011 for all Folklorama pavilions. Five randomly chosen pavilions were trained on-site, in their work environment, focusing on critical control points specific to their menu. A control group (five pavilions) did not receive on-site food safety training. Critical infractions noted on standardized food inspection reports were assessed. Results of the current study suggest no statistically significant difference in food inspection scores between the trained group and control group. Results imply that the 2-hour food safety course delivered via slides was sufficient to pass public health inspections.

TABLE OF CONTENTS

List of Tables

Chapter 1 Introduction

Folklorama in Winnipeg, Manitoba, Canada is a 14-day temporary food service event that explores different cultural realms of food, food preparation, and entertainment. The ethnic nature and diversity of foods prepared within each pavilion present unique problems for public health and risk reduction. One problem in particular involves each culture preparing food in a fashion that may differ from North American health standards. Winnipeg Folklorama consists of 46 pavilions with approximately 440,000 visits annually. There are approximately 600,000 meals served and 1,000,000 beverages poured throughout the event (Folklorama, 2010). With an increasing number of visits to each pavilion annually, an outbreak would be devastating not only to the community but to the reputation of Folklorama.

In Manitoba, a temporary food service event is defined as any place where food is prepared or provided for consumption at a fixed location for 14 consecutive days or less in conjunction with a single event (Manitoba Health, 2011). All temporary food service establishments are subject to the requirements of Manitoba Regulation 339/88R, Food and Food Handling Establishments Regulation under The Manitoba Public Health Act (Manitoba Health, 2009).

Temporary food service establishments are often brief events incorporating a multitude of staff with minimal food safety experience (Manning and Snider, 1993). As such, problems may arise during food preparation, food storage, and food service. Food operators and event co-ordinators attend classroom-based food safety training sessions with no hands-on practical applications. Folklorama employs many individuals who are English as second language (ESL) students. In this respect, food safety terminology and ideologies may be confusing to the ESL

student and alternative food safety training techniques may be required (Regimbald and Shaw, 2007).

The goal of this study was to evaluate the provision of on-site, hands-on food safety training for food operators and event co-ordinators using standardized food inspection reports. The researcher developed a standardized food safety training program (Chapters 3.5-3.9) for pavilions to be trained. The food safety training was 2 hours in length which covered all food related practices relevant to temporary food service. For instance, the operator and researcher physically washed pots via the three compartment sink method as per the MR 339/88R for effective and safe dishwashing. The researcher also developed and discussed, with both the food operator and event co-ordinator, menu-specific critical control points (CCP-s). A critical control point is defined by the Food and Drug Administration (FDA) as a step at which a control can be applied and is essential to prevent or eliminate a food safety hazard or reduce it to an acceptable level (FDA, 1997).

1.1 *Scope of the study*

In 2010, the Russian pavilion at Folklorama was implicated in a foodborne outbreak of *E.coli* O157 causing 37 illnesses and 18 hospitalizations due to cross-contamination between raw ground meat and juice compote (WRHA 2010). Both Manitoba Health and Healthy Living and Folklorama Board of Directors realized the need for a revised food safety program that would be more effective than the previous 2-hour food safe course delivered via slides. Until 2011, the 2-hour food safety course was not mandatory; however, because of the 2010 outbreak, the course is now mandatory according to Manitoba Health and Healthy Living and Board of Folklorama for food operators and/or event co-ordinators of each pavilion.

An evaluation of on-site, hands-on food safety training for a temporary food service event, such as Folklorama, has never been documented in the literature. Furthermore, assessing menu items to develop and explain CCP-s with the food operator/event co-ordinator has not been tested nor documented. This study attempted to determine the benefits of this enhanced, specific food safety training by assessing the number of critical infractions incurred through public health inspection reports.

Chapter 2 Literature Review

The importance of training food handlers is acknowledged as critical to effective food hygiene; however, there have been limited studies on the effectiveness of such training (Egan *et al.*, 2007). Food safety training courses are administered worldwide in attempts to reduce outbreaks in restaurant and temporary food service establishments. However, food handlers often exhibit a poor understanding of microbial or chemical contamination of food and the measures necessary to correct them (Hobbs and Roberts, 1993). Many studies on this subject matter tend to be conducted on a short-term basis; longer-term evaluations are required to properly assess behavioral changes in food operators (Egan *et al.,* 2007). The World Health Organization (WHO 2001) suggests that the most critical line of defense against foodborne disease is the implementation of a food safety education program. Research indicates that three major obstacles food service staff must overcome to effectively reduce foodborne outbreaks are a lack of food safety knowledge, lack of applicable knowledge into practice, and work-site barriers (Ehiri *et al.,*1997; Egan *et al.*, 2007; Seamen and Eves, 2006). Pragle *et al.* (2007) suggest that providing a hands-on format of training would be more beneficial than traditional classroom-based programs, yet there is limited research in the literature demonstrating this point.

Regulatory bodies employ environmental health professionals to inspect food service/temporary food service establishments. Inspections of such establishments are meant to determine compliance with food safety regulations and promote health education. However, over the last 30 years, the frequency of foodborne illness has increased by over 300% (WHO, 2001), in part due to better detection and surveillance methods. Active surveillance in the United States has led to the estimate that foodborne diseases cause nearly 48 million illnesses, 128,000

hospitalizations, and 3000 deaths each year (CDC, 2011). In Canada, there are approximately 11 to 13 million cases of foodborne disease per year (Health Canada, 2006). Furthermore, the burden of foodborne disease is underestimated as only a few illnesses can be directly attributed to food via diagnostic testing and studies may use different definitions to assess acute diarrheal illness (WHO, 2008). A joint Food and Agriculture Organization/World Health Organization expert committee on food safety concluded that illness due to contaminated food was the most widespread health problem in the contemporary world (Kaferstein *et al.,* 1997).

Temporary food service establishments present a unique concern in terms of food safety. A temporary food service event is defined as any place where food is prepared or provided for consumption at a fixed location for 14 consecutive days or less in conjunction with a single event (Manitoba Health, 2011). All temporary food service establishments are subject to the requirements of MR 339/88R under The Manitoba Public Health Act including routine public health inspections by an appointed Public Health Inspector. Temporary food service events typically include fairs, festivals, farmers markets, church functions, and Folklorama events. The majority of workers in such establishments tend to be volunteers with minimal food safety experience (Manning and Snider, 1993). Furthermore, food handling practices associated with multicultural temporary food events may differ from North American standards/regulations. Language barriers may further exacerbate concerns with understanding food safety terminology and practices (Regimbald and Shaw, 2007).

Temporary food service events attract large numbers of people within a short period of time, and thus, only a few food violations may make the establishment an unsafe place to eat

(Choi *et al.,* 2010). Table 1 is a review of documented foodborne disease outbreaks at temporary food service events globally.

Table 1.1- *Review of temporary food service event outbreaks globally (1990-2010)*

Setting	Etilogic Agent	# ill	Source of contamination
Sasquatch Festival (Yakima Herald, 2010)	*Salmonella*	7	Unknown.
Folkorama (WRHA, 2010)	*E.coli*	37	Post contamination of juice compote, which is fruit boiled with sugar, allowed to cool and served at room temperature, with raw ground beef.
Music Festival (Lee *et al.,* 1991)	*Shigella sonnei*	3175	Uncooked tofu salad implicated in the outbreak. Sick food handlers and limited access to soap and running water.
Taste of Chicago (Chicago Tribune 2007)	*Salmonella*	>630	Unknown. Restaurant implicated in the outbreak, suspect food was fresh herb cucumber salad served over hummus.
Mass Gathering (Wharton *et al.,* 1990)	*Shigella*	185	Unknown. Food prepared in multiple locations with limited access to handwashing facilities. Sick persons were not excluded from food preparation.
Mass Gathering (Gessner and Beller, 1994)	*Shigella*	19	Moose soup was prepared in private (unlicensed) homes. One food operator was known to have had a gastrointestinal illness during food preparation.
Community Meal (CDC, 1997)	*Salmonella*	18	Temperature abuse (inadequate food holding).
Church Supper (Delpech *et al.,* 1998)	*Salmonella typhi*	22	Contaminated pork during the de-boning process that was inadequately cooked.
Church Supper (Kirkland *et al.,* 1996)	*Norovirus*	27	Contaminated oysters. The oysters were steamed, however, this was not found to be sufficient in inactivating small round structured virus.
Church Fundraiser (Castel *et al.,* 2005)	*Salmonella enteriditis*	104	Crabcakes were prepared in an unlicensed facility. They were prepared using raw eggs which were inadequately cooked. Thermometers were not used to verify internal cooking temperature.
Buffet (Holtby *et al.,* 2008)	*Clostridium perfringens*	54	Chicken curry. Poor temperature and time control. Inadequate reheating of the chicken curry.
Festival (Camps *et al.,* 2005)	*Salmonella enteriditis*	1435	Hard pastry with vanilla ice cream was implicated in the outbreak. Inadequate handling of food that contained eggs due to the facility exceeding its` safe food production capacity.
University Festival (Kitamoto *et al.,* 2009)	*Staphylococcus aureus*	75	Advance preparation of crepes that were served with fruit, pudding, and cheese cake. Improper cooling of crepes and crepes left out at room temperature for an extended period of time.
High School Dinner (Pakalniskiene *et al.,* 2009)	*E.coli; Salmonella* Anatum	200	Pasta salad and pesto were implicated in the outbreak. The imported basil was the most likely cause of the outbreak.

There is limited research on temporary food service events in terms of assessing knowledge, practices, and behaviors; therefore this review will reference permanent food service establishments. According to Lynch *et al*. (2006), foodborne disease outbreaks occur more frequently in restaurants than at home. This may be due to restaurant operators trying to constantly meet the high demand of people that dine out. In doing so, food is prepared either in advance or very quickly to meet such volumes. As a result, food safety may be compromised and one may experience a foodborne illness. According to the U.S. National Restaurant Association (2000), half of all adults are restaurant patrons on a typical day (Hine *et al*., 2003). Surveillance data further confirms that a significant percentage of reported outbreaks are associated with restaurants (Olsen *et al.,* 2000). These outbreaks can have devastating consequences, not only at the individual level, but also at the economic and societal level. Research indicates that a lack of food safety knowledge is one of the major contributors to foodborne illness (Salazar *et al.*, 2005).

2.1 *Food Safety Knowledge*

Food safety courses are administered worldwide as a means to inform food service workers on matters of food safety. Furthermore, data suggest that the food service industries are more likely to hire workers trained in food safety (Hine *et al.*, 2003). The expectation in providing these courses is ultimately to reduce the incidence of foodborne illness (Kassa *et al.*, 2010). However, there are conflicting results in the literature. For instance, Hammond *et al.* (2005) found that critical food violations actually increased after training. Furthermore, Ehiri *et al.* (1997) suggest that there are no significant improvements after training on a number of critical concepts in food safety such as, food storage, cross-contamination, temperature control, and high risk foods. The authors further identify problems in training regimes that tend to rely

merely on dissemination of information with no practical re-enforcement. Powell *et al.* (1997) determined that there was no relationship between the level of knowledge of staff and hygiene standards in restaurants. Cates *et al.* (2009), however, suggest that the presence of a certified kitchen manager is protective for the majority of critical food violations, and therefore employing and properly training such a manager is essential to ensuring a safe food product. Kneller and Bierma (1990); Cook and Casey (1979); and Mathias *et al.*,(1995) found that health inspection scores increased after food safety training, thereby implying the knowledge imparted from food safety training is sufficient in achieving higher inspection scores.

Knowledge regarding some of the key principles in preventing foodborne outbreaks, such as use of thermometers to verify safe internal food temperatures, is often overlooked and could potentially result in illness. For instance, Green *et al.* (2005) in their study of assessing food safety practices indicate that half of their respondents did not use a thermometer to properly ensure safe internal food temperatures. As such, this imposes a critical concern regarding food safety. Askarian *et al.* (2004) assessed knowledge, attitudes, and practices of food service staff on food hygiene in government and private hospitals. The study illustrated that staff comprehension, regarding pathogens that cause disease and the correct temperature for the storage of hot and cold foods, was limited. They further suggest that additional food safety courses and manuals be easily available for staff, however, the validity of such a comment has not been successfully proven.

A similar study assessing food hygiene knowledge, attitudes, and practices in food businesses in Turkey revealed an immediate need for education and increasing awareness among food handlers on food safety practices (Bas *et al.*, 2006). Seven hundred and sixty-four food handlers participated in the study that used a multiple choice questionnaire survey to determine

food safety knowledge. The questionnaire was sent out to the participants and followed up by a face-to-face interview. There were ten interviewers who were trained by the researchers to assess the accuracy of responses. However, it is important to note that interviewers' background was in nutrition and dietetics, not food safety. The study revealed a lack of knowledge among food handlers regarding critical temperatures of hot or cold ready-to-eat foods, refrigeration temperatures, and cross-contamination.

A study conducted by Angellilo *et al.* (2001) examined foodservice staff in hospital environments. The results suggested a lack of knowledge regarding temperature of food storage of hot and cold foods, the identification of pathogens associated with foods, and common food vehicles that transmit pathogens. The study recommends food safety training and implementation of a hazard analysis critical control points (HACCP) system to reduce the likelihood of a foodborne illness in the hospital setting.

HACCP is a food safety management tool utilized worldwide in many small and large food service businesses. However, in a study conducted by Walker *et al*. (2003), lack of knowledge not only is a major contributor to the rise of illness but also a major obstacle to the implementation of safety programs, such as HACCP, geared toward decreasing such outbreaks. The authors evaluated food handlers' hygiene knowledge in small food businesses by way of a questionnaire survey to demonstrate that a lack of knowledge is a significant barrier to an effective HACCP program. Four hundred and forty-four food handlers from 104 small food businesses participated in the study. Results suggested poor understanding of food safety knowledge, in particular, temperature control, bacterial multiplication rates, and lack of knowledge regarding food poisoning. Fifty-seven per cent of participants thought that one could tell if food was contaminated with bacteria by sight, smell, and taste; 55% of 444 participants

had received some sort of formal food safety training. The paper does not successfully distinguish between these two groups of participants in the study. Acquiring food safety knowledge is one component in attempting to reduce the likelihood of a foodborne illness. More important is the translation of knowledge into practice.

2.2 *Translating Food Safety Knowledge into Practice*

The provision of knowledge to change food safety attitudes and behaviors has not been adequately proven in the literature (Seaman and Eves, 2006). An effective food training course should not only provide food safety information, it should implement knowledge into practice for proper information retention. Campbell *et al.* (1998) suggests that implementation of a food safety training regime must target both managers and food service workers; furthermore the course must be active, such as a workshop. Food safety training courses are often administered via computer-based programs, classroom-based seminars, or hands-on training (Seaman and Eves, 2006). Little research has confirmed the effectiveness of hands-on training delivered in the work environment. Rennie (1994) suggests that training programs that are more closely associated with the work site with practical reinforcement of hygiene messages are more effective than traditional methods of training. Practical in house, hands-on training tends to be the most favorable approach in relaying food safety messages (Hendry *et al.,* 1992). Further research with temporary foodservice establishments is necessary to effectively demonstrate this point.

Food safety training will lead to an improvement in food safety if the knowledge imparted reflects a positive change in behavior (Seaman and Eves, 2006). For instance, a manager of food service establishment in South Carolina that received food safety training was required to take an exam for evaluation purposes. Six months after passing the exam, an

outbreak of salmonellosis, involving 135 confirmed cases and approximately 800 affected persons occurred in his establishment (Rennie, 1994). This suggests that the information was not translated into effective food safety practice thereby causing a substantial outbreak.

The majority of food safety courses rely solely on the dissemination of information with very little emphasis on practice which is ineffective (Egan *et al.,* 2007). They tend to adopt the Knowledge, Attitudes, and Practices (KAP) model which has substantial limitations (Griffith, 2000). This model has become synonymous with health education and assumes an individual's behavior is dependent on their knowledge and the provision of information alone will lead to a direct change in attitude and thus behavior (Bas *et al.,* 2006). However, one such limitation to this model is that it assumes that people who are provided with food safety information will act upon the information gained (Ehiri *et al.,*1997). Ehiri *et al.*(1997) in their study of evaluating a food hygiene training course in Scotland noted that after the training, there was no significant improvement in course participants' pre-course knowledge of a number of crucial aspects of food safety, including food storage, cross contamination, temperature control, and high risk foods. This reflects poor training designs whose sole purpose is to comply with regulations and produce certified personnel. MacAuslan (2003) also suggests training in food safety relies too heavily upon attaining a certificate rather than paying attention to achieving competency in food hygiene practice.

Behavioral changes in food safety will not occur as a result of training alone (Clayton *et al.*, 2002). Roberts *et al.* (2008) conducted an assessment of knowledge and behavior on three food safety practices in the work environment: cross contamination, personal hygiene, and time/temperature abuse. The study suggests food safety training can have a significant impact on improving knowledge and behaviors of food operators; however, an increase in knowledge alone

does not necessarily guarantee a change in behavior. Pre-and-post training observations were assessed by trained researchers during restaurant hours. Throughout the observations, researchers determined whether or not food related behaviors were performed correctly. A critical flaw in the study design was that behaviors were directly affected when monitored, otherwise known as the Hawthorne effect. The Hawthorne effect describes positive behavioral results in intervention studies due to the awareness of being directly monitored (Wickstrom and Bendix, 2000).

Kirby and Gardiner (1997) assessed the effectiveness of health education in changing food handler behavior in a case control study. A food safety course was administered by one central body with 20 food premises assessed before and after completion of the food safety training course. A control group was studied concurrently. The study suggests that the food safety training course made little or no difference to the practices/behaviors in the kitchen. Pilling *et al.* (2008) evaluated the effectiveness of knowledge, behavioral antecedents, and behavioral compliance between two groups of food handlers in restaurants. The first group had all food handlers trained in food safety. Alternatively, the comparative group had only shift managers trained. Results suggested there was no difference in having either shift managers knowledgeable in food safety or having all food handlers trained. Observations in the study included handwashing, the use of a thermometer, proper handling of food, and work surfaces. It is important to note that training regimes for both groups may have differed significantly. One group may have had better food safety training than the other which may have affected the results. One food safety training model may have proven to be more effective than the other. Furthermore, direct monitoring from researchers will alter behaviors via the Hawthorne effect.

Chapman *et al.* (2010) evaluated the provision of infosheets, a communication tool, designed for food handlers to assess whether the infosheets had any bearing upon food safety behavioral practices. Infosheets are posters that contain food safety information built around stories. Infosheets were posted in visible locations throughout the restaurant to assess food handler practices. Visual observations via video surveillance of 47 food handlers, pre-and post-observations, in eight food service establishments were analyzed. Results suggest that infosheets had a positive influence in behavioral change among food handlers. The videotaping may have decreased bias from the Hawthorne effect.

2.3 *Work-Site Barriers*

To modify food safety behaviors, work-site barriers must be taken into consideration. Food safety research suggests that barriers in the work environment will impact employees' food safety attitudes and behaviors. Such barriers include a lack of technical resources, poor working conditions, high staff turnover, and lack of funds for training (Seamen and Eves, 2006). Food operators must overcome these barriers to achieve an environment that will reduce foodborne outbreaks. Furthermore, factors that play a significant role on employees' behaviors are directly correlated with organizational structure in the company, the level of job satisfaction, labor conditions, and relations between employees and their supervisors (Jevsnik *et al.,* 2008). Clayton *et al.* (2002) suggest barriers such as lack of time, lack of staff, and a lack of resources will ultimately affect food safety behaviors. In their study to determine food handlers' beliefs and self-reported practices, 95% of the food service staff had received some sort of formal food safety training, yet 63% admitted to not carrying out food safety behaviors. Food safety practices will only be implemented given adequate resources and the proper attitude of management. This is consistent with Seamen and Eves (2006) who suggest proper food handling

and effective implementation of training programs depend highly on qualified, positive managers. In order to be effective, food hygiene training must target changing those behaviors most likely to result in foodborne illness (Egan *et al.*, 2007).

Temporary food service events, such as Folklorama, have food operators and volunteers with English being their second language (ESL). As such, food safety terminology and practices may not be clear to the ESL operator. Regimbald and Shaw (2007) indicate that ESL students frequently have difficulty finishing food safety training due to language barriers. Furthermore, they suggest that the only possible means of overcoming such an issue is to change class format, presentation style, and evaluation methods.

2.4 *Research Needs*

Evaluating the effectiveness of food safety training courses has been researched and documented extensively with conflicting results. Studies that assess knowledge and behavior of food service staff/managers have relied on survey questionnaires, either mailed or via telephone, to determine if a food safety course was beneficial. Furthermore, it is imperative that the knowledge acquired from such courses translates into positive behavioral changes. However, there is a need to effectively assess behavioral changes in the food industry as opposed to merely relying upon visual observations which affect food handler performance via the Hawthorne effect.

There are limited studies evaluating the provision of food safety training targeting ethnic groups. There is a need to assess and evaluate food safety programs that are geared to such groups taking into consideration possible language barriers. Furthermore, preparation of ethnic foods may differ from North American standard therefore further research should target this need.

All of the aforementioned obstacles in translating knowledge into practice in order to reduce the incidence of foodborne outbreaks apply primarily to permanent food service events. Thus, further research is required in targeting food operators' knowledge, practices, and behaviors at temporary events and to determine if on-site training is effective in decreasing, and ideally, preventing such communicable diseases. Moreover, there is limited research to assess the implementation of a HACCP based program at temporary food service events, such as Folklorama.

Traditional food safety courses rely on examinations to evaluate the effectiveness of training courses. Food safe courses tend to be a one-day 8-hour training session followed by an examination to determine knowledge retention. There is a need to evaluate alternative methods of assessing knowledge such as practical demonstrations rather than a written examination.

Chapter 3 Materials and Methods

3.1 *Experimental design*

Folklorama in Winnipeg, Manitoba, Canada is a 14-day temporary food service event that explores the different cultural realms of food, food preparation, and entertainment. Winnipeg Folklorama was first held in 1970 with 21 pavilions and hosted more than 75,000 visits. Due to its overwhelming success and popularity, Folklorama has occurred ever since (Folklorama, 2010).

In 2011, there were 46 Folklorama pavilions stationed throughout the City of Winnipeg in cafeterias or canteens that provide food service and entertainment. Each pavilion was approved and issued a permit by a Public Health Inspector prior to commencement. Public Health Inspectors evaluated each site for provisions of hand-washing facilities, including adequate number of hand sinks, soap and paper towels, and running warm and cold potable water. Inspectors also ensured that each facility had adequate refrigeration units for the event, a triple compartment sink for utensil and dishwashing, and a mechanical high temperature or chemical dishwasher. Inspectors verified that food contact surfaces of food preparation equipment were protected from contamination and that adequate and properly constructed equipment was installed in a manner that food would not become contaminated (Manitoba Health, 1988). Prior to approval, each pavilion must provide the Public health Inspector a completed food registration form that includes pavilion contact information and menu items to be served.

Folklorama pavilions in the provincial jurisdiction falling under the mandate of Manitoba Health and Healthy Living participated in the study. In Manitoba, there is split jurisdiction between the Province of Manitoba and the City of Winnipeg. The Province of Manitoba employs

Public Health Inspectors that govern Winnipeg suburbs and rural municipalities. The City of Winnipeg employs Public Health Inspectors that cover the City downtown core. City of Winnipeg Inspectors use a different health inspection form that would have imposed inconsistencies within the study design and therefore were not involved.

All 46 Folklorama pavilions prepared dishes involving perishable food. Of the 46 pavilions, five were randomly chosen to receive hands-on, on-site specific food safety training by the researcher, a Certified Public Health Inspector in the Province of Manitoba. Perishable food as defined by MR 339/88R is any food that consists in whole or in part of milk or milk products, eggs, meat, poultry, fish, shellfish, edible crustacea, or other ingredients, including synthetic ingredients, in a form capable of supporting rapid and progressive growth of infectious or toxigenic microorganisms, but does not include foods which have a pH level of 4.6 or below or a water activity value of 0.85 or less (Manitoba Health, 1988).

Hands-on, on-site food safety training involved a myriad of food safety practice demonstrations with the food operator and event co-ordinator prior to Folklorama event. On-site training followed the food safety training program discussed in Chapters 3.5-3.9. The food safety training was 2 hours in length and covered food preparation and service practices relevant to the temporary food service. Trained pavilions were coded as pavilions A-E. A randomly selected control group selling perishable food (five pavilions) that did not receive on-site food safety training was assessed and coded as pavilions A1-E1, respectively, n=10 as the total sample size. All 46 Folklorama pavilions were notified at the onset of the study by Winnipeg Folklorama Board that a food safety study was to take place in 2011. The food operator and event co-ordinator for the 10 randomly chosen pavilions agreed to participate in the study.

The current study was submitted for review to the Committee for Research Involving Human Subjects (IRB) at Kansas State University on February 2, 2011. The research was considered exempt from IRB and on-site training commenced in June, 2011.

Prior to on-site food safety training of the five selected pavilions, the food operator and/or event co-ordinator of all Folklorama pavilions (46), attended a mandatory 2-hour basic food safety course tailored for Folklorama. The food safety course was administered by two Certified Public Health Inspectors via PowerPoint slides that covered food safety topics relevant to food service. The 2-hour course covered proper food holding temperatures, food safe internal temperatures, personal hygiene, cleaning and sanitation, pest control, and chemical testing. The course was made mandatory in 2011 by Manitoba Health and Healthy Living and Winnipeg Folklorama due to the Winnipeg Russian pavilion outbreak of *E. coli* O157 in 2010. The 10 pavilions chosen for the study participated in a food safety survey, after the delivery of the 2-hour food safety course, to attain baseline food safety knowledge. The survey placed a strong emphasis on food holding temperatures, food safe internal temperatures, and food preparation sanitizer questions. The survey was designed to determine food safety knowledge retention from the 2-hour food safety course. All answers were rated by the researcher as excellent, good, fair, or poor (Appendix A). The survey was administered in person to either the food operator or event coordinator who attended the food safety course. Volunteers were to required to attend the food safety course. Note: Question five on the survey (When would you wash your hands?) was eliminated due to the subjective nature of answers. There was a wide range of answers ranging from “all the time” to “before handling food”, “after smoking”, “after using the washroom”, etc. which made it difficult to scale as either an excellent answer, good, fair, or poor. All answers to

this question were correct but difficult to assess; as such, the question was not included in the data analysis.

Pavilions A-E submitted their menus to the researcher in advance for review. Each menu was assessed to establish CCP-s for perishable foods along with corrective procedures discussed on-site. A food safety poster was left with trained pavilions providing reference tips on food safety to alleviate concerns with memorizing food safety information, in particular, food safe internal temperatures (Appendix B). Inspections of the 10 chosen pavilions were performed by six Certified Public Health Inspectors using a standardized Food Protection Inspection Report through Hedgehog software. Inspections occurred after the delivery of the 2-hour food safety course and on-site food safety training. The Food Protection Inspection Report consisted of 11 criteria that focus on food safety and food hygiene for temporary food service events (Appendix C). Hedgehog is a software program designed to assist environmental health professionals through standardized health inspection forms that are tailored to meet an organizations needs. Inspectors were not informed of which pavilions received the on-site training to reduce bias.

Table 3.1- *Training dates for pavilions A-E.*

Pavilion A	**Pavilion B**	**Pavilion C**	**Pavilion D**	**Pavilion E**
August 5, 2011	**July 11, 2011**	**June 23, 2011**	**August 3, 2011**	**July 20, 2011**

3.2 *Data Collection*

Food safety surveys were administered to the 10 chosen pavilions, in person, prior to the Folklorama event, to obtain baseline food safety knowledge. The food safety survey was administered to both the control and trained groups after the 2-hour food safety course and consisted of 11 criteria to assess baseline knowledge retention.

Data collection for the 10 pavilions chosen for the study was through unannounced public health inspections by six Certified Public Health Inspectors employed by the Province of Manitoba. The purpose of inspections was to determine compliance with the MR 322/88R under the Manitoba Public Health Act.

Each pavilion had a minimum of 3 public health inspections to determine compliance with MR 339/88R. Two randomly chosen inspection reports per pavilion were used to assess critical violations. The results from the inspection reports were compared between the trained and the control groups focusing on major critical violations (Appendix H).

The inspection form consists of 11 criteria and if observed occurrences were IN COMPLIANCE, the data were marked as "YES". In the event observed occurrence NOT IN COMPLIANCE, data marked as "NO". Definitions are as follows:

- **YES**- In compliance with MR 322/88R. Comment section allows for public health inspector comments or observations.
- **NO**- Not in compliance with MR 322/88R. For instance, if hot holding temperatures for food products were held below 60°C (140°F), this option will be selected. A canned comment, which is an existing observational comment taken directly from MR 339/88R in a drop box format in Hedgehog, or inspection notes will be provided in the comment section.
- **CDI**- Corrected during the inspection. For instance, no sanitizer available and upon request from the inspector, the sanitizer was prepared correctly at time of inspection, CDI will be indicated. A canned comment, which is an existing observational comment taken

directly from MR 339/88R in a drop box format in Hedgehog, or inspection notes will be provided in the comment section.

- **N/O**- Not observed at time of inspection. For instance, hot foods cooled within a 6 hour time frame, if this was not directly observed by the inspector, N/O will be checked.

3.3 *Data Analysis*

The Statistical Analysis System (SAS), version 9.2 was used in the analysis of the survey and inspection report results. The food safety survey was administered to both the control and trained groups after the 2-hour food safety course. Food safety survey data for all 10 pavilions were analyzed and scaled blindly by the researcher to determine if answers were excellent (3 points), good (2 points), fair (1 point), or poor (0 point). The highest attainable score per question was 3 points for a total overall score of 33 points (Table 3.2). A percentage of total scores was then measured. For instance:

Table 3.2- *How do you clean and sanitize food preparation surfaces?*

Excellent (3pts.)	Good (2 pts.)	Fair (1 pt.)	Poor (0)
All food preparation surfaces must be washed with soap and water, rinsed, then sanitized using an approved sanitizer	**Surfaces sanitized with an approved sanitizer i.e. chlorine, quaternary ammonia or iodine**	**Wash with soap and water**	**I do not know**

Survey questions were further analyzed to determine if there was a statistical significant difference in knowledge between the trained and control groups using Analysis of Variance (ANOVA). F-tests, p-values, and means with standard errors are reported for each group and survey item.

The categorical response (YES,NO,CDI) of each of the eight health inspection criterion from the Food Protection Inspection Reports for the 10 randomly chosen Folklorama pavilions were analyzed to determine the potential benefits of on-site food safety training. Inspection data

were tested by item and time, comparing the first inspection scores between the trained and control groups, followed by second inspection scores, using Pearson's chi-square (χ^2) and Fisher's exact test. Furthermore, inspection data for item 4, which is a critical food temperature criterion, was analyzed by collapsing "corrected during inspection" (CDI) and "not in compliance" (NO). *P*-values of less than 0.05 for chi-squared (χ^2) were considered significant for both the survey results and inspection data.

3.4 *On-site Training Regime*

On-site food safety training used a modified version of hazard analysis critical control points (HACCP), a food safety management tool. The purpose of using HACCP was to reduce the likelihood of foodborne outbreaks by identifying CCP-s for perishable foods. Once the hazards were identified, corrective measures were implemented to reduce the risk. The operator explained the process of food preparation and food service and CCP-s were identified along with corrective actions.

The majority of staff at Folklorama are volunteers with minimal food safety experience (Manning and Snider, 1993); therefore, it is necessary to present critical control points in a manner that is compelling and easy to follow. Flow diagrams for each of the critical food menu items (Chapters 3.5-3.9) identify the process and preparation of food products with CCP-s highlighted in red.

Pavilions A-E followed the set on-site training protocol, developed by the researcher, who covered all aspects of proper hygiene and food safety pertaining to temporary food service events. The on-site food safety training protocol was as follows for pavilions A-E and is in accordance with the MR 339/88R under the Manitoba Public Health Act, except where noted.

1. ***Transport of food to kitchen*.** The food operator learned how to test internal food temperatures using a metal stem probe thermometer. Food products delivered by Health-approved food service operations such as caterers or restaurants must provide food either frozen, cold (<5°C/40°F), or hot (>60°C/140°F) for the event. The food operator will test the food products upon arrival to ensure proper food safety temperatures and document accordingly. The concept of the "*danger zone,"* the zone that supports rapid bacterial multiplication, between (<5°C/40°F) and (>60°C/140°F) was reinforced throughout the training session. In the event food, which is required to be transported either cold (<5°C/40°F), hot (>60°C/140°F), or frozen is not at the required temperature upon arrival, the food operator will determine corrective actions at that time and document in the food safety log book provided by the trainer. All foods must originate from an approved food source, that is, a food source that complies with the provisions of MR 339/88R and that has been inspected and permitted by a provincial or federal body.
2. ***Sanitizer with test strips.*** Food operators learned how to make a sanitizer (chlorine) solution on-site. All trained pavilions used a chlorine-based sanitizer for food contact surfaces. Solution will be changed every two to three hours depending on use to attain optimal sanitizer strength (100 ppm) throughout the event. The trainer provided a laminated sanitizer sticker which was taped on the sanitizer bucket to verify the strength of the solution (color coded and circled) **(Appendix D).** Test strips used to verify the concentration of the solution were provided and proper use of strips was demonstrated on-site. Once tested, the food operator had to document concentrations in the food safety log book provided throughout the event.

3. ***Three compartment sink (methodology).*** The food operator learned how to effectively use pots to perform the three compartment sink method which was demonstrated by the trainer. All three sinks were first washed with soap and water then rinsed to reduce microbial loads. First compartment sink was filled with soap and warm water for pot washing. The second compartment sink was filled with warm water to rinse off the surfactant (soap) prior to the third step. The third sink was filled with warm water at 24°C (75°F) and chlorine at a concentration of 50 ppm as per the MR 339/88R. The solution was tested with chlorine test strips to verify the concentration during the event. The trainer provided a sanitizer sticker (laminated) which was taped onto the third sink to verify the strength of the solution (color coded and circled) **(Appendix E).** Pots were required to remain in the third sink (sanitizer) for a minimum of 7 seconds as per FDA Food Code for effective oxidation of microbial cells, followed by air drying (FDA, 1999).
4. ***Mechanical chemical dishwasher.*** The operator learned how to use chlorine test strips to verify the concentration of residual chlorine on dishware (50 ppm). The operator was required to check the dishwasher daily and document in the food safety log book throughout the event.*
5. ***Mechanical high temperature dishwasher.*** The operator learned how to use thermolabel strips to ensure a final rinse temperature of 71°C (160°F) for at least 10 seconds for effective microbial inactivation. The operator will check the dishwasher daily and document in the food safety log book during the event. **
6. ***Handwashing.*** The trainer demonstrated proper handwashing technique. Proper handwashing procedure was as follows: take off jewellery, wash hands with soap and water using friction for a minimum of 10 seconds, dry hands with a paper towel and close

the taps with a new paper towel to prevent hand contamination. An egg timer was on-site during the event which was scheduled to ring every 30 minutes as a reminder for all volunteers and staff was instructed to wash their hands. Although the egg timer is meant as a reminder, staff must wash their hands as often as necessary to prevent food contamination. Food operators had to ensure a constant supply of soap and paper towels at all times for handwashing throughout the event.

7. ***Hair nets, aprons, and gloves.*** In the event the food operator had a cut or abrasion on their hands, they were trained to use band-aids to prevent potential food contamination. Furthermore, gloves were used during food preparation and food service as an extra precautionary measure. Gloves were not meant to be a substitute for handwashing. The trainer taught the operator to properly wash hands prior to wearing gloves and after removal of gloves. Hair nets which also included caps, hats, bandanas, were used by all food service staff as well as clean outer garments throughout the event.
8. ***Metal stem probe thermometer***. The trainer demonstrated how to properly calibrate probe thermometers using an ice bath. The food operator had to log the temperature of the calibrated thermometer into the food safety log book during the event. The trainer demonstrated the proper use of the probe thermometer with the food operator. A poster was left on-site indicating internal food safe temperatures for different meats as well as re-heating temperatures. The food operator was instructed to use 70% isoproponol alcohol wipes to sanitize the probe thermometer after each use.
9. ***Food safety log books***. Pavilions A-E received a food safety log book **(Appendix F).** The log book included:

a. **Food receiving temperature sheet:** The food operator learned how to record food temperatures upon arrival. Frozen foods were indicated as such. The food operator was instructed to determine what to do in the event of a problem and document corrective actions throughout the event.
b. **Food temperature sheet:** The food operator learned how to test internal food temperatures using a metal stem probe thermometer and document accordingly. The food operator was instructed to determine what to do in the event of a problem and document corrective actions throughout the event.
c. **Refrigeration/cooler temperature sheet:** The food operator was required to check cooler temperatures twice daily and document accordingly during the event. The food operator had to determine what to do in the event of a problem and document corrective actions throughout the event.
d. **Cooling temperature sheet:** The food operator learned how to cool hot foods from 60°C (140°F) to 5°C (40°F) within 6 hours. The food operator was trained to test the food product on an hourly basis and document accordingly.***
e. **Hot holding temperature sheet:** The food operator learned how to use the metal stem probe thermometer for hot holding units to ensure a temperature of >60°C (140°F) and document accordingly. The food operator had to determine what to do in the event of a problem and document corrective actions throughout the event.
f. **Cold holding temperature sheet:** The food operator learned how to use the metal stem probe thermometer for cold holding units to ensure a temperature of <5°C (40°F) and document accordingly. The food operator had to determine what to do in the event of a problem and document corrective actions throughout the event.

10. *Critical control points (CCP-s).* The trainer assessed menu items for pavilions A-E in advance and chose the most perishable /high risk food items to identify CCP-s with the food operator (Chapter 3.5-3.9).

11. *Cooling/reheating.**** No re-heating was allowed on-site. Proper cooling of food products was demonstrated on-site. This involved sub-dividing batch foods into smaller batches in containers no greater than two inches to facilitate rapid cooling. All foods had to be cooled to 20°C (68°F) within four hours and from 20°C (68°F) to 5°C(40°F) an additional two hours for a total cooling time of six hours. A cooling log sheet was left with the operator to test foods hourly and document throughout the event.

12. *Hot/Cold holding food temperatures.* A laminated food safety poster was left on-site indicating proper hot/cold holding temperatures, in particular, "*danger zone*" temperatures. All food operators were required to test hot/cold holding temperatures using a metal stem probe thermometer throughout the event and document into the food safety log book.

13. *Monitor refrigeration temperatures.* The food operator will monitor cooler temperatures daily during the event to ensure temperatures were maintained at <5°C (40°F). A functional thermometer was placed into each cooler to verify the required cold holding temperature. Corrective actions were documented if coolers did not hold proper temperatures throughout the event.

14. *Food samples in freezer and labelled.* The trainer demonstrated on-site how to take a food sample and seal it into a sterile food sample bag. The food operator was provided with sterile food sample bags and sterile plastic spoons to take food samples. Samples were held in the freezer throughout the duration of the event and so they could be submitted to an accredited laboratory in the event of a foodborne outbreak.

15. ***Thawing.*** The trainer demonstrated how to thaw frozen foods, via microwave, in cooler or as part of the cooking process.

16. ***Separate cutting boards for meat and ready-to-eat foods.*** The food operator was equipped with multi-coloured cutting boards- one for meat and meat products and the other for ready-to-eat foods to prevent cross-contamination. Proper cleaning and sanitizing of each board was demonstrated on-site.

17. ***All foods covered and meats separated from ready-to-eat foods.*** The operator used plastic wrap or foil to cover food products to prevent unwanted contamination. The food operator learned how to properly organize coolers in a food safe manner to prevent cross-contamination.

18. ***Stick to menu item.*** If a food operator ran out of their menu food items, they were not allowed to prepare another dish not specified on their menu, unless they have consent from the Public Health Inspector. This was a recommendation from the Winnipeg Regional Health Authority (WRHA) after their investigation of the Russian pavilion *E.coli* O157 outbreak.

* Pavilions A, D, E not trained, no mechanical chemical dishwasher.
**Pavilions A, B, C, D not trained; no mechanical high temperature dishwasher.
*** This training was only applicable to pavilion A.

3.5 *Pavilion A Food Safety Training*

Pavilion A food safety training occurred on August 5, 2011 at 4 p.m. Food safety training was 2 hours and involved both the food operator and event coordinator. The kitchen equipment on-site included a three compartment sink, hand sink, two coolers, one freezer, and one oven with hood. All food products were purchased from approved food sources. Approved food source comply with the provisions of the MR 339/88R and has been inspected and permitted by a provincial or federal body.

Critical menu items:

1. ***Pelmeni***
2. ***Beef stew***
3. ***Cabbage Pie***
4. ***Juice Compote***
5. ***Potato Salad***

Pelmeni

Ingredients: Dough: *egg, salt, flour*; **Filling:** *ground beef, onions, spices*

Process
- Product purchased from an approved source **frozen** that was pre-made and pre-cooked. Product placed in freezer on-site.Pelmeni are small dumplings made from a thin layer of dough with a filling, typically meat.

Process CCP
- Product placed in boiling water, covered, and cooked for 3-4 minutes. Water drained via colander. Internal temperature of the pelmeni must be at or above **74°C (165°F).** Re-heating provides an adequate reduction of vegetative cells to safe level. Pelmeni pre-cooked, therefore *Escherichia coli* inactivated.

Process CCP
- Pelmeni immediately placed on steam table, covered, and held at or above **60°C (140°F)** to prevent the growth of pathogenic bacteria. Verify with a metal stem probe thermometer that the hot holding unit is maintaining the product at or above this required temperature.

Beef Stew

Ingredients: Vegetable stock, beef cubes, mushrooms, carrots, sweet peppers, spices

Process CCP
- Beef cubes pre-cut and purchased from an approved source. The beef cubes will be transported via a cooler and held in the refrigerator at **5°C (40°F).** Check that the temperature of the cubes are at or below **5°C (40°F)** by inserting a metal stem probe thermometer directly into the center of the beef cube. Bacteria such as ***E.coli, Campylobacter* sp.**, multiply very slowly at this temperature.
- Mushrooms, carrots, and sweet peppers were purchased pre-cut from an approved food source.

Process CCP
- Keep the beef cubes completely seperated from vegetables by using two different colored cutting boards, one for meats and the other for vegetables.
- All food products placed into a pressurized pot with vegetable stock and cooked for the required amount of time. Beef cubes must be cooked to a minimum temperature of **74°C (165°F).**

Process CCP
- The beef stew will then be held at or above **60°C (140°F)** to prevent the growth of pathogenic bacteria. Verify with a metal stem probe thermometer that the hot holding unit is maintaining the product at this temperature.

Cabbage Pie

Ingredients: Dough, cabbage, mayonnaise, eggs, and sour cream.

Process CCP	• Mayonnaise and sour cream purchased from an approved food source in sealed containers. Eggs purchased in cartons. All ingredients will be transported on-site via a cooler and maintained at **5°C (40°F).**
Process CCP	• The pie will be layered and baked. Check the internal temperature of the pie to ensure a minimal temperature of **74°C (165°F)** for *Salmonella sp.* inactivation in eggs by using a metal stem probe thermometer.
Process CCP	• Maintain the pie at or above **60°C (140°F)** to prevent the growth of pathogenic bacteria. Check the temperature of the hot holding unit with a metal stem probe thermometer to verify the correct holding temperature.

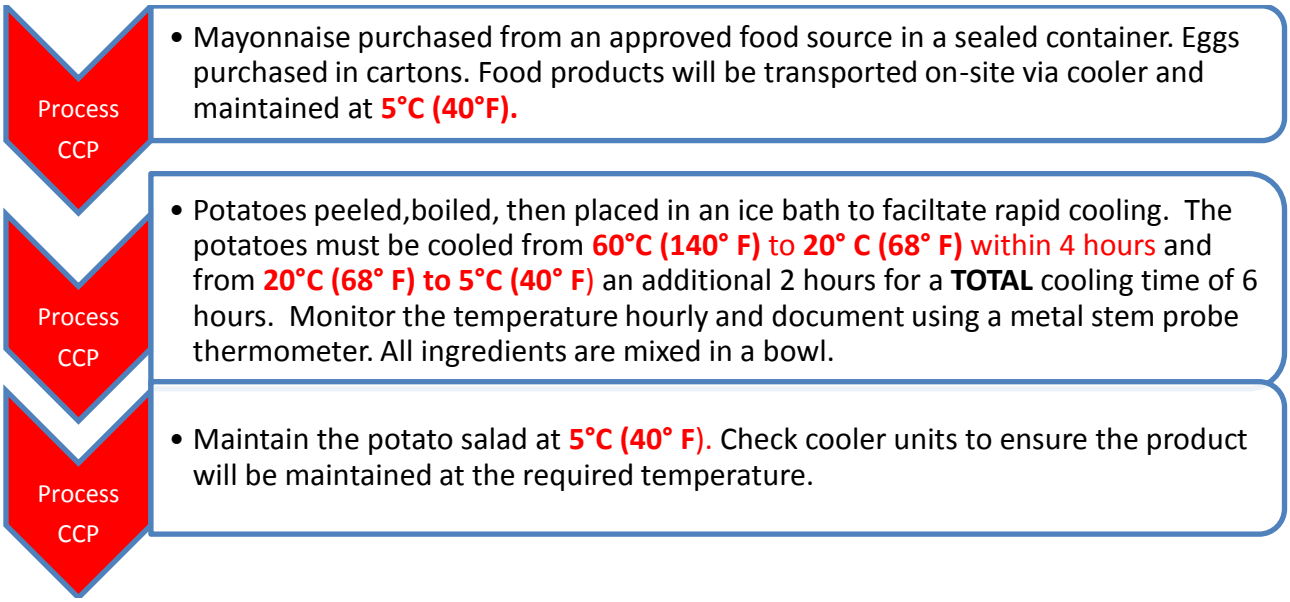
Juice Compote

Ingredients: Mixed berries, sugar, ice

Process	• Mixed berries purchased from an approved food source frozen. Transported on-site via cooler and maintained frozen until ready for use. Berries are boiled for 10-15 minutes with the addition of sugar.
Process CCP	• Cooling: After the boil, ice added to the pot to facilitate rapid cooling. The compote must be cooled from **60°C (140° F)** to **20° C (68° F)** within 4 hours and from **20°C (68° F) to 5°C (40° F**) an additional 2 hours for a **TOTAL** cooling time of 6 hours. Monitor temperature hourly using a metal stem probe thermometer and document in the food safety log book.
Process CCP	• Maintain the compote at **5°C (40° F**). Check cooler units to ensure the product will be maintained at the required temperature.

Potato Salad

Ingredients: Potatoes, peas, onions, boiled eggs, spices, mayonnaise



3.6 Pavilion *B Food Safety Training*

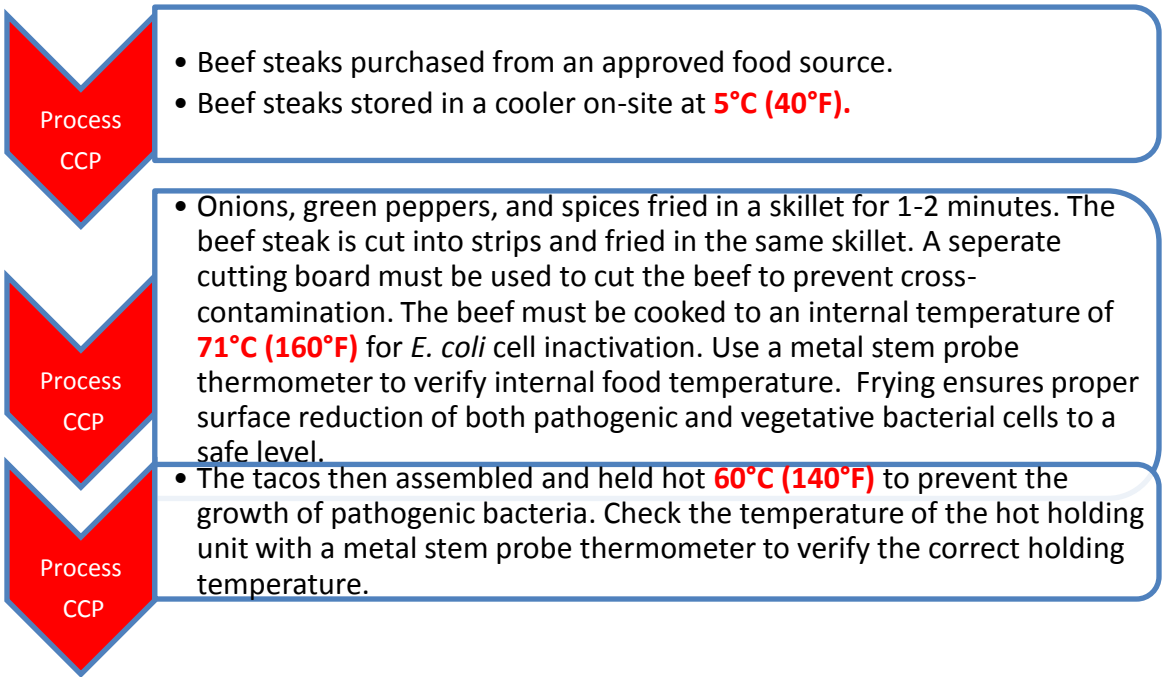
Pavilion B food safety training occurred on July 11, 2011 at 11 a.m. Food safety training was 2 hours and involved both the food operator and event coordinator. The kitchen equipment on-site included a three compartment sink, hand sink, two coolers, one freezer, one oven with hood, and a mechanical chemical dishwasher. All food products were purchased from approved food sources. Approved food source comply with the provisions of the MR 339/88R and has been inspected and permitted by a provincial or federal body.

Critical menu items:

1. ***Beef Fajita Taco***
2. ***Chicken Fajita Taco***
3. ***Rice***
4. ***Pozole***

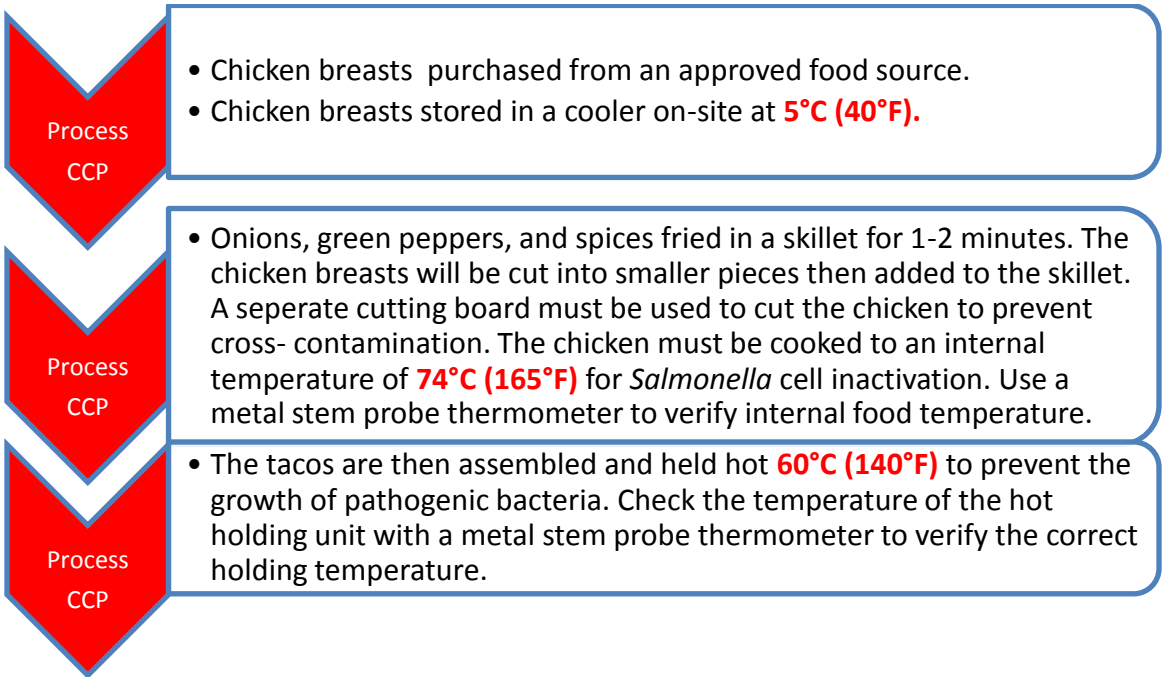
Beef Fajita Taco

Ingredients: beef, onions, green peppers, oil, salt, and pepper



Chicken Fajita Taco

Ingredients: chicken, onions, green peppers, oil, salt, and pepper



Rice

Ingredients: rice, onions, carrots, green peas, oil, salt, water.

Process	• Dry rice placed in a shallow stainless steel pan, covered with water and baked in the oven. • Onions, carrots, green peas, and spices fried seperately.
Process CCP	• Once the rice is cooked, the vegetables will be mixed in with the rice and transported to the hot holding unit. • The rice must be held hot **60°C (140°F)** to prevent the outgrowth of *Bacillus cereus* spores. Check the temperature of the hot holding unit with a metal stem probe thermometer to verify the correct holding temperature.

Pozole

Ingredients: pork, water, hominy, onions, garlic, spices

Process CCP	• Pozole is traditional soup or stew that typically contains pork, chicken, or turkey. Pork purchased from an approved food source and kept at **5°C (40°F)** on-site until ready to be used.
Process CCP	• Pork, water, hominy, and all spices placed in a large pot and brought to a boil over medium-to high heat, then reduced and allowed to simmer for 2 hours. Pork must reach an internal temperature of **71°C (160°F).**
Process CCP	• The soup then held hot **60°C (140°F)** on the hot holding unit to prevent the growth of pathogenic bacteria. Check the temperature of the hot holding unit with a metal stem probe thermometer to verify the correct holding temperature.

3.7 *Pavilion C Food Safety Training*

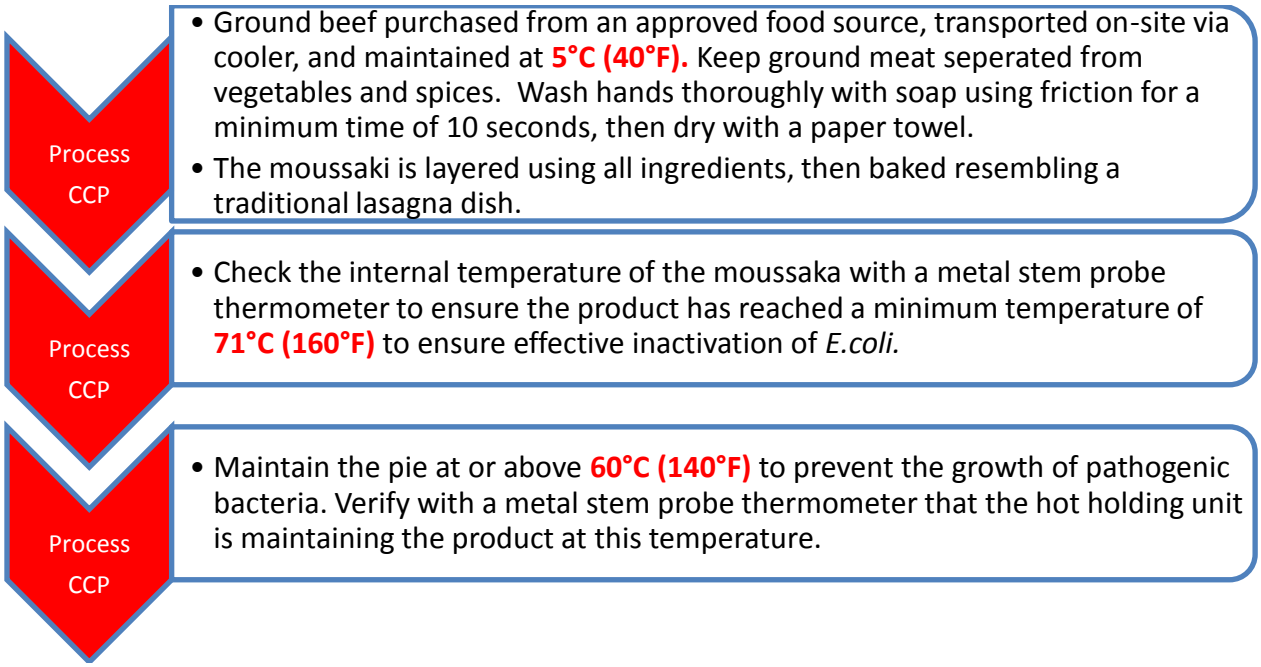
Pavilion C food safety training occurred on June 23, 2011 at 4 p.m. Food safety training was 2 hours and involved both the food operator and event coordinator. The kitchen equipment on-site included a three compartment sink, hand sink, four coolers, two freezers, one oven with hood, and a mechanical chemical dishwasher. All food products were purchased from approved food sources. Approved food source comply with the provisions of the MR 339/88R and has been inspected and permitted by a provincial or federal body.

Critical menu items:

1. ***Moussaka***
2. ***Pork Souvlaki***
3. ***Roasted Potatoes***

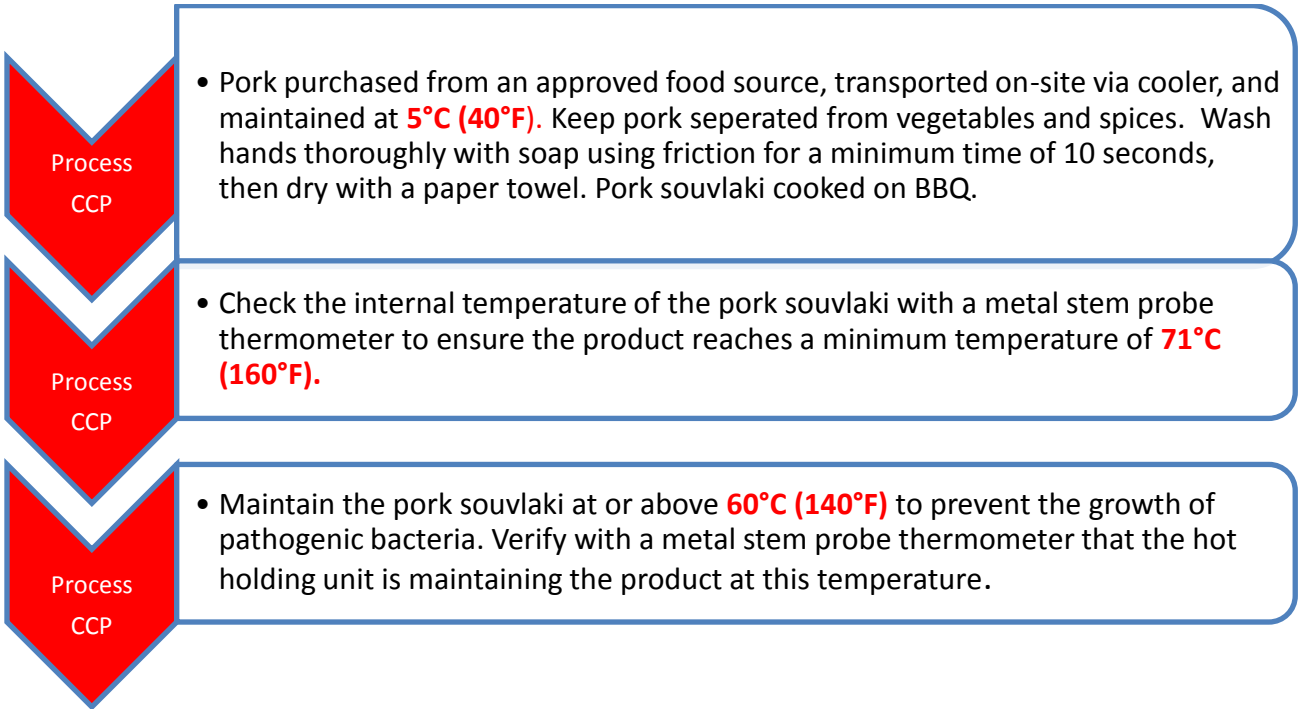
Moussaka

Ingredients: Ground beef, eggplant, onions, garlic, potatoes, spices



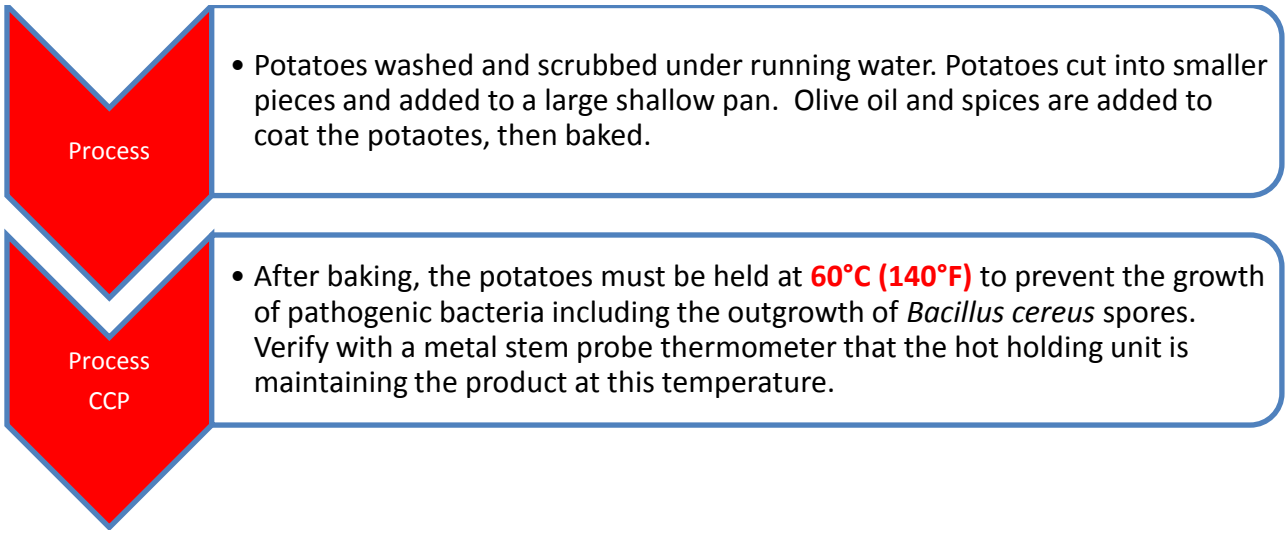
Pork Souvlaki

Ingredients: Pork, lemon, olive oil, spices



Roasted Potatoes

Ingredients: Potatoes, olive oil, spices



3.8 *Pavilion D Food Safety Training*

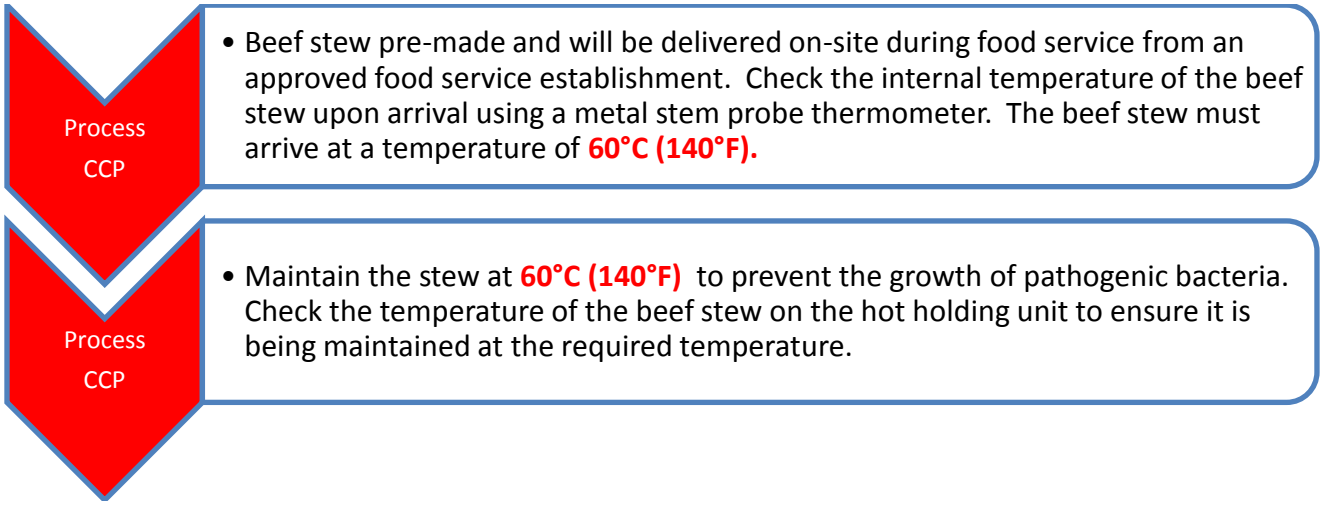
Pavilion D food safety training occurred on August 3, 2011 at 10 a.m. Food safety training was 2 hours and involved both the food operator and event coordinator. The kitchen equipment on-site included a three compartment sink, hand sink, three coolers, one freezer, and one oven with hood. All food products were purchased from approved food sources. Approved food source comply with the provisions of the MR 339/88R and has been inspected and permitted by a provincial or federal body.

Critical menu items:

1. ***Beef stew***
2. ***Meat Pies (beef and pork) and Shepherd's pie***
3. ***Gravy***

Beef Stew

Ingredients: Pre-made from an approved establishment.



Meat Pies (Beef and Pork) and Shepherd's Pie

Ingredients: Pre-made from an approved establishment.

a. ***Meat Pie (Beef)***- Ground beef, dehydrated potatoes, onion, salt, pepper, egg wash, glycerol monosterate, sodium acid pyrophosphate, sodium bisulphate, calcium stearoyl, 2 lactylate, butylated hydroxyanisole, and/or butylated hydrogenated vegetable oil

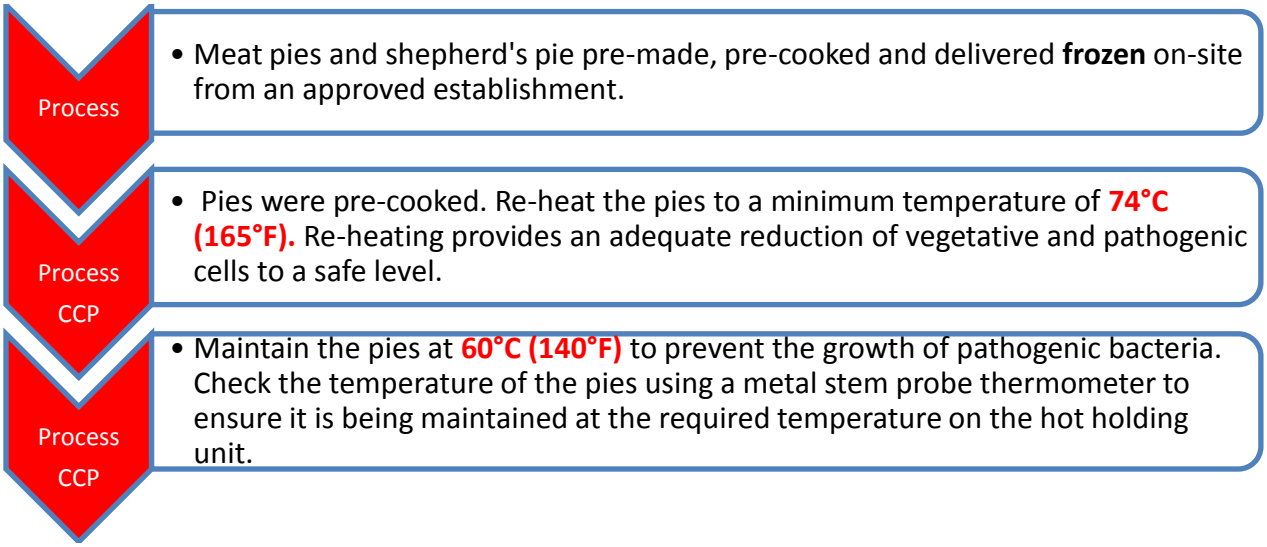
Short dough pastry- flour, vegetable shortening, hydrogenated vegetable oil, salt, water

b. ***Meat Pie (Pork)***- Pork, dehydrated potatoes, onion, salt, pepper, egg wash, glycerol monosterate, sodium acid pyrophosphate, sodium bisulphate, calcium stearoyl, 2 lactylate, butylated hydroxyanisole, and/or butylated hydrogenated vegetable oil

Short dough pastry- flour, vegetable shortening, hydrogenated vegetable oil, salt, water

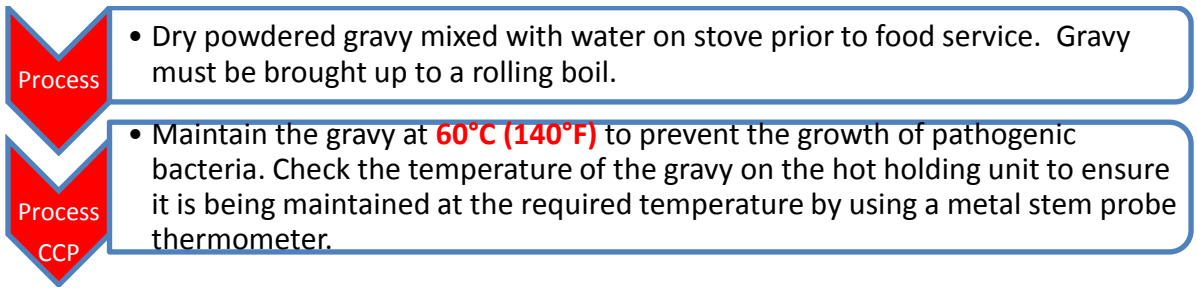
c. ***Shepherds Pie***- Ground beef, dehydrated potatoes, onion, salt, pepper, egg wash, glycerol monosterate, sodium acid pyrophosphate, sodium bisulphate, calcium stearoyl, 2 lactylate, butylated hydroxyanisole, and/or butylated hydrogenated vegetable oil

Pastry- dried potato flakes, partially hydrogenated soya bean oil, salt, milk or milk product



Gravy

Ingredients: Dry powder mix



3.9 *Pavilion E Food Safety Training*

Pavilion E food safety training occurred on July 20, 2011 at 1:30 p.m. Food safety training was 2 hours and involved both the food operator and event coordinator. The kitchen equipment on-site included a three compartment sink, one hand sink, two coolers, one freezer, one oven with hood, and a mechanical high temperature dishwasher. All food products were purchased from an approved food source. All food products were purchased from approved food sources. Approved food source comply with the provisions of the MR 339/88R and has been inspected and permitted by a provincial or federal body.

Critical menu items:

1. ***Meat pies (beef and pork) and Sausage rolls***
2. ***Fresh pork sausages***
3. ***Beef gravy***

Meat pies (Beef and Pork) and Sausage Rolls

Ingredients: Pre-made from an approved establishment.

a. ***Meat Pie (Beef)-*** Ground beef, dehydrated potatoes, onion, salt, pepper, egg wash, glycerol monosterate, sodium acid pyrophosphate, sodium bisulphate, calcium stearoyl, 2 lactylate, butylated hydroxyanisole, and/or butylated hydrogenated vegetable oil

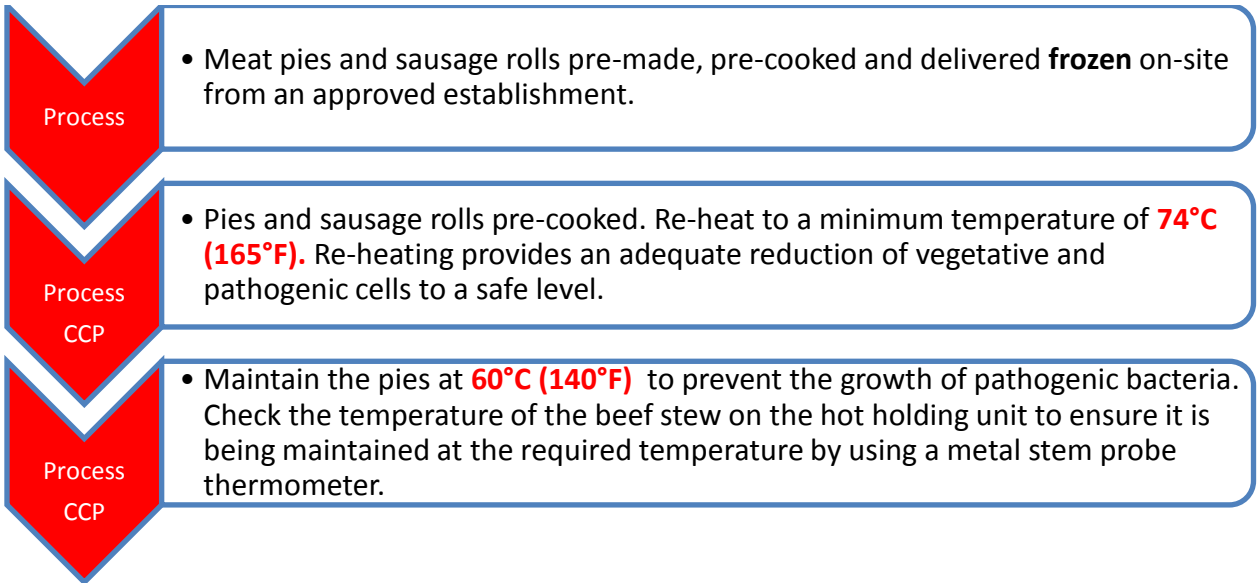
Short dough pastry- flour, vegetable shortening, hydrogenated vegetable oil, salt, water

b. ***Meat Pie (Pork)-*** Pork, dehydrated potatoes, onion, salt, pepper, egg wash, glycerol monosterate, sodium acid pyrophosphate, sodium bisulphate, calcium stearoyl, 2 lactylate, butylated hydroxyanisole, and/or butylated hydrogenated vegetable oil

Short dough pastry- flour, vegetable shortening, hydrogenated vegetable oil, salt, water

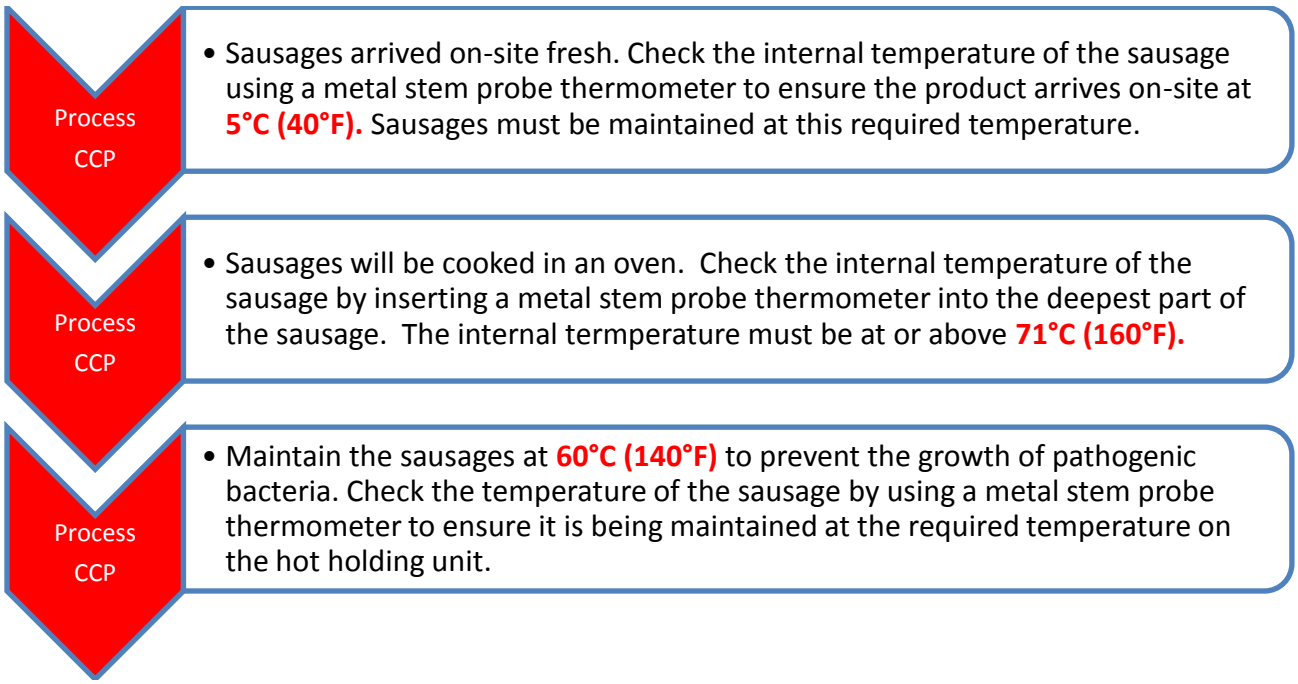
c. ***Sausage Rolls-*** Pork, water, toasted wheat crumbs, salt, durum wheat flour, buttermilk powder, spices, hydrogenated soybean oil, sodium erythorbate

Short dough pastry- flour, vegetable shortening, hydrogenated vegetable oil, salt, water



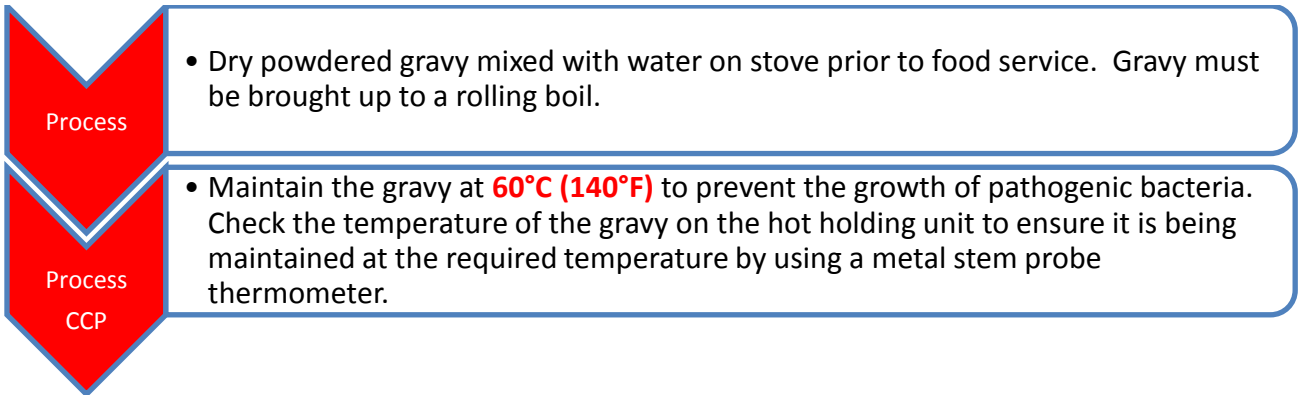
Fresh Pork Sausages

Ingredients: Purchased from an approved source. Pork, water, toasted wheat crumbs, salt, durum wheat flour, buttermilk powder, spices, hydrogenated soybean oil, sodium erythorbate.



Beef Gravy

Ingredients: Dry powdered mix



3.10 *Food Safety Surveys for Pavilions A1-E1*

Food safety knowledge surveys were administered to either the food operator or event co-ordinator of the 10 chosen pavilions who attended the 2-hour food safe workshop delivered by Certified Public Health Inspectors. All surveys were administered in person prior to Folklorama and on-site training to assess food safety knowledge regarding some of fundamental principles in food safety. Refer to Appendix A for survey questions.

Table 3.3- *Food Safety Survey dates for untrained pavilions A1-E1.*

Pavilion A1	Pavilion B1	Pavilion C1	Pavilion D1	Pavilion E1
July 27, 2011 to food operator	July 25, 2011 to food operator	July 6, 2011 to event co-ordinator	July 20, 2011 to food operator	July 28, 2011 to food operator

Chapter 4 Results

In 2011, the Winnipeg Folklorama hosted 46 pavilions to provide food service and entertainment for the citizens of Manitoba and international visitors. The Winnipeg Folklorama Board was advised that a study was to take place in 2011 assessing the provision of on-site, hands-on food safety training for selected pavilions. The Folklorama Board informed the event co-ordinators of all 46 pavilions that a study involving food safety training was to take place and may require their participation. The 10 randomly chosen pavilions assessed in the study agreed to participate in the study. The training involved both the event co-ordinator and food operator for the five selected pavilions. All participants involved in the on-site, hands-on training were female.

Seven of the 10 pavilions had taken an 8-hour food safe course that provides certification above and beyond the 2-hour food course by the City of Winnipeg Health Department. Although not mandatory to obtain certification in the provincial jurisdiction of Manitoba, the 8-hour food safe course covered all matters relating to food safety. Pavilions C, C1, and D1 did not take an 8-hour food safe course (Table 4.1). The 2-hour food safety course was mandatory for all event co-ordinators and/or food operators of each pavilion and was specifically designed for Folklorama venue.

Table 4.1- *Folklorama pavilions who had taken an 8-hour food safe course that provides certification.*

Pavilions	**A**	**B**	**C**	**D**	**E**	**A1**	**B1**	**C1**	**D1**	**E1**
8-hour Food Safe Course	**2010**	**2011**	**X**	**2011**	**2011**	**2010**	**2010**	**X**	**X**	**2010**

The food safety survey was administered to both the control and trained groups after the 2-hour food safe course. Appendix G is a summary of the survey results for all 10 pavilions involved in the study. Table 4.2 is a summary of total points and percentages for pavilions A-E, A1-E1, respectively. Note that question 1 was to determine if the participants had taken a previous food safety course and thus was not included in the tables to assess knowledge retention.

Results suggest no statistically significant difference ($P>0.05$) in food safety knowledge retention between the trained and control groups for each of the questions (Table 4.3). The lowest mean average when combining results (trained and control groups) to determine overall knowledge retention was in question 6c which states: What is the required concentration for your sanitizer on food preparation surfaces? The combined mean average was 0.3 ± 0.30. The highest mean averages occurred in questions 3 and 4 which were directly related to food holding temperatures, mean average 1.5 ± 0.42 and 1.5 ± 0.52 respectively (Table 4.4).

Table 4.2- *Total score out of 33 and percentage results from food safety questionnaire survey for pavilions A-E; A1-E1after the 2-hour food safety course and before on-site, hands-on training.*

Pavilions	**A**	**B**	**C**	**D**	**E**	**A1**	**B1**	**C1**	**D1**	**E1**
Total/33 points	13	17	0	19	20	13	7	5	0	21
Percentage	39	52	0	58	61	39	21	15	0	64

Pavilions A-E (trained); pavilions A1-E1 (not trained)

Table 4.3- *Mean, standard error, F-values and P-values for trained and control groups with respect to food safety survey on a 3-point scale after the 2-hour food safety course and before on-site, hands-on training.*

Food Safety Survey Question	Mean	Std. Error	F value	P value
2. How would you properly cool hot foods down to 4°C?	**(T) 1.4 (C) 0.8**	**0.45 0.45**	**0.90**	**0.37**
3. Hot foods should be maintained at what temperature?	**(T) 2.0 (C) 1.0**	**0.59 0.59**	**1.43**	**0.27**
4. Cold foods should be maintained at what temperature?	**(T) 1.8 (C) 1.2**	**0.73 0.73**	**0.33**	**0.58**
6a.How do you clean and sanitize food preparation surfaces?	**(T) 1.6 (C) 1.2**	**0.45 0.45**	**0.40**	**0.54**
6b.What type of sanitizer is approved for use on food contact surfaces?	**(T) 1.4 (C) 1.4**	**0.60 0.60**	**0.00**	**1.00**
6c.What is the required concentration for your sanitizer on food preparation surfaces?	**(T) 0.0 (C)0.6**	**0.42 0.42**	**1.00**	**0.35**
7. What temperature must you cook ground beef to consider it safe for consumption?	**(T) 0.8 (C) 1.2**	**0.62 0.62**	**0.21**	**0.66**
8. What temperature must you cook boneless chicken to consider it safe for consumption?	**(T) 1.0 (C) 0.4**	**0.53 0.53**	**0.64**	**0.45**
9. How long can food be left sitting out?	**(T) 1.6 (C) 0.8**	**0.59 0.59**	**0.91**	**0.38**
10a.What is the required temperature when re-heating soup?	**(T) 0.4 (C) 0.6**	**0.51 0.51**	**0.08**	**0.79**
10b. What is the required temperature when re-heating meat?	**(T) 1.8 (C) 0.4**	**0.59 0.59**	**2.80**	**0.13**

T=trained; C=Control
P<0.05 considered significant

Table 4.4-*Combined Mean and Standard Errors for 10 pavilions (trained and control) with 3 as the highest possible score per question after the 2-hour food safety course and before on-site, hands-on training.*

Food Safety Survey Question	Combined Mean	Std. Error
2. How would you properly cool hot foods down to 4°C?	**1.1**	**0.32**
3. Hot foods should be maintained at what temperature?	**1.5**	**0.42**
4. Cold foods should be maintained at what temperature?	**1.5**	**0.52**
6a.How do you clean and sanitize food preparation surfaces?	**1.4**	**0.32**
6b.What type of sanitizer is approved for use on food contact surfaces?	**1.4**	**0.43**
6c.What is the required concentration for your sanitizer on food preparation surfaces?	**0.3**	**0.30**
7. What temperature must you cook ground beef to consider it safe for consumption?	**1.0**	**0.44**
8. What temperature must you cook boneless chicken to consider it safe for consumption?	**0.7**	**0.38**
9. How long can food be left sitting out?	**1.2**	**0.42**
10a.What is the required temperature when re-heating soup?	**0.5**	**0.36**
10b. What is the required temperature when re-heating meat?	**1.6**	**0.42**

4.1 *Food Protection Inspection Form Results*

The food protection reports for 10 pavilions involved in the study are included in Appendix H. Criteria1-3 do not pertain to food or food preparation and thus are not included in the study. Criteria 1 and 2 are concerned with obtaining a valid temporary food service permit which is issued by the Public Health Inspector. Criterion 3 refers to the event facility meeting all the requirements necessary to operate a temporary food service event.

The 10 chosen pavilions for the study had 3 unannounced public health inspections; 2 randomly chosen inspections per pavilion were used for statistical analysis. Statistical analysis using Pearson's chi-square test and Fisher's exact test identified no significant difference between

the trained and control groups with respect to criteria 4-11 on the first food protection inspection reports (Table 4.5)

Table 4.5- *Chi-Square results for questions 4-11 for the first public health inspection comparing trained groups (A-E) to control groups (A1-E1).*

Criteria	Chi-square	P value
4. Potentially hazardous foods maintained below 5°C (41°F) or above 60°C (140°F).	**0.53**	**0.77**
5. Food is protected from contamination at all times while being stored or displayed.	**n/a***	**n/a**
6. Thermometers used to verify food preparation and storage temperatures.	**1.11**	**0.29**
7. Adequate supply of potable water is provided for duration and type of event.	**1.11**	**0.29**
8. Operator has provided suitable handwashing station for booth workers.	**1.11**	**0.29**
9. Garbage is stored in suitable receptacles.	**n/a**	**n/a**
10. Food handlers are maintaining good personal hygiene practices.	**n/a**	**n/a**
11. Food contact surfaces washed / rinsed / sanitized after each use and following any operations when contamination may have occurred.	**0.00**	**1.00**

*n/a refers to not applicable, questions were all in compliance for both control and trained groups
P<0.05 considered significant

Statistical analysis using Pearsons chi-square test and Fisher's exact test found no statistical difference between the trained and control group with respect to criteria 4-11 on the second food protection inspection reports (Table 4.6).

Table 4.6- *Chi-Square results for questions 4-11 for the second public health inspection comparing trained groups (A-E) to control groups (A1-E1).*

Criteria	Chi-square	P value
4. Potentially hazardous foods maintained below 5°C (41°F) or above 60°C (140°F).	**2.50**	**0.29**
5. Food is protected from contamination at all times while being stored or displayed.	**n/a***	**n/a**
6. Thermometers used to verify food preparation and storage temperatures.	**n/a**	**n/a**
7. Adequate supply of potable water is provided for duration and type of event.	**n/a**	**n/a**
8. Operator has provided suitable handwashing station for booth workers.	**n/a**	**n/a**
9. Garbage is stored in suitable receptacles.	**n/a**	**n/a**
10. Food handlers are maintaining good personal hygiene practices.	**n/a**	**n/a**
11. Food contact surfaces washed / rinsed / sanitized after each use and following any operations when contamination may have occurred.	**1.11**	**0.29**

*n/a refers to not applicable, questions were all in compliance for both control and trained groups
P<0.05 considered significant

On-site training for Folklorama pavilions involved a number of food safety practice demonstrations such as proper use of probe thermometers, cooling of hot foods, handwashing, food sampling, and food monitoring. On-site food safety training revealed a number of incorrect food safety practices which were performed by the food operator, such as, the incorrect use of a metal stem probe thermometer to verify safe internal food temperatures. Some operators were unable to recall correct safe internal food temperatures for food products listed on their menu. Operators were often confused with food holding temperatures; that is, once a product was cooked to the correct safe internal temperature i.e. 71°C (160°F) for ground beef, it must be held at that temperature and not the required 60°C (140°F) for hot holding. A number of operators also falsely believed that food refrigeration at 5°C (40°F) kills pathogenic bacteria and therefore the product would be safe for an extended period of time. Sanitizer preparation was often done incorrectly for food contact surfaces. The technique to properly clean and sanitize food contact

surfaces was confusing to food operators. All trained pavilions used chlorine to sanitize food contact surfaces. Preparation of sanitizer involved a dilution with water for concentration strength of 100 ppm for effective microbial oxidation. It was noted that operators would add soap to the solution as they believed this would make the sanitizer more effective, although the 2-hour food safe course indicated that this was incorrect.

Chapter 5 Discussion

Food safety training is an integral component in the public health system designed to prevent the incidence of foodborne outbreaks. However, there is a lack of evidence of improved food hygiene as a direct result from food safety training programs (Rennie, 1994). The majority of food safety courses rely on classroom-based settings that present food safety information via slides with no practical component. Furthermore, to assess knowledge of students, a written examination is often required to obtain certification.

A number of studies suggest this training is inadequate as it reflects poor training designs that focus on only producing certified personnel (Ehiri *et al.*, 1997). If this is the case, why are food safety courses administered in this fashion? Perhaps a reason may be due to a lack of adequate resources available in developing alternative methods of training. The future of training seems to focus on the increasing concern of supplementing resources towards traditional methods of training, while the food service sector is opting for alternative training regimes (Seaman and Eves, 2006).

The food safety survey in this study indicated poor food safety knowledge retention for all 10 pavilions in the study. Staff at two pavilions scored zero out of 33 while the highest score was 64%. Only four pavilions scored >50%, implying that simply attending a food safe course does not guarantee that food operators will retain the presented information. Three pavilions did not take the 8-hour food safe course that provides certification as it is not mandatory in the provincial jurisdiction of Manitoba. As such, those pavilions who did not take an 8-hour food safe course (pavilions C, C1, and D1), scored the poorest in terms of knowledge retention 0%, 15%, and 0% respectively. This suggests that additional food safety training may be more beneficial than a 2-hour food safety course in terms of knowledge retention. The 8-hour food

safe course covers all topics relating to food service, handling, and processing and therefore provides an in depth understanding of food safety practices. This may be the reason why the seven pavilions who took an 8-hour food safe course fared better with respects to survey results. However, the overall results in terms of knowledge retention remain low, regardless of the additional training. Moreover, an increase in food safety knowledge will not guarantee desired behavioral changes (Roberts *et al*., 2008).

The current study attempted to determine the potential benefits of on-site food safety training for Folklorama pavilions. During on-site training for the selected five pavilions, operators were confused with certain food safe practices, such as temperature control. Operators did not know how to properly use a metal stem thermometer to test and verify internal food safe temperatures. Although the 2-hour food safety course covered this topic, operators did not retain the information. Moreover, without physically demonstrating how to use the thermometer correctly, the operator was unable to recall where and how deep to insert the thermometer into the food product. On-site training alleviated these concerns as there were physical demonstrations of such techniques, although this was not reflected on the inspection reports. Furthermore, operators were unable to recall safe internal food temperatures for their food products served. Often times during the training, the operator had indicated that there were too many temperatures to remember and as such they were confused. Food operators were thankful for the food safe poster left on-site that referenced food safe internal temperatures for different food products.

Assessing menu items and developing CCP-s for food products relevant to their menu seemed to have alleviated unwarranted stress in their work environment. For instance, if one pavilion was preparing a dish that only involved pork, they should be familiar with the safe

internal food temperature that would inactivate pathogens in pork and not with ground beef or chicken. The operator suggested that the 2-hour food safety course presented too much material to fully grasp and understand food safety concepts. The future of training should be tailored to the individuals' needs taking into consideration a myriad of factors such as language barriers, previous experience, and work-site barriers.

5.1 *Food Inspection Report Results*

Results of the current study suggest no statistical significant difference in food inspection scores between the trained group and control group. This, however, may be due to the small sample size used in the study. Results imply that the 2-hour food safety course delivered via slides is sufficient to pass public health inspections. Courses and training are designed to pass the test; passing the test is not a meaningful indicator, or contribution to, improved public health; so alternative and creative delivery and evaluation techniques need to be developed. Although the survey results suggested limited food safety knowledge retention, this was not reflected on health inspection reports.

Although not statistically significant, trained pavilions (A-E) fared better with respect to item four on the food protection inspection report by collapsing "CDI" (corrected during inspection) and "NO" (not in compliance) into one category using Pearson's chi-square and Fisher's exact test, results not shown. Item four is a critical food violation dealing with temperature which states: Potentially hazardous foods maintained below 5°C (41°F) or above 60°C (140°F). Temperature abuse is one factor that increases the risk of acquiring a foodborne illness (WHO, 2008). Therefore, emphasis should be focused on food holding temperatures as one means of reducing foodborne illness.

The food safety survey indicates that the highest correct mean average scores were in questions 2 and 3 which pertain specifically to food holding temperatures; however, this was where the greatest number of infractions were noted in the inspection reports. Thus, as in this case, food safety knowledge does not necessarily reflect a change in food safety behavior.

Health inspections for Folklorama pavilions occur during food service and monitor primarily food hygiene and food holding temperatures. Therefore, they do not take into consideration how menu items were prepared prior to the event. The standardized food inspection reports do not take CCP-s into consideration, which is integral to HACCP in providing a safe food product. WHO (2007) has recognized the importance of HACCP in the prevention of foodborne diseases for over 30 years.

5.2 *Conclusion*

Research suggests that knowledge acquired from traditional food safety training programs does not necessarily translate into positive food safety behaviors (Seaman and Eves, 2006). Furthermore, the authors realize a need for further research in thoroughly assessing the effectiveness of training, taking into consideration personal and physical barriers that impede on translating knowledge into positive food safe behaviors. Traditional models tend to adopt the Knowledge, Attitudes, and Practice (KAP) model. This model has become synonymous with health education and assumes an individual's behavior is dependent on their knowledge and the provision of information alone will lead to a direct change in attitude and thus behavior (Bas *et al.,* 2006).

While some studies suggest improved food safety knowledge and/or inspection scores after food safety training (Cates *et al.,* 2009; Kneller and Bierma, 1990; Cook and Casey, 1979; Mathias *et al.,* 1995), others do not (Hammond *et al.,* 2005; Ehiri *et al.,* 1997; Powell *et al.,*

1997). Research is lacking in assessing the potential benefits of on-site, hands-on training in improving knowledge and inspection scores for both temporary and permanent food service facilities. Although many researchers infer that this type of training would be beneficial (Pragle *et al.*, 2007; Park *et al.*, 2010), very little has been documented. One key principle of adult learning is that information retention is directly affected by the amount of practice during the learning process (Lieb, 1991).

Although the current study identified no statistically significant difference between the trained and untrained groups with respect to health inspection scores, a number of considerations must be taken into account. Trained pavilions were taught to retain and freeze representative food samples from each meal for the duration of Folklorama event. In the event of a foodborne outbreak, samples would have been sent to the laboratory for microbiological analysis to assist in the outbreak response. As such, if this was a pre-imposed item on the inspection report, trained pavilions should have exhibited higher inspection scores. Standardized health inspections do not reflect food safety culture as whole and do not take into consideration CCP-s identified throughout the food preparation process, unless indicated as a comment by the public health inspector. Furthermore, the small sample size made it difficult to attain statistical significance; it would be beneficial to assess the provision of hands-on training with a larger sample size. However, for the purposes of this study, the use of standardized inspection reports to assess critical food violations between trained and control groups reduced the number of variables in the study design.

Training methods must impart food safety knowledge and yield food related behaviors (Egan *et al.*, 2007). Training must address the full range of factors that impact food related behaviors (Green and Selman, 2005). Such factors include time pressure, resources, training, and

attitude of managers. Chapman et al. (2010) determined that the use of food safety infosheets elicited positive behavioral changes through stories that relate to the food handler. A holistic model to food safety training should be developed that takes into consideration all of the aforementioned factors. Furthermore, there is a need to properly evaluate training outcomes. Kirkpatrick (1976) outlines a four level framework for evaluating training programs. Level one (*Reaction*) involves the participants reaction to the training program. Level two (*Learning),* assesses participants knowledge, skills, and attitudes after the delivery of the training. Level three (*Behavior*) evaluates whether a change of behavior occurred as a direct result from training. Level four (*Results*) reflects organizational benefits attributed from the training program.

5.3 *Limitations*

Limitations exist in the current study that includes small sample size used to attain statistical significance between trained and control groups; inspector bias; previous food safe education; and a lack of a pre-test for survey questions. On-site, hands-on training for pavilions A-E involved considerable amount of time and co-ordination between the researcher and those involved. Furthermore, as each of the pavilions were trained by the researcher, a larger sample size was not practical.

The on-site food safety training involved the use of a food safe poster and laminated sanitizer labels, developed by the researcher, to be posted on-site to remind staff on matters of handwashing, safe internal food temperatures, danger zone range, sanitizer concentration, and cross-contamination. In this regard, trained pavilions did not have to memorize food safety information; rather, they could reference the poster and sanitizer labels. Health inspectors may have seen these posters/labels and discerned that this was a trained pavilion, thereby imposing slight bias. Although the inspection forms are standardized reports with either yes, no, corrected

during inspection, not observed, or not applicable, comments by each inspector are more subjective.

Three out of the ten participants in the study did not take the 8-hour City of Winnipeg food safe course or equivalent which provides certification. The 8-hour food safe course is not mandatory for those pavilions that fall under the provincial jurisdiction in Manitoba. Although it was mandatory for all pavilions to have a representative attend the mandatory 2-hour food safe course, those with previous food safe education may have fared better with respect to the survey results.

The food safety survey was not pilot tested resulting in deletion of question five pertaining to handwashing. The subjective nature of the answers to this question made it difficult to assess and scale. A pre-test of the survey may have corrected this issue.

It is important to note that all Folklorama pavilions were under scrutiny from the Winnipeg Board of Folklorama and Department of Health. This was due to the 2010 *E.coli* O157 outbreak that led to negative press for Folklorama. This outbreak caused 37 illnesses which was the largest outbreak associated with Winnipeg Folklorama. As such, pavilions may have been more conscientious of proper food safety practices and thereby reflected better health inspection results.

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Appendix A- Survey Results and Scale Rating

Survey Questions- Food Safety Knowledge (*Folklorama 2011*)

1. **Have you taken the City of Winnipeg Food Safe Course or any other Food Safe Course, if so, specify? (Certificate good for 5 years). When?**

2. **How would you properly cool hot foods down to 4°C (40°F)?**

3. **Hot foods should be maintained at what temperature?**

4. **Cold foods should be maintained at what temperature?**

5. **When do you wash your hands?***

6. **a. How do you clean and sanitize food preparation surfaces?**

   b. What type of sanitizer is approved for use on food contact surfaces?

   c. What is the required concentration for your sanitizer on food preparation surfaces?

7. **What temperature must you cook ground beef to consider it safe for consumption?**

8. **What temperature must you cook boneless chicken to consider it safe for consumption?**

9. **How long can food be left sitting out?**

10. **What is the required temperature when re-heating**

    A. Soup?

    B. Meat?

*Question deleted

Scale rating:

Question 2

1. **Excellent-** Hot foods must be subdivided into shallow containers not more than 1 ½ inches deep and placed into a cooling unit capable of maintaining a temperature of 4°C (40°F). Foods must be cooled to 20°C (68°F)within 4 hours and from 20°C(68°F) to 4°C (40°F) an additional 2 hours with a total cooling period of 6 hours.
2. **Good-** Hot foods must be cooled within 6 hours and achieve an internal temperature of 4°C (40°F).
3. **Fair-** Hot foods must be cooled using an ice bath or placed in a cooler.
4. **Poor-** other

Question 3

1. **Excellent-** 60°C/140°F
2. **Good-** Anything over 60°C/140°F
3. **Poor**- other

Question 4

1. **Excellent**- 4°C/40°F
2. **Good-** Anything below 4°C/40°F
3. **Poor-**other

Question 6 A.

1. **Excellent-** All food preparation surfaces must be washed with soap and water, rinsed, then sanitized using an approved sanitizer.
2. **Good-** Surfaces sanitized with an approved sanitizer i.e. chlorine, quaternary ammonia or iodine.
3. **Fair**- Wash with soap and water
4. **Poor-** I do not know

Question 6 B.

1. **Excellent-** Chlorine, quaternary ammonia, and iodine
2. **Good-** Either chlorine, ammonia, or iodine
3. **Poor- other**

Question 6 C.

1. **Excellent-** Choice of a. Chlorine- 100 ppm; Quaternary ammonia- 200 ppm; Iodine-25 ppm
2. **Poor-** other

Question 7

1. **Excellent-** 71°C/160°F
2. **Good**- Anything above 71°C/160°F
3. **Poor-** other

Question 8

1. **Excellent-** 74°C/165°F
2. **Good-** Anything over 74°C/165°F
3. **Poor-**other

Question 9

1. **Excellent-** 2 hours maximum
2. **Good-**never
3. **Fair-** 1 hour
4. **Poor-** other

Question 10 A.

1. **Excellent-** Rolling boil for a minimum of one minute
2. **Good-** Rolling boil
3. **Poor-** other

Question 10 B.

1. **Excellent-** 74°C/165°F
2. **Good-** Anything over 74°C/165°F
3. **Poor-**other

Excellent= 3 points
Good= 2 points
Fair= 1 point
Poor= 0

Appendix B- Food Safe Poster

Folklorama

July 31st to August 13th 2011

PROPER HAND WASHING is one of the most important food safety practices in reducing the incidence of foodborne illness.

1. Wet Hands

2. Soap and Scrub
For 10 to 15 seconds

3. Rinse

4. Dry Hands with Paper Towel

5. Turn off taps with towel

There have been many outbreaks associated with **TEMPERATURE ABUSE**. Use a probe thermometer to make sure foods are cooked to safe **INTERNAL TEMPERATURES.**

71°c / 160°F — ground meat

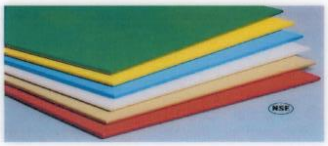
74°c / 165°F — poultry including stuffing and egg products

71°c / 160°F — pork

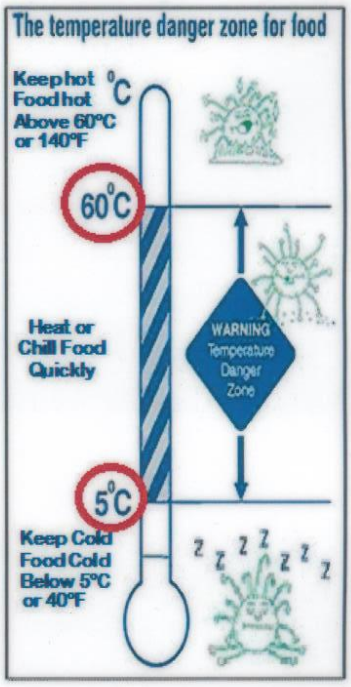
63°c / 145°F — fish

74°c / 165°F — reheat foods

Reduce **CROSS CONTAMINATION** by using colored cutting boards. One board for meat and the other cutting board for ready-to-eat foods such as fruits and vegetables.



Food holding temperatures:
KEEP HOT FOODS HOT AT OR ABOVE 60°C AND COLD FOODS COLD AT OR BELOW 5°C



Appendix C- Food Protection Inspection Report

Province of Manitoba
5th Floor, 408 Booth Drive Winnipeg, MB R3J 3R7
Fax Number: (204) 948-3727

FOOD PROTECTION INSPECTION REPORT

Facility Information: Folklorama		**Facility Number:**	EST-017-00075
		Report Number:	INS-017-00193-1
		Inspection Date:	August 24, 2011
		Community:	St. Vital North

Facility Category:	FT - Temporary Food Establishment, Temporary Food Service Establishment
Inspection Type:	Routine: Announced
Action(s) Taken:	Satisfactory - No Action Required
Delivery Method:	Hand Delivery

Opening Comments and Observations:

Compliance Category		Compliance
Temporary FSE		
Registration / Licensing/Permits		
1	Operator has completed and submitted a registration form for a permit to operate. (Sec. 2) In compliance.	N/S
Permits / Licensing/Permits		
2	Operator possesses a valid permit to operate a temporary food establishment. (Sec. 3) In compliance.	N/S
General Surroundings		
Booth / Structure and Maintenance		
3	Construction of temporary booth meets requirements. (Sec. 37) In compliance.	N/S
Temperature		
Food Handling / General Condition		
4	Potentially hazardous foods maintained below 5°C (41°F) or above 60°C (140°F). (Sec. 13) In compliance.	N/S
Food Safety		
Food Storage and Display / General Condition		
5	Food is protected from contamination at all times while being stored or displayed. (Sec. 6) In compliance.	N/S
Temperature Control / Thermometer Use		
6	Thermometers used to verify food preparation and storage temperatures. (Sec. 13) In compliance.	N/S
Water Supply / Water Supply		

Compliance Legend: N/S = No Option Selected, YES = In Compliance, NO = Not In Compliance, CDI = Corrected During Inspection, N/O = Not Observed at Time of Inspection, N/A = Not Applicable

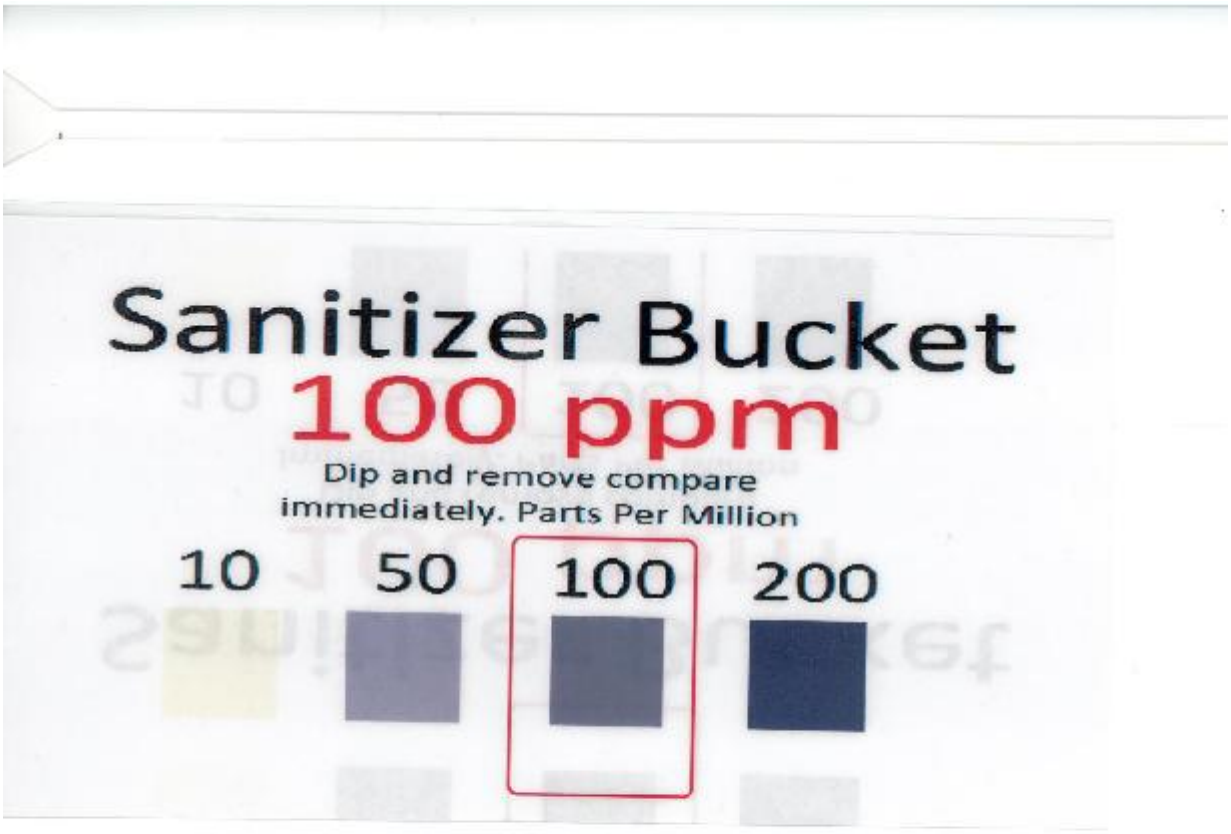
Folklorama
Facility Contact:
Community: St. Vital North
Report Date: August 24, 2011

Compliance Category		Compliance
7	Adequate supply of potable water is provided for duration and type of event. (Sec. 37) In compliance.	N/S
Hand Washing / Hand Washing		
8	Operator has provided suitable handwashing station for booth workers. (Sections 33 and 37) In compliance.	N/S
Programs & Operational Controls		
Garbage / Waste Management		
9	Garbage is stored in suitable receptacles. (Sec. 37) In compliance.	N/S
Food Safety		
Personnel Practices / Personal Hygiene/Practices		
10	Food handlers are maintaining good personal hygiene practices. (Sec. 12) In compliance.	N/S
Sanitation / Sanitation		
11	Food contact surfaces washed / rinsed / sanitized after each use and following any operations when contamination may have occurred. (Sec. 15) In compliance.	N/S

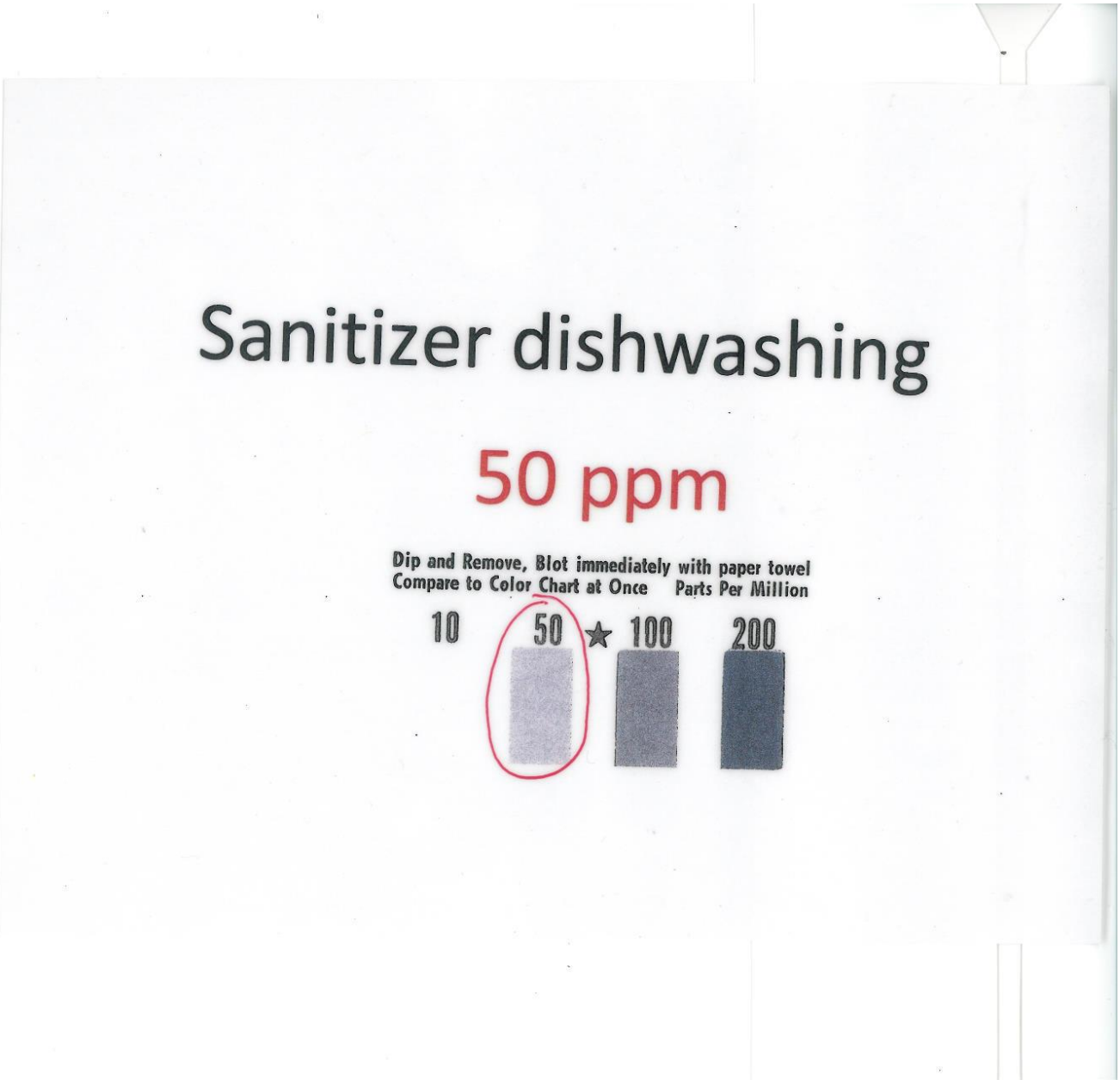
Owner or Agent Acknowledgement	Inspector
I have read and understood this report.	Robert Mancini, CPHI(C), Public Health Inspector

Compliance Legend: N/S = No Option Selected, YES = In Compliance, NO = Not in Compliance, CDI = Corrected During Inspection, N/O = Not Observed at Time of Inspection, N/A = Not Applicable

Appendix D- Sanitizer Label



Appendix E- Chemical Dishwasher Label



Appendix F- Temperature Charts

Hot Hold Temperature Chart

Manitoba Health
Health Protection Unit

Probe Thermometer Calibrated?	YES or NO
Sanitizer Solutions Checked?	YES or NO
Dishwasher Checked?	YES or NO

Pavillion:

Month	Day						
	Mon	Tues	Weds	Thur	Fri	Sat	Sun
Temperature	°C	°C	°C	°C	°C	°C	°C
Time							
Corrective Action							
Temperature	°C	°C	°C	°C	°C	°C	°C
Time							
Corrective Action							
Temperature	°C	°C	°C	°C	°C	°C	°C
Time							
Corrective Action							
Temperature	°C	°C	°C	°C	°C	°C	°C
Time							
Corrective Action							

Cold Holding Temperature Chart

Manitoba Health
Health Protection Unit

Probe Thermometer Calibrated?	YES or NO
Sanitizer Solutions Checked?	YES or NO
Dishwasher Checked?	YES or NO

Pavillion:

Month	Day						
	Mon	Tues	Weds	Thur	Fri	Sat	Sun
Temperature	°C	°C	°C	°C	°C	°C	°C
Time							
Corrective Action							
Temperature	°C	°C	°C	°C	°C	°C	°C
Time							
Corrective Action							
Temperature	°C	°C	°C	°C	°C	°C	°C
Time							
Corrective Action							
Temperature	°C	°C	°C	°C	°C	°C	°C
Time							
Corrective Action							

Food Temperature Chart

Manitoba Health
Health Protection Unit

Probe Thermometer Calibrated?	YES or NO
Sanitizer Solutions Checked?	YES or NO
Dishwasher Checked?	YES or NO

Pavillion:

Month	Day	Mon	Tues	Weds	Thur	Fri	Sat	Sun
Temperature		°C	°C	°C	°C	°C	°C	°C
Time								
Corrective Action								
Temperature		°C	°C	°C	°C	°C	°C	°C
Time								
Corrective Action								
Temperature		°C	°C	°C	°C	°C	°C	°C
Time								
Corrective Action								
Temperature		°C	°C	°C	°C	°C	°C	°C
Time								
Corrective Action								

Food Cooling Chart

Manitoba Health
Health Protection Unit

Probe Thermometer Calibrated?	YES or NO
Sanitizer Solutions Checked?	YES or NO
Dish Washer Checked?	YES or NO

Pavillion:

Food Product Name							
Date							
Start Time							
Start Temperature							
After 1 Hour	**Temp**						
	Time						
After 2 Hours	**Temp**						
	Time						
After 3 Hours	**Temp**						
	Time						
After 4 Hours	**Temp**						
	Time						
After 5 Hours	**Temp**						
	Time						
After 6 Hours	**Temp**						
	Time						
Corrective Action							
Employee							

Refrigeration/Cooler Temperature Log

Manitoba Health
Health Protection Unit

Fridge Number:

Month :

	AM Check	PM Check	Corrective Action/Comments	Initials
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				

Appendix G- Survey Results

Pavilion A Survey Result				
Question Number	Yes	No	Year	
1	X		2010	
	Excellent (3)	Good (2)	Fair (1)	Poor (0)
2			1	
3	3			
4	3			
6a		2		
6b				0
6c				0
7				0
8		2		
9		2		
10a				0
10b				0
Total	6	6	1	0
Test Score	13		Test %	39.3939394

Pavilion A1 Survey Result				
Question Number	Yes	No	Year	
1	X		2010	
	Excellent (3)	Good (2)	Fair (1)	Poor (0)
2				0
3	3			
4	3			
6a				0
6b		2		
6c	3			
7				0
8				0
9		2		
10a				0
10b				0
Total	9	4	0	0
Test Score	13		Test %	39.3939394

Pavilion B Survey Result				
Question Number	Yes	No	Year	
1	X		2011	
	Excellent (3)	Good (2)	Fair (1)	Poor (0)
2	3			
3	3			
4				0
6a		2		
6b	3			
6c				0
7				0
8				0
9	3			
10a				0
10b	3			
Total	15	2	0	0
Test Score	17		Test %	51.5151515

Pavilion B1 Survey Result				
Question Number	Yes	No	Year	
1	X			
	Excellent (3)	Good (2)	Fair (1)	Poor (0)
2		2		
3				0
4				0
6a		2		
6b				0
6c				0
7	3			
8				0
9				0
10a				0
10b				0
Total	3	4	0	0
Test Score	7		Test %	21.2121212

Pavilion C Survey Result				
Question Number	Yes	No	Year	
1		X		
	Excellent (3)	Good (2)	Fair (1)	Poor (0)
2				0
3				0
4				0
6a				0
6b				0
6c				0
7				0
8				0
9				0
10a				0
10b				0
Total	0	0	0	0
Test Score	0		Test %	0

Pavilion C1 Survey Result				
Question Number	Yes	No	Year	
1		X		
	Excellent (3)	Good (2)	Fair (1)	Poor (0)
2			1	
3				0
4				0
6a		2		
6b		2		0
6c				0
7				0
8				0
9				0
10a				0
10b				0
Total	0	4	1	0
Test Score	5		Test %	15.1515152

Pavilion D Survey Result				
Question Number	Yes	No	Year	
1	X		2011	
	Excellent (3)	Good (2)	Fair (1)	Poor (0)
2		2		
3		2		
4	3			
6a		2		
6b		2		
6c				0
7		2		
8				0
9	3			
10a				0
10b	3			
Total	9	10	0	0
Test Score	19		Test %	57.5757576

Pavilion D1 Survey Result				
Question Number	Yes	No	Year	
1		X		
	Excellent (3)	Good (2)	Fair (1)	Poor (0)
2				0
3				0
4				0
6a				0
6b				0
6c				0
7				0
8				0
9				0
10a				0
10b				0
Total	0	0	0	0
Test Score	0		Test %	0

Pavilion E Survey Result				
Question Number	Yes	No	Year	
1	X		2011	
	Excellent (3)	Good (2)	Fair (1)	Poor (0)
2			1	
3		2		
4	3			
6a		2		
6b		2		
6c				0
7		2		
8	3			
9				0
10a	2			
10b	3			
Total	11	8	1	0
Test Score	20		Test %	60.6060606

Pavilion E1 Survey Result				
Question Number	Yes	No	Year	
1	X		2010	
	Excellent (3)	Good (2)	Fair (1)	Poor (0)
2			1	
3		2		
4	3			
6a		2		
6b	3			
6c				0
7	3			
8		2		
9		2		
10a	3			
10b				0
Total	12	8	1	0
Test Score	21		Test %	63.6363636

Appendix H- Food Protection Inspection Reports

Pavilion A						
Inspection Number: 1						
06-Aug-11	**Result**					
Questions Listed in Inspection Reports	**Yes**	**No**	**CDI**	**N/O**	**N/A**	**Comments**
1. Operator has completed and submitted a registration form for a permit to operate. (Sec. 2)	✓					
2. Operator possesses a valid permit to operate a temporary food establishment. (Sec. 3)	✓					Temporary permit issued. Post the permit in a visible location.
3. Construction of temporary booth meets requirements. (Sec. 37)	✓					
4. Potentially hazardous foods maintained below 5°C (41°F) or above 60°C (140°F). (Sec. 13)	✓					All food currently frozen or refrigerated.
5. Food is protected from contamination at all times while being stored or displayed. (Sec. 6)	✓					
6. Thermometers used to verify food preparation and storage temperatures. (Sec. 13)	✓					Accurate thermometers located in all coolers. Probe thermometers and temperature check list for all food products is on site for use. The juice compote has been temperature checked regularly sice 7 a.m.
7. Adequate supply of potable water is provided for duration and type of event. (Sec. 37)	✓					
8. Operator has provided suitable handwashing station for booth workers. (Sections 33 and 37)	✓					Hand station is well stocked with hand soap and paper towels
9. Garbage is stored in suitable receptacles. (Sec. 37)	✓					
10. Food handlers are maintaining good personal hygiene practices. (Sec. 12)	✓					Proper hair coverings and clean aprons are worn by all kitchen staff.
11. Food contact surfaces washed / rinsed / sanitized after each use and following any operations when contamination may have occurred. (Sec. 15)	✓					pH test strips are used to verify chlorine sanitizer at 50 ppm for dishes and 100 ppm for wiping cloths. Signs indicating proper dish washing steps and correct sanitizer strength are posted.
Closing Comments:						
"Food Safety Steps For Kitchen Staff" posters (in English and Russian) were given to the event coordinator. The kitchen is well organized and preapred for the event.						
Total	**11**	**0**	**0**	**0**	**0**	
Total Compliance Percentage	**100%**	**0%**	**0%**	**0%**	**0%**	
Number of violations	**0**					

Pavilion A						
Inspection Number: 2						
07-Aug-11			Result			
Questions Listed in Inspection Reports	**Yes**	**No**	**CDI**	**N/O**	**N/A**	**Comments**
1. Operator has completed and submitted a registration form for a permit to operate. (Sec. 2)	✓					
2. Operator possesses a valid permit to operate a temporary food establishment. (Sec. 3)	✓					Permit visibly posted.
requirements. (Sec. 37)	✓					
4. Potentially hazardous foods maintained below 5°C (41°F) or above 60°C (140°F). (Sec. 13)	✓					All temperatures are measuring well below 5°C (41°F) in the coolers and above 60°C (140°F) in the warmers. The temperature check list has been used to monitor the cooler temperatures, but not the food once cooked or in the warmers. The borscht and dumplings are cooked to boiling, but are not temperature checked (or recorded in the log book).
5. Food is protected from contamination at all times while being stored or displayed. (Sec. 6)	✓					All food is covered and protected.
6. Thermometers used to verify food preparation and storage temperatures. (Sec. 13)	✓					All the coolers are equipped with accurate thermometers.
7. Adequate supply of potable water is provided for duration and type of event. (Sec. 37)	✓					
8. Operator has provided suitable handwashing station for booth workers. (Sections 33 and 37)	✓					The hand sink is well stocked with hand soap and paper towels.
9. Garbage is stored in suitable receptacles. (Sec. 37)	✓					
10. Food handlers are maintaining good personal hygiene practices. (Sec. 12)	✓					Proper hair coverings and clean aprons are worn by all kitchen staff.
11. Food contact surfaces washed / rinsed / sanitized after each use and following any operations when contamination may have occurred. (Sec. 15)	✓					The chlorine sanitizer accurately measured 50 PPM for the dishes and 100 PPM for the wiping cloths (two buckets in the kitchen and one at the service line).
Closing Comments:Valid City of Winnipeg Food Safe Handling certificates are posted. Disposable cutlery for the customers has been pre-wrapped in plastic wrap to						
Total	**11**	**0**	**0**	**0**	**0**	
Total Compliance Percentage	**100%**	**0%**	**0%**	**0%**	**0%**	
Number of violations	**0**					

Pavilion A1						
Inspection Number: 1						
02-Aug-11	Result					
Questions Listed in Inspection Reports	**Yes**	**No**	**CDI**	**N/O**	**N/A**	**Comments**
1. Operator has completed and submitted a registration form for a permit to operate. (Sec. 2)	✓					
2. Operator possesses a valid permit to operate a temporary food establishment. (Sec. 3)	✓					
3. Construction of temporary booth meets requirements. (Sec. 37)	✓					
4. Potentially hazardous foods maintained below 5°C (41°F) or above 60°C (140°F). (Sec. 13)			✓			All cooler temperatures were good.All cooler temperatures were good. Log sheets are provided to show the time and temperature of the food taken throughout the event.
5. Food is protected from contamination at all times while being stored or displayed. (Sec. 6)	✓					
6. Thermometers used to verify food preparation and storage temperatures. (Sec. 13)	✓					Metal probe thermometers are used to monitor food internal temperatures. All refrigerators were equipped with thermometers to monitor tempertures.
7. Adequate supply of potable water is provided for duration and type of event. (Sec. 37)	✓					
8. Operator has provided suitable handwashing station for booth workers. (Sections 33 and 37)	✓					
9. Garbage is stored in suitable receptacles. (Sec. 37)	✓					
10. Food handlers are maintaining good personal hygiene practices. (Sec. 12)	✓					
11. Food contact surfaces washed / rinsed / sanitized after each use and following any operations when contamination may have occurred. (Sec. 15)	✓					All wiping rags are stored in 100 ppm chlorine sanitizer.
Closing Comments:						
All items listed on the inspection report dated July 31, 2011 have been corrected.Thank you for your cooperation.						
Total	**10**	**0**	**1**	**0**	**0**	
Total Compliance Percentage	**91%**	**0%**	**9%**	**0%**	**0%**	
Number of violations	**1**					

Pavilion A1						
Inspection Number: 2						
04-Aug-11			Result			
Questions Listed in Inspection Reports	**Yes**	**No**	**CDI**	**N/O**	**N/A**	**Comments**
1. Operator has completed and submitted a registration form for a permit to operate. (Sec. 2)	✓					
2. Operator possesses a valid permit to operate a temporary food establishment. (Sec. 3)	✓					
3. Construction of temporary booth meets requirements. (Sec. 37)	✓					
4. Potentially hazardous foods maintained below 5°C (41°F) or above 60°C (140°F). (Sec. 13)			✓			Refrigerator in the main kitchen had a temperature of 7°C. The temperature was immediately turned down and by the end of the inspection, the cooler reached 5°C.Continue to
5. Food is protected from contamination at all times while being stored or displayed. (Sec. 6)	✓					All food was properly covered during storage.
6. Thermometers used to verify food preparation and storage temperatures. (Sec. 13)	✓					
7. Adequate supply of potable water is provided for duration and type of event. (Sec. 37)	✓					
8. Operator has provided suitable handwashing station for booth workers. (Sections 33 and 37)	✓					
9. Garbage is stored in suitable receptacles. (Sec. 37)	✓					
10. Food handlers are maintaining good personal hygiene practices. (Sec. 12)	✓					
11. Food contact surfaces washed / rinsed / sanitized after each use and following any operations when	✓					Wiping rags stored in 100 ppm chlorine sanitizer.
Closing Comments:						
Continue to closely monitor cooler temperatures.						
Total	**10**	**0**	**1**	**0**	**0**	
Total Compliance Percentage	**1**	**0**	**0**	**0**	**0**	
Number of violations	**1**					

Pavilion B						
Inspection Number: 1						
09-Aug-11			Result			
Questions Listed in Inspection Reports	**Yes**	**No**	**CDI**	**N/O**	**N/A**	**Comments**
1. Operator has completed and submitted a registration form for a permit to operate. (Sec. 2)	✓					
2. Operator possesses a valid permit to operate a temporary food establishment. (Sec. 3)	✓					Permit now posted outside the main kitchen area.
3. Construction of temporary booth meets requirements. (Sec. 37)	✓					
4. Potentially hazardous foods maintained below 5°C (41°F) or above 60°C (140°F). (Sec. 13)			✓			Container of refried beans being stored on a block of ice. The container was at 9 Celsius which is not acceptable. Container must be stored deep in the ice to keep it at 5 Celsius or less at all times. More ice added.Single service containers of rice pudding was found stored at 9 Celsius on the service line. Items moved to a fridge that can maintain 5 Celsius or less. All potentially hazardous foods must be stored at 5 Celsius or less.
5. Food is protected from contamination at all times while being stored or displayed. (Sec. 6)	✓					
6. Thermometers used to verify food preparation and storage temperatures. (Sec. 13)	✓					Probe thermometer now being used as well as temperature log sheets. Please date sheets accordingly and keep all records on file.
7. Adequate supply of potable water is provided for duration and type of event. (Sec. 37)	✓					
8. Operator has provided suitable handwashing station for booth workers. (Sections 33 and 37)		✓				A portable handwashing sink or a temporary handwashing station to be set up between the bar and serving line area. This must be equipped with liquid soap and paper towel. Staff currently washing hands in the canteen area.
9. Garbage is stored in suitable receptacles. (Sec. 37)	✓					
10. Food handlers are maintaining good personal hygiene practices. (Sec. 12)	✓					
11. Food contact surfaces washed / rinsed / sanitized after each use and following any operations when contamination may have occurred. (Sec. 15)			✓			No sanitizer detected in the sanitizer buckets in the serving line area as well as the canteen area. This was corrected during inspection.
Closing Comments						
Facility is no longer using cloths to store tortillas, they are now storing using tin foil. Single service forks/knives/spoons must be stored in the same direction so as to prevent contamination when picking up. This was corrected during inspection.						
Total	8	1	2	0	0	
Total Compliance Percentage	73%	9%	18%	0%	0%	
Number of violations	3					

Pavilion B						
Inspection Number: 2						
12-Aug-11			Result			
Questions Listed in Inspection Reports	**Yes**	**No**	**CDI**	**N/O**	**N/A**	**Comments**
1. Operator has completed and submitted a registration form for a permit to operate. (Sec. 2)	✓					
2. Operator possesses a valid permit to operate a temporary food establishment. (Sec. 3)	✓					
3. Construction of temporary booth meets requirements. (Sec. 37)	✓					
4. Potentially hazardous foods maintained below 5°C (41°F) or above 60°C (140°F). (Sec. 13)	✓					All fridges maintaining proper temperatures.
5. Food is protected from contamination at all times while being stored or displayed. (Sec. 6)	✓					
6. Thermometers used to verify food preparation and storage temperatures. (Sec. 13)	✓					
7. Adequate supply of potable water is provided for duration and type of event. (Sec. 37)	✓					
8. Operator has provided suitable handwashing station for booth workers. (Sections 33 and 37)	✓					Handwashing station has been set up between the serving line and the bar service area.
9. Garbage is stored in suitable receptacles. (Sec. 37)	✓					
10. Food handlers are maintaining good personal hygiene practices. (Sec. 12)	✓					
11. Food contact surfaces washed / rinsed / sanitized after each use and following any operations when contamination may have occurred. (Sec. 15)	✓					3-compartment sink being used properly (wash, rinse,sanitize) and commercial dishwasher now being used. Sanitizer level in dishwasher is appropriate.All wiping cloths being stored in sanitizer buckets. Sanitizer buckets labelled with sanitizer strength and how to test using test strips.
Closing Comments						
Total	**11**	**0**	**0**	**0**	**0**	
Total Compliance Percentage	**100%**	**0%**	**0%**	**0%**	**0%**	
Number of violations	**0**					

Pavilion B1						
Inspection Number: 1						
03-Aug-11			Result			
Questions Listed in Inspection Reports	**Yes**	**No**	**CDI**	**N/O**	**N/A**	**Comments**
1. Operator has completed and submitted a registration form for a permit to operate. (Sec. 2)	✓					
2. Operator possesses a valid permit to operate a temporary food establishment. (Sec. 3)	✓					
3. Construction of temporary booth meets requirements. (Sec. 37)	✓					
4. Potentially hazardous foods maintained below 5°C (41°F) or above 60°C (140°F). (Sec. 13)		✓				One cooler was off due to a power outage (in the concession area) - all food from this cooler was moved into the one that was maintaining correct temperatures (in the room beside first aid kit). The other fridge adjacent to the stove was also not maintaining correct temperature. Food from this fridge was also moved into the fridge in room beside first aid kit.
5. Food is protected from contamination at all times while being stored or displayed. (Sec. 6)	✓					
6. Thermometers used to verify food preparation and storage temperatures. (Sec. 13)	✓					
7. Adequate supply of potable water is provided for duration and type of event. (Sec. 37)	✓					
8. Operator has provided suitable handwashing station for booth workers. (Sections 33 and 37)	✓					
9. Garbage is stored in suitable receptacles. (Sec. 37)	✓					
10. Food handlers are maintaining good personal hygiene practices. (Sec. 12)	✓					
11. Food contact surfaces washed / rinsed / sanitized after each use and following any operations when contamination may have occurred. (Sec. 15)			✓			Bucket used for wiping cloths had no sanitizer. This was corrected during inspection.These violations were corrected during the inspection
Closing Comments:						
Total	9	1	1	0	0	
Total Compliance Percentage	82%	9%	9%	0%	0%	
Number of violations	2					

Pavilion B1						
Inspection Number: 2						
06-Aug-11			Result			
Questions Listed in Inspection Reports	Yes	No	CDI	N/O	N/A	Comments
1. Operator has completed and submitted a registration form for a permit to operate. (Sec. 2)	✓					
2. Operator possesses a valid permit to operate a temporary food establishment. (Sec. 3)	✓					
3. Construction of temporary booth meets requirements. (Sec. 37)	✓					
4. Potentially hazardous foods maintained below 5°C (41°F) or above 60°C (140°F). (Sec. 13)		✓				White fridge beside stove is still not maintaining adequate temperatures. Food was removed from here and put into the cooler in concession area (which is maintaining
5. Food is protected from contamination at all times while being stored or displayed. (Sec. 6)	✓					
6. Thermometers used to verify food preparation and storage temperatures. (Sec. 13)	✓					
7. Adequate supply of potable water is provided for duration and type of event. (Sec. 37)	✓					
8. Operator has provided suitable handwashing station for booth workers. (Sections 33 and 37)	✓					
9. Garbage is stored in suitable receptacles. (Sec. 37)	✓					
10. Food handlers are maintaining good personal hygiene practices. (Sec. 12)	✓					
11. Food contact surfaces washed / rinsed / sanitized after each use and following any operations when contamination may have occurred. (Sec. 15)			✓			No sanitizer bucket in kitchen - this was provided during inspection. Sanitizer bucket was available in the buffet area.
Closing Comments:						
Total	9	1	1	0	0	
Total Compliance Percentage	82%	9%	9%	0%	0%	
Number of violations	2					

Pavilion C						
Inspection Number: 1						
02-Aug-11			Result			
Questions Listed in Inspection Reports	**Yes**	**No**	**CDI**	**N/O**	**N/A**	**Comments**
1. Operator has completed and submitted a registration form for a permit to operate. (Sec. 2)	✓					
2. Operator possesses a valid permit to operate a temporary food establishment. (Sec. 3)	✓					
3. Construction of temporary booth meets requirements. (Sec. 37)	✓					
4. Potentially hazardous foods maintained below 5°C (41°F) or above 60°C (140°F). (Sec. 13)	✓					
5. Food is protected from contamination at all times while being stored or displayed. (Sec. 6)	✓					
6. Thermometers used to verify food preparation and storage temperatures. (Sec. 13)	✓					Monitoring of hot holding temperature for serving area was not recorded in sheet as requested.
7. Adequate supply of potable water is provided for duration and type of event. (Sec. 37)			✓			
8. Operator has provided suitable handwashing station for booth workers. (Sections 33 and 37)	✓					At time of inspection paper towelling was out.Operator changed when pointed out paper towel was out.
9. Garbage is stored in suitable receptacles. (Sec. 37)	✓					
10. Food handlers are maintaining good personal hygiene practices. (Sec. 12)	✓					
11. Food contact surfaces washed / rinsed / sanitized after each use and following any operations when contamination may have occurred. (Sec. 15)	✓					
Closing Comments:						
Record of hot holding temp is requested. Amendment: Inspection verified that a sample of food was being kept and labeled as to date and time in fridge. This was the pavillion's policy in case food needed to be sampled if a FBI occurred. -Temperatures including hot holding were satisfactory. -Verification by documenting of cooking temperatures was only done at barbecue station. But hot holding temperature verification and documenting was not done on log sheet upstairs in main kitchen. Spoke to (X) who checked and then recorded for this date and indicated he would do that for remaining days. Also cook was using a wet cloth that is used for holding hot pots as a hand wipe. He indicated that this was a chlorine soaked cloth. He was advised that he should ensure that this is not done instead of hand washing.						
Total	**10**	**0**	**1**	**0**	**0**	
Total Compliance Percentage	**91%**	**0%**	**9%**	**0%**	**0%**	
Number of violations	**1**					

Pavilion C						
Inspection Number: 2						
04-Aug-11			Result			
Questions Listed in Inspection Reports	**Yes**	**No**	**CDI**	**N/O**	**N/A**	**Comments**
1. Operator has completed and submitted a registration form for a permit to operate. (Sec. 2)	✓					
2. Operator possesses a valid permit to operate a temporary food establishment. (Sec. 3)	✓					Permit posted
3. Construction of temporary booth meets requirements. (Sec. 37)	✓					
4. Potentially hazardous foods maintained below 5°C (41°F) or above 60°C (140°F). (Sec. 13)	✓					Hot holding temperature log with daily temperatures
5. Food is protected from contamination at all times while being stored or displayed. (Sec. 6)	✓					
6. Thermometers used to verify food preparation and storage temperatures. (Sec. 13)	✓					
7. Adequate supply of potable water is provided for duration and type of event. (Sec. 37)	✓					
8. Operator has provided suitable handwashing station for booth workers. (Sections 33 and 37)	✓					
9. Garbage is stored in suitable receptacles. (Sec. 37)	✓					
10. Food handlers are maintaining good personal hygiene practices. (Sec. 12)	✓					
after each use and following any operations when contamination may have occurred. (Sec. 15)	✓					
Closing Comments:						
Hot food held now tested each meal and temps above 60°C						
Total	11	0	0	0	0	
Total Compliance Percentage	100%	0%	0%	0%	0%	
Number of violations	0					

Pavilion C1						
Inspection Number: 1						
09-Aug-11	Result					
Questions Listed in Inspection Reports	**Yes**	**No**	**CDI**	**N/O**	**N/A**	**Comments**
1. Operator has completed and submitted a registration form for a permit to operate. (Sec. 2)	✓					
2. Operator possesses a valid permit to operate a temporary food establishment. (Sec. 3)	✓					
3. Construction of temporary booth meets requirements. (Sec. 37)	✓					
4. Potentially hazardous foods maintained below 5°C (41°F) or above 60°C (140°F). (Sec. 13)	✓					
5. Food is protected from contamination at all times while being stored or displayed. (Sec. 6)	✓					
6. Thermometers used to verify food preparation and storage temperatures. (Sec. 13)	✓					
7. Adequate supply of potable water is provided for duration and type of event. (Sec. 37)	✓					
8. Operator has provided suitable handwashing station for booth workers. (Sections 33 and 37)	✓					
9. Garbage is stored in suitable receptacles. (Sec. 37)	✓					
10. Food handlers are maintaining good personal hygiene practices. (Sec. 12)	✓					
11. Food contact surfaces washed / rinsed / sanitized after each use and following any operations when contamination may have occurred. (Sec. 15)	✓					
Closing Comments						
Hot holding monitored/recorded and verified as at or above 60°C. However soups and gravy are being re-heated in crock pots and from refrigeration to 60°C took 2 hours AND not cooked to 74°C. Operator instructed to cook all food to 74°C form 5°C within one hour and then hold at 60°C Corrected during inspection.Chlorine test strips were not provided after second request and must be provided for Aug 10th/11.						
Total	11	0	0	0	0	
Total Compliance Percentage	100%	0%	0%	0%	0%	
Number of violations	0					

Pavilion C1						
Inspection Number: 2						
11-Aug-11			Result			
Questions Listed in Inspection Reports	**Yes**	**No**	**CDI**	**N/O**	**N/A**	**Comments**
1. Operator has completed and submitted a registration form for a permit to operate. (Sec. 2)	✓					
2. Operator possesses a valid permit to operate a temporary food establishment. (Sec. 3)	✓					
3. Construction of temporary booth meets requirements. (Sec. 37)	✓					
4. Potentially hazardous foods maintained below 5°C (41°F) or above 60°C (140°F). (Sec. 13)	✓					
5. Food is protected from contamination at all times while being stored or displayed. (Sec. 6)	✓					
6. Thermometers used to verify food preparation and storage temperatures. (Sec. 13)	✓					
7. Adequate supply of potable water is provided for duration and type of event. (Sec. 37)	✓					
8. Operator has provided suitable handwashing station for booth workers. (Sections 33 and 37)	✓					
9. Garbage is stored in suitable receptacles. (Sec. 37)	✓					
10. Food handlers are maintaining good personal hygiene practices. (Sec. 12)	✓					
after each use and following any operations when contamination may have occurred. (Sec. 15)	✓					
Closing Comments:						
Hot holding monitored/recorded and verified as at or above 60°C. Soups and gravy are being re-heated to 71°C. Chlorine test strips were provided. Operator documented twice daily cook and hot holding temps. Ice scoops stored in clean containers. Refrigeration temps satisfactory						
Total	**11**	**0**	**0**	**0**	**0**	
Total Compliance Percentage	**100%**	**0%**	**0%**	**0%**	**0%**	
Number of violations	**0**					

Pavilion D						
Inspection Number: 1						
9-Aug-11	Result					
Questions Listed in Inspection Reports	**Yes**	**No**	**CDI**	**N/O**	**N/A**	**Comments**
1. Operator has completed and submitted a registration form for a permit to operate. (Sec. 2)	✓					
2. Operator possesses a valid permit to operate a temporary food establishment. (Sec. 3)	✓					Permit visibly posted.
3. Construction of temporary booth meets requirements. (Sec. 37)	✓					
4. Potentially hazardous foods maintained below 5°C (41°F) or above 60°C (140°F). (Sec. 13)	✓					All temperatures in the service line are measuring well above 60°C (140°F). The food is being plated and replaced with hot dishes continually. All temperature log sheets have been filled for receiving, hot holding, cold holding and cooking.
5. Food is protected from contamination at all times while being stored or displayed. (Sec. 6)	✓					
6. Thermometers used to verify food preparation and storage temperatures. (Sec. 13)	✓					The probe thermometer is calibrated every day in an ice water bath.
7. Adequate supply of potable water is provided for duration and type of event. (Sec. 37)	✓					
8. Operator has provided suitable handwashing station for booth workers. (Sections 33 and 37)	✓					The hand station is well stocked with paper towels and hand soap.With the aid of a timer, the kitchen staff conscientiously stop and wash their hands every 30 minutes, even while serving the customers.
9. Garbage is stored in suitable receptacles. (Sec. 37)	✓					
10. Food handlers are maintaining good personal hygiene practices. (Sec. 12)	✓					Proper hair coverings and clean aprons are worn by all kitchen staff and disposable gloves are worn by the service line staff.
11. Food contact surfaces washed / rinsed / sanitized after each use and following any operations when contamination may have occurred. (Sec. 15)	✓					The chlorine sanitizer is being measured for the wiping cloth buckets every 3 hours and as needed in the dish sink. Sanitizer was losing strength at the time of inspection. Try to keep the cloths at 100 PPM and the dishes at 50 PPM.
Closing Comments The kitchen manager is doing a great job at practicing safe food handling. The kitchen staff are aware of proper handling and keeping the food protected while serving.						
Total	**11**	**0**	**0**	**0**	**0**	
Total Compliance Percentage	**100%**	**0%**	**0%**	**0%**	**0%**	
Number of violations	**0**					

Pavilion D						
Inspection Number: 2						
11-Aug-11			Result			
Questions Listed in Inspection Reports	**Yes**	**No**	**CDI**	**N/O**	**N/A**	**Comments**
1. Operator has completed and submitted a registration form for a permit to operate. (Sec. 2)	✓					
2. Operator possesses a valid permit to operate a temporary food establishment. (Sec. 3)	✓					
3. Construction of temporary booth meets requirements. (Sec. 37)	✓					
4. Potentially hazardous foods maintained below 5°C (41°F) or above 60°C (140°F). (Sec. 13)	✓					All temperatures in the service line, stove top and warmer are measuring well above 60°C (140°F). The cooler is used for only a few food items (synthetic cream, sour cream and vegetable plates) and is measuring 5°C (41°F). The temperature log sheets are being filled out as best as possible.
5. Food is protected from contamination at all times while being stored or displayed. (Sec. 6)	✓					All food is covered with lids or foil in storage, on the stove top and in the service line.
6. Thermometers used to verify food preparation and storage temperatures. (Sec. 13)	✓					Accurate thermometers are used in all coolers and the probe is calibrated daily in an ice water bath.
7. Adequate supply of potable water is provided for duration and type of event. (Sec. 37)	✓					
8. Operator has provided suitable handwashing station for booth workers. (Sections 33 and 37)	✓					The hand station is well stocked with hand soap and paper towels. Staff stop and wash their hands at 30 minute intervals.
9. Garbage is stored in suitable receptacles. (Sec. 37)	✓					
10. Food handlers are maintaining good personal hygiene practices. (Sec. 12)	✓					Proper hair coverings and clean aprons are worn by all kitchen staff and disposable gloves are worn by the service line staff.
after each use and following any operations when contamination may have occurred. (Sec. 15)	✓					The chlorine sanitizer is accurately measuring 50 PPM and both wiping cloth buckets are at 100 PPM.
Closing Comments: The kitchen manager and staff have done a great job this week at practicing proper food handling.						
Total	**11**	**0**	**0**	**0**	**0**	
Total Compliance Percentage	**100**	**0**	**0**	**0**	**0**	
Number of violations	**0**					

Pavilion D1						
Inspection Number: 1						
09-Aug-11			Result			
Questions Listed in Inspection Reports	**Yes**	**No**	**CDI**	**N/O**	**N/A**	**Comments**
1. Operator has completed and submitted a registration form for a permit to operate. (Sec. 2)	✓					
2. Operator possesses a valid permit to operate a temporary food establishment. (Sec. 3)	✓					Permit posted
3. Construction of temporary booth meets requirements. (Sec. 37)	✓					
4. Potentially hazardous foods maintained below 5°C (41°F) or above 60°C (140°F). (Sec. 13)			✓			The hot holding food temperatures were at 50 C. Operator provided aluminum foil on three sides of chafing trays.Where temperature can not be consistenly held at 60 C operator was advised and agreed that no food left over from each service will be re-served.
5. Food is protected from contamination at all times while being stored or displayed. (Sec. 6)	✓					
6. Thermometers used to verify food preparation and storage temperatures. (Sec. 13)			✓			The operator did not provide a thermometer in a closed container such as capped water as advised to provide more accurate fridge holding temperature readings.The temperature of the fridge in the kitchen had temperature of 10 C. at coldest setting. This is likely from constant opening of door. A more accurate thermometer was provided and operator will monitor temperature and if temperature is not at 5 C or less will move food to the other fridge with 5 C holding temperature
7. Adequate supply of potable water is provided for duration and type of event. (Sec. 37)	✓					
8. Operator has provided suitable handwashing station for booth workers. (Sections 33 and 37)	✓					
9. Garbage is stored in suitable receptacles. (Sec. 37)	✓					
10. Food handlers are maintaining good personal hygiene practices. (Sec. 12)	✓					
11. Food contact surfaces washed / rinsed / sanitized after each use and following any operations when contamination may have occurred. (Sec. 15)	✓					
Closing Comments: Due to computer battery being low the insepction report was lost and a written and signed copy was left with oeperator.The head cook was keeping temepeature record of cooked food sent and recieved as well as hot holding at start of service.Due to a large fan placed in area of service the hot holding using sternos were temperature affected and aluminum foil placement and instruction to the Pavilion co-ordinator that foods from each service were to be removed unless hot holding can be maintained at 60 C were followed.All other were in compliance.						
Total	**9**	**0**	**2**	**0**	**0**	
Total Compliance Percentage	**82%**	**0%**	**18%**	**0%**	**0%**	
Number of violations	**2**					

Pavilion D1						
Inspection Number: 2						
11-Aug-11	Result					
Questions Listed in Inspection Reports	**Yes**	**No**	**CDI**	**N/O**	**N/A**	**Comments**
1. Operator has completed and submitted a registration form for a permit to operate. (Sec. 2)	✓					
2. Operator possesses a valid permit to operate a temporary food establishment. (Sec. 3)	✓					
3. Construction of temporary booth meets requirements. (Sec. 37)	✓					
4. Potentially hazardous foods maintained below 5°C (41°F) or above 60°C (140°F). (Sec. 13)	✓					
5. Food is protected from contamination at all times while being stored or displayed. (Sec. 6)	✓					
6. Thermometers used to verify food preparation and storage temperatures. (Sec. 13)	✓					Food thermometer in bottled water with cap provided and temp was 2°C.
7. Adequate supply of potable water is provided for duration and type of event. (Sec. 37)	✓					
8. Operator has provided suitable handwashing station for booth workers. (Sections 33 and 37)	✓					
9. Garbage is stored in suitable receptacles. (Sec. 37)	✓					
10. Food handlers are maintaining good personal hygiene practices. (Sec. 12)	✓					
after each use and following any operations when contamination may have occurred. (Sec. 15)	✓					
Closing Comments: Hot holding temperatures were being monitored and verified at or above 60°C. Fridge temps were 5°C or less. Cooking temps were monitored and at or above 71°C. Chlorine in dishwash and wiping cloth solution were satisfactory.						
Total	**11**	**0**	**0**	**0**	**0**	
Total Compliance Percentage	**100%**	**0%**	**0%**	**0%**	**0%**	
Number of violations	**0**					

Pavilion E						
Inspection Number: 1						
03-Aug-11			Result			
Questions Listed in Inspection Reports	**Yes**	**No**	**CDI**	**N/O**	**N/A**	**Comments**
1. Operator has completed and submitted a registration form for a permit to operate. (Sec. 2)	✓					
2. Operator possesses a valid permit to operate a temporary food establishment. (Sec. 3)	✓					
3. Construction of temporary booth meets requirements. (Sec. 37)	✓					
4. Potentially hazardous foods maintained below 5°C (41°F) or above 60°C (140°F). (Sec. 13)		✓				The single coke cooler in the back is not maintaining food below 5°C. Food was moved into the cooler next to it during inspection. This cooler is not to be used for remainder of event.
5. Food is protected from contamination at all times while being stored or displayed. (Sec. 6)	✓					
6. Thermometers used to verify food preparation and storage temperatures. (Sec. 13)	✓					
7. Adequate supply of potable water is provided for duration and type of event. (Sec. 37)	✓					
8. Operator has provided suitable handwashing station for booth workers. (Sections 33 and 37)	✓					
9. Garbage is stored in suitable receptacles. (Sec. 37)	✓					
10. Food handlers are maintaining good personal hygiene practices. (Sec. 12)	✓					
11. Food contact surfaces washed / rinsed / sanitized after each use and following any operations when contamination may have occurred. (Sec. 15)	✓					
Closing Comments						
Total	10	1	0	0	0	
Total Compliance Percentage	91%	9%	0%	0%	0%	
Number of violations	1					

Pavilion E						
Inspection Number: 2						
05-Aug-11			Result			
Questions Listed in Inspection Reports	**Yes**	**No**	**CDI**	**N/O**	**N/A**	**Comments**
1. Operator has completed and submitted a registration form for a permit to operate. (Sec. 2)	✓					
2. Operator possesses a valid permit to operate a temporary food establishment. (Sec. 3)	✓					
3. Construction of temporary booth meets requirements. (Sec. 37)	✓					
4. Potentially hazardous foods maintained below 5°C (41°F) or above 60°C (140°F). (Sec. 13)	✓					Gravy was at approximately 50-55°C so it was removed from buffet and reheated.
5. Food is protected from contamination at all times while being stored or displayed. (Sec. 6)	✓					
6. Thermometers used to verify food preparation and storage temperatures. (Sec. 13)	✓					
7. Adequate supply of potable water is provided for duration and type of event. (Sec. 37)	✓					
8. Operator has provided suitable handwashing station for booth workers. (Sections 33 and 37)	✓					
9. Garbage is stored in suitable receptacles. (Sec. 37)	✓					
10. Food handlers are maintaining good personal hygiene practices. (Sec. 12)	✓					
after each use and following any operations when contamination may have occurred. (Sec. 15)	✓					
Closing Comments:						
Fridges are now operating at an adequate temperature.						
Total	**11**	**0**	**0**	**0**	**0**	
Total Compliance Percentage	**100%**	**0%**	**0%**	**0%**	**0%**	
Number of violations	**0**					

Pavilion E1						
Inspection Number: 1						
10-Aug-11			Result			
Questions Listed in Inspection Reports	**Yes**	**No**	**CDI**	**N/O**	**N/A**	**Comments**
1. Operator has completed and submitted a registration form for a permit to operate. (Sec. 2)	✓					
2. Operator possesses a valid permit to operate a temporary food establishment. (Sec. 3)	✓					
3. Construction of temporary booth meets requirements. (Sec. 37)	✓					
4. Potentially hazardous foods maintained below 5°C (41°F) or above 60°C (140°F). (Sec. 13)	✓					All fridges are now operating correctly. Buffet temperatures are excellent.
5. Food is protected from contamination at all times while being stored or displayed. (Sec. 6)	✓					
6. Thermometers used to verify food preparation and storage temperatures. (Sec. 13)	✓					
7. Adequate supply of potable water is provided for duration and type of event. (Sec. 37)	✓					
8. Operator has provided suitable handwashing station for booth workers. (Sections 33 and 37)	✓					Soap and paper towel are now available and there is plenty of hand sanitizers in various locations.
9. Garbage is stored in suitable receptacles. (Sec. 37)	✓					
10. Food handlers are maintaining good personal hygiene practices. (Sec. 12)	✓					
11. Food contact surfaces washed / rinsed / sanitized after each use and following any operations when contamination may have occurred. (Sec. 15)	✓					
Closing Comments:						
Total	11	0	0	0	0	
Total Compliance Percentage	100%	0%	0%	0%	0%	
Number of violations	0					

Pavilion E1						
Inspection Number: 2						
11-Aug-11			Result			
Questions Listed in Inspection Reports	**Yes**	**No**	**CDI**	**N/O**	**N/A**	**Comments**
1. Operator has completed and submitted a registration form for a permit to operate. (Sec. 2)	✓					
2. Operator possesses a valid permit to operate a temporary food establishment. (Sec. 3)	✓					
3. Construction of temporary booth meets requirements. (Sec. 37)	✓					
4. Potentially hazardous foods maintained below 5°C (41°F) or above 60°C (140°F). (Sec. 13)	✓					The Coke cooler is a little high in temperature (10°C). Please keep an eye on it and if it doesn't go down to at least 5°C in the next two hours please remove all food and place in the other fridge.
5. Food is protected from contamination at all times while being stored or displayed. (Sec. 6)	✓					
6. Thermometers used to verify food preparation and storage temperatures. (Sec. 13)	✓					
7. Adequate supply of potable water is provided for duration and type of event. (Sec. 37)	✓					
8. Operator has provided suitable handwashing station for booth workers. (Sections 33 and 37)	✓					
9. Garbage is stored in suitable receptacles. (Sec. 37)	✓					
10. Food handlers are maintaining good personal hygiene practices. (Sec. 12)	✓					
after each use and following any operations when contamination may have occurred. (Sec. 15)	✓					
Closing Comments:						
Window in kitchen was left open and there was lots of house flies - it was closed during inspection. Please only open windows if screens are provided.						
Total	**11**	**0**	**0**	**0**	**0**	
Total Compliance Percentage	**100%**	**0%**	**0%**	**0%**	**0%**	
Number of violations	**0**					