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Obtaining Efficiencies in Food-Borne Illness Protection for Residential, Health Department-Licensed, and Non-Licensed Entities

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Obtaining Efficiencies in Food-Borne Illness Protection for Residential, Health Department-
Licensed, and Non-Licensed Entities

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Abstract

Severe storms, natural disasters, and other emergencies resulting in extended periods of power loss can negatively impact public health as the likelihood of food-borne illnesses resulting from the consumption of food products held in refrigerators and freezers at improper temperatures is greatly increased. Additionally, food products used or served during emergency responses present additional challenges as many of the products may have other risk factors often associated with food-borne illness outbreaks. These include food from unsafe sources (food prepared in a facility not subject to regulation or inspection), improper cooking temperatures, preparation on contaminated food contact surfaces, and poor hygienic practices during preparation, storage and/or serving. Reducing the likelihood of a food-borne illness outbreak eliminates the need for resources to be redirected during emergency responses.

This manuscript presents brief educational modules developed from existing sources that will provide comprehensive information for residential, health department-licensed, and non-licensed entities detailing proper food handling practices during power loss situations. The modules are designed to be delivered to business and community entities during the health department's monthly food safety course, on the health department's website, through other social media outlets, and during disaster responses. By developing, consolidating, and disseminating operational procedures and guidelines for safe food preparation and storage, the public can benefit from increased protection from improperly prepared and held food, health department-licensed facilities will have a better understanding of food code requirements and expectations, and residents and non-licensed entities will be better positioned to safely assist their fellow citizens in emergency situations.

Keywords: food safety, emergency responses, power outages, educational modules, proper practices

A Risk-Based Approach to Obtain Efficiencies in Food-Borne Illness Protection for Residential, Health Department-Licensed, and Non-Licensed Entities

The Centers for Disease Control and Prevention (CDC) estimates that 48 million people get sick, 128,000 are hospitalized, and 3,000 die each year as a result of a food-borne illness (Kosa, Cates, Karns, Godwin, & Coppings, 2012). This preventable public health problem presents an economic burden as well, estimated at \$152 billion annually for medical care, lost productivity, and reduced quality of life (Pew Charitable Trust, 2012).

Microbial pathogens causing food-borne illnesses can multiply to unsafe levels sufficient enough to cause illness in as little as two hours at temperatures above 41°F (Marx et al., 2006). Severe storms, natural disasters, and other emergencies resulting in extended periods of power loss can negatively impact public health as the likelihood of food-borne illnesses resulting from the consumption of food and food products held in refrigerators and freezers at improper temperatures is greatly increased.

Foods used or served during emergency responses present additional challenges as many of the products may have the risk factors often associated with food-borne illness outbreaks. These include food from unsafe sources (food processed or prepared in a facility not subject to regulation or inspection), improper holding temperatures of potentially hazardous or perishable food items, improper cooking temperatures, contaminated utensils and food contact surfaces, and poor hygienic practices (CDC, 2013). Food with any of these risk factors increases the risk of a food-borne illness outbreak. Additionally, in times of community need, individuals want to help their fellow citizens, but the importance of following safe practices to reduce further harm can sometimes be lost in the recovery efforts increasing the potential of an outbreak.

Proper food safety practices play a vital role during emergency situations as hospitals, medical providers, and other participating agencies may be challenged in providing the appropriate response. The size and scale of disasters greatly influences the services required for a proper recovery. Health departments, especially in rural areas, may be understaffed and Registered Sanitarians are typically cross-trained to address many public health concerns. Reducing the likelihood of a food-borne illness outbreak eliminates the need for resources and sanitarians to be redirected to address a very preventable situation during an already challenging situation.

This project was stimulated by an actual emergency event that occurred in northern Kentucky. On the afternoon of Friday, March 2, 2012, the National Weather Service Forecast Office in Wilmington, Ohio reported Enhanced Fujita Scale level three (EF3) and level four (EF4) tornadoes with estimated wind speeds between 136 and 200 miles per hour (mph) in the northern Kentucky area (NOAA's National Weather Service Forecast Office, 2012). The northern portion of Grant County and southern portions of Kenton County sustained the most damage as the tornado began west of Crittenden and headed east toward Piner, approaching Campbell County (Figure 1).

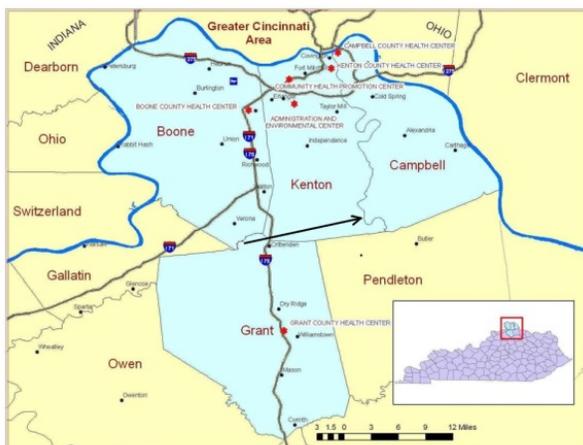


Figure 1. Map of northern Kentucky.

Note: The arrow shows the estimated path of the tornado beginning west of the city of Crittenden (Grant County) and proceeding northeast through southern Kenton County toward Campbell County.

Source: Map obtained from the Northern Kentucky Independent District Health Department.

As the storm moved east and strengthened, homes were severely damaged, cars were thrown, and four deaths were reported (NOAA's National Weather Service Forecast Office, 2012). By Saturday morning, March 3, 2012, the Northern Kentucky Independent District Health Department (NKHD) staff mobilized. NKHD staff worked with hospitals and long-term care facilities to confirm operating status, determine number of injuries and deaths, and share information about food safety and the potential risk of carbon monoxide poisoning associated the portable generators through media outlets (Northern Kentucky Independent District Health Department, 2012). Six NKHD Registered Sanitarians began inspecting existing food service establishments in Grant, Boone, and Kenton Counties and temporary shelters in Kenton County to ensure the safety of the food being served or distributed. Enforcement at several licensed food service facilities was required as confirmed adulterated (temperature-abused) food products meant for public consumption were identified and officially quarantined. Further it was determined that education was needed in temporary shelters involving food preparation as observations revealed that well-intended volunteers lacked the appropriate training, tools, and skills necessary for a safe response. Several health department sanitarians assisted in setting up temporary hand wash and utensil sanitizing stations, provided information on appropriate cooking temperatures, and demonstrated proper hygienic practices for safe food preparation. The health department's response continued for several weeks as reopening inspections of licensed facilities were conducted and follow up visits to shelters were performed to verify proper sanitary conditions and provide additional educational assistance if needed.

While the impact of additional public health concerns was minimized because of the coordinated response, the NKHD realized that licensed and non-licensed entities could be better positioned to address power loss situations and NKHD could play a role in helping them through training. Guidelines and procedures consisting of the proper proportions of community education, enforcement, and technical support for civic responsibility can provide the framework of improved protection from food-borne illnesses for those in the community during an emergency response.

Licensed facilities that prepare food are required to attend the health department's monthly food safety course; however emergency procedural guidelines are not discussed or made available. Incorporating this information will enable operators to gain a better understanding of food code requirements and proper operating parameters during extended periods of power loss and other emergency situations. While residential preparedness information is available on the health department website, it's not presented in a one-page, downloadable format. A downloadable format would allow residents to visit the health department's website before an actual emergency, obtain the information, and keep for future reference.

By increasing the health department's effectiveness in educating licensed and non-licensed entities about the science behind food safety regulations, we anticipate that compliance will increase, waste may be reduced, and the risk of food-borne illnesses will be minimized during disasters and extended periods of power loss. Additionally, residential preparedness can be strengthened as community members would have a reference guide detailing proper food safety procedures to assist them in reducing the risk of food-borne illnesses.

Statement of Purpose

This manuscript presents brief educational modules developed from existing sources that will provide comprehensive information for residential, health department-licensed, and non-licensed entities detailing proper food handling practices during power loss situations. The modules are designed to be delivered to business and community entities during the health department's monthly food safety course, on the health department's website, through other social media outlets, and during disaster responses. This risk-based approach to obtaining efficiencies in food-borne illness protection will result in evidence-driven procedures by examining the impact of food safety during extended periods of power loss, constructing a remedial process for improvement, and educating members of the community. By developing, consolidating, and disseminating operational procedures and guidelines for safe food preparation and storage, the public can benefit from increased protection from improperly prepared and held food, health department-licensed facilities will have a better understanding of food code requirements and expectations, and residents and non-licensed entities will be better positioned to safely assist their fellow citizens in emergency situations.

Literature Review

Storms, Infrastructure, and Power Outages

The United States has experienced an increase in frequency and damage totals from most types of severe storms during the past 10-15 years (Changnon, 2010). As ocean temperatures rise, the destructive force of tropical storms has increased by 50 percent since the 1970's (National Wildlife Federation, 2011). With severe weather being the main factor in the majority of power outages, disturbances cost the U.S. economy between \$25 and \$180 billion annually (National Wildlife Federation, 2011). Additionally, increased electrical demands due to

population increases and an aging transmission infrastructure contribute to more frequent power outages (National Wildlife Federation, 2011).

Hurricane Ike and Power Outage Data

Hurricane Ike struck Galveston Texas on September 13, 2008. The storm transitioned to an extra-tropical cyclone and moved across Ohio on September 14, causing the largest electrical failure in Ohio history, with over 2 million customers without power (Schmidlin, 2011). The extensive damage was a result of the sheer magnitude (up to 70 mph) and the long duration of the strong winds (three to four hours), which caused utility lines and poles to be blown down; trees and limbs blown onto utility lines caused further damage (Schmidlin, 2011). According to Duke Energy, which serves Ohio and northern Kentucky, their customers experienced nearly 400,000 outages averaging 157 minutes in 2011, up from an average of 144 minutes in 2010. Most of this increase is attributed to an increase with severe weather events (Duke Energy, 2012).

Likelihood of Local Storm Threats

Organized in 1971, the Northern Kentucky Area Development District (NKADD) comprises a statewide network of multi-county planning and development organizations. NKADD serves as a forum and convener to provide continuity to projects and foster regional strategies, solutions, and partnerships for economic growth and improved quality of life (NKADD, 2013). NKADD's 2012 Northern Kentucky Regional Hazard Mitigation Plan includes tornadoes, severe storms (thunder and winter) and severe winds as *High Potential Threats* with high likelihood and severity (NKADD, 2013).

Large Scale Power Outages and Gastrointestinal Illness

On August 14, 2003, more than 50 million people experienced a sudden power loss in eight states and parts Canada (Klein, Herzog, Smolinske, & White, 2007). With nine million affected in the New York City metropolitan area alone, syndromic surveillance data indicted an increase in emergency department visits for gastrointestinal illnesses, an increase in antidiarrheal medication sales, and an increase in the number and proportion of worker absences because of gastrointestinal illnesses (Marx et al., 2006). Additionally, the Michigan Poison Control Center experienced a 54 percent increase in questions regarding food poisoning and food spoilage when compared to baseline data as 11 out of 18 counties in their catchment area were without power for at least 24 hours (Klein et al., 2007).

The Need for Efficiencies in Food-Borne Illness Protection

The 2003 blackout presented unique challenges to the Ingham County Health Department (ICHHD) in Lansing Michigan as health department staff tried to contact over 600 restaurants within their district to determine to what extent the temperatures of refrigerated and frozen foods had risen above safe levels and for how long (Berg, 2004). This effort proved difficult as phone lines were down and the system was overloaded. The ICHHD quickly realized that they need to communicate with food establishments and with community they serve before, during, and after an emergency response for improved protection of public health. As a result, in 2004 the Michigan Department of Agriculture hosted a meeting involving state agencies, health departments, industry, and various stakeholders to establish a statewide uniform protocol for communicating with food establishments, residents, and each other during emergency responses (Berg, 2004).

The Importance of Education

Many health departments relied on the food safety knowledge of food establishments during the 2003 blackout period and communities might have suffered more serious consequences if food handlers had not been so well educated and trained (Berg, 2004). In Toronto, reports of diseases commonly associated with food-borne illnesses were actually lower for the period August 15 to 29, 2003 than in previous years. This can be attributed to health officials educating the public and operators about the science behind food safety prior to the blackout (Berg, 2004). Although education played a large part, this would not have been possible if not for the public and operators incorporating what they had learned into their practices.

Severe storms and other emergencies with extended periods of power loss result in volunteer organizations to assist those in need, particularly with food products. Food used during emergency responses present additional challenges as many of the products may possess the risk factors often associated with food-borne illness outbreaks. Food prepared in the presence of these risk factors dramatically increases the risk of a food-borne illness outbreak.

Food donated during emergency responses typically travel long distances before distribution or preparation (Finch & Daniel, 2005). The longer travel distance results in more stops along the way before distribution. Food not stored properly during this time, may result an increased risk of a food-borne illness (Finch & Daniel, 2005). Personal vehicles used in the transportation of food products, as is the case of community volunteers, may present additional food safety issues due to sanitary conditions, time and temperature abuse (Finch & Daniel, 2005).

Emergency food programs heavily rely on volunteers, where less than 30% have ever attended a food safety workshop (Finch & Daniel, 2005). Many volunteers lack the appropriate food safety knowledge, specifically related to temperature control, proper personal and workplace hygienic practices, and sanitizing schedules of food contact surfaces. Improper food preparation and insufficient training of food services employees contribute to an increase risk of food-borne illnesses (Finch & Daniel, 2005). Knowledge of proper practices are crucial as emergency food workers must evaluate, transport, store, and prepare food for those in need.

Educating the General Public

Emergency food volunteers may also need to educate and convey food safety messages to those using emergency services. Recipients may lack electricity and transportation leaving food at unsafe temperatures for extended periods of time (Finch & Daniel, 2005). Leftovers taken are often not refrigerated and other behaviors that may lead to a food-borne illness such as sharing leftovers and eating food from unsafe sources are common (Finch & Daniel, 2005). Emergency food workers must be able to accurately address and answer food safety situations and questions.

Some individuals may not be aware of the practices needed to reduce food-borne illnesses. In a study involving older adults who recently experienced an extended power outage, approximately two-thirds did not follow the Centers for Disease Control and Prevention recommended practices of discarding refrigerated, perishable foods (Finch & David, 2005). Furthermore, approximately 36% reported the taste of food as being the determining factor of whether it was safe to eat (Kosa et al., 2012). Among those patients diagnosed with diarrhea or similar syndromes during the 2003 power outage in New York City, 68% had eaten food considered at risk of contamination (Kosa et al., 2012).

Health Department's Role

When extended periods of power loss occur, food-borne illness protection for the community is vital. By educating health department licensed-facilities, non-licensed charitable entities, and households on the importance of proper food handling practices and procedures, compliance will increase, residential preparedness will strengthen, and the risk of food-borne illnesses reduced. Standard Sanitizing Operating Procedures were developed so that community friendly guidelines can be made available. Ultimately, the public will benefit from increased protection from improperly prepared and held food and businesses and community organizations will be empowered to safely assist their fellow citizens in emergency situations

Methods

The Northern Kentucky Independent District Health Department serves the counties of Boone, Kenton Campbell, and Grant (Figure 2). With nearly 400,000 people residing in the Northern Kentucky area, the Environmental Health and Safety Division is responsible for permitting, educating, and enforcing public health rules and regulations governing approximately 3,000 establishments, including schools, motels, tattoo and body piercing studios, and other public facilities (Northern Kentucky Independent District Health Department, 2012).

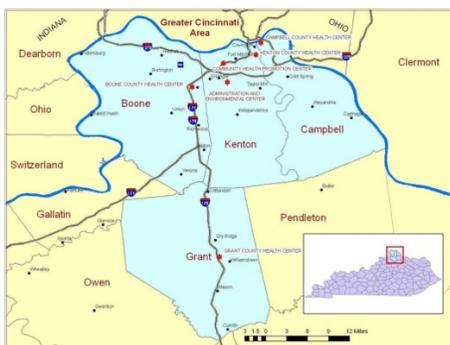


Figure 2. Map of northern Kentucky showing the counties of Boone, Kenton, Campbell, and Grant.

Source: Map obtained from the Northern Kentucky Independent District Health Department.

Information available to residential, health department-licensed, and non-licensed entities was customized by balancing education with the appropriate amount of existing enforcement policies and procedures. This allows the health department to concentrate on education, while still able to exercise enforcement measures if needed. This improvement is designed to simplify and modernize responses by having operating procedures in the appropriate form for dissemination to those in the community, thereby increasing the health department's capacity and effectiveness in educating safe food handling practices. Information is designed to be delivered to business and community entities during the health department's monthly food safety course, on the health department's website, through other social media outlets, and during disaster responses. As information is distributed in training sessions, or used in the event of a real emergency, feedback from users will be solicited and changes may be adopted. By having stakeholders involved in the process, ownership of food safety may be obtained, thereby further reducing the risk of food-borne illnesses during emergency situations. Additionally, information will be provided to the Health Department's Disaster Preparedness Team for distribution among registered shelters and other emergency response agencies. Translation to other languages, specifically to Chinese and Spanish, may facilitate food safety education opportunities more broadly and will be considered.

Guidelines were created using best practices and information obtained from the 2005 FDA Food Code and the Kentucky Cabinet for Health and Family Services Food Safety Branch. This methodology was approved by the IRB as exempt (Appendix A). Procedures were developed as one page, easy-to-follow documents emphasizing important concepts in a bullet point format. While elementary, information regarding the science of why the procedures are necessary was included to assist the reader in the understanding of the rationale for such a

protocol. Additionally, for a sense of ownership, an explanation of the importance of the individuals role in reducing the risk of food-borne illnesses to fellow community members, and emphasizing the information provided was an aid to assist them, was stressed.

Although previously available from the Kentucky Cabinet for Health and Family Services Food Safety Branch, information regarding temporary food permits was simplified and additional graphics added to assist the reader in the understanding of the requirements (Kentucky Cabinet for Health and Family Services Food Safety Branch, 2013). This will be especially useful for non-licensed entities, such as churches, wishing to provide food assistance during emergency responses. Additionally, water emergency operational procedures, such as boil water advisories, were condensed and presented in an easier-to-follow format (Kentucky Cabinet for Health and Family Services Food Safety Branch, 2013).

Results

Licensed Facilities

Licensed facilities, such as restaurants and retail food establishments, now have information available detailing the concerns and consequences of power loss and the steps necessary to aid in the prevention of temperature-abused products from reaching their customers (Appendix B). The procedure guides the user in assuring a safe food environment by providing comprehensive information on ceasing operation, monitoring and recording times and temperatures, when and how to properly discard unsafe food products, and the cleaning and sanitizing of surfaces that may have come in contact with adulterated food. Additionally, they express the fact that the owner/operator is ultimately responsible for maintaining food products in a wholesome condition, thereby reducing the chances of a food-borne illness to their

customers. Water emergency operational procedures are also included in the training materials (Appendix C).

The information in these modules will be presented during the health department's monthly food safety class, as small-class, in-person trainings as needed, and on the health department's website.

Non-licensed Entities

Emergency food relief organizations play a central role in disaster relief. Those impacted by extended periods of power loss depend on such organizations for basic necessities, including prepackaged and prepared food products. A guide for emergency food relief organizations and workers is now available addressing food source, holding and cooking temperatures, cleaning and sanitizing schedules, and proper hygienic practices (Appendix D). The guidelines open with a brief dialog describing how the importance of following safe practices to reduce further harm when assisting those in need can understandably be lost in the recovery efforts. Furthermore, it is explained that one of the roles of the health department is to take steps that enable recovery to move forward without placing additional health risks to volunteers or those in the community and the guidelines are to assist the reader in reducing the risk of a food-borne illness to those who need their help. As an aid for those preparing food in a non-commercial kitchen, temporary food permit guidelines can be used to assist in structure requirements (Appendix E). The information in these modules will be offered as small-class, in-person trainings as needed, and on the health department's website. Additionally, information will be provided to the Health Department's Disaster Preparedness Team for distribution among registered shelters and other emergency response agencies.

Residential

It is necessary for residents to understand how food becomes unsafe to consume. By incorporating safe food handling practices into their homes, residents can, if necessary, modify their current beliefs and behaviors to minimize risk. Information promoting food safety will enable residents to learn and meet the food safety standards of those found in food service establishments (Appendix F). This will provide a platform to educate and serve as a reminder that food safety is a shared responsibility, thereby decreasing associated food safety risks at home.

The information in these modules will be offered as small-class, in-person trainings as needed, and on the health department's website.

Feedback

As information is distributed in training sessions, social media outlets, or in the event of a real emergency, feedback from users will be solicited and changes may be adopted. By having stakeholders involved in the process, ownership of food safety may be obtained, thereby further reducing the risk of food-borne illnesses during emergency situations. As with previous emergencies, the health department collaborates with major grocery retailers and other governmental agencies in providing much needed information to community members.

Discussion and Limitations

Proper food safety practices play a vital role during emergency situations as hospitals, medical providers, and other participating agencies may be challenged in providing the appropriate response. Health departments, and other agencies, may be understaffed and Registered Sanitarians are typically cross-trained to address many public health concerns.

Reducing the likelihood of a food-borne illness outbreak eliminates the need for resources to be redirected to address a very preventable situation during an already challenging situation.

Requirements and recommendations were developed through best practices and the 2005 FDA Food Code. Therefore, the procedures are limited to that particular code or regulation. Furthermore, health departments or health districts may have local ordinances that may supersede the guidelines, placing additional limitations on the procedures. However, the information provided details basic food safety principles and practices that are universally recognized. Therefore, health departments or other agencies can use the education modules with very limited revision, if any.

By developing, consolidating, and disseminating operational procedures and guidelines for safe food preparation and storage, the public can benefit from increased protection from understanding of food code requirements and expectations, and residents and non-licensed entities will be better positioned to safely assist their fellow citizens in emergency situations.

Recommendations

Local health departments should review emergency procedural guidelines for residential, health department-licensed, non-licensed entities to ensure the information is consolidated and formatted for quick dissemination. If offered, health department food safety classes should present emergency guidelines. Such classes typically emphasize basic food safety concepts occurring in optimal conditions or fully-functioning kitchens. Classes should educate participants of abnormal situations and the procedures necessary for a safe food environment.

Non-licensed entities and residents should contact their local health department prior to real emergencies to obtain information regarding proper practices. Local health departments are an excellent resource - a resource that, unfortunately, can be underutilized.

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Appendix A

IRB Exemption



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DATE: June 19, 2013

TO: Theodore W. Talley, PI, Graduate Student
Community Health
Christopher Eddy, M.P.H., Faculty Advisor

FROM: Bette Sydelko, MS.L.S. *BS*
Facilitator, ERAC-WSU

SUBJECT: SC# 5212

'A Risk-Based Approach to Obtain Efficiencies in Food-Borne Illness Protection for Residential, Health Department Licensed, and Non-Licensed Entities'

Your study does not meet the definitions for human subjects research. Therefore the proposal submitted does not need approval from the Wright State University Institutional Review Board.

If you have any questions or require additional information, please call Jodi Blacklidge, Program Facilitator at 775-3974.

Thank you!

Appendix B

Guidelines for Food Service and Retail Food Establishments During Power Outages

During extended periods of power loss, safe storage of potentially hazardous foods is critical. Extended power outages, those lasting 4 hours or more, create an environment where facilities have difficulty operating within the parameters of Kentucky's Retail Food Code, especially maintaining proper temperature of hot and cold food products.

If your facility is without power and you are unable to make alternate arrangements for the proper storage of potentially hazardous food products, the following guidelines are to assist you in preventing temperature-abused products from reaching your customers.

- Cease operations and note the time the outage occurred, and for how long.
- Close refrigeration and freezer units, including sandwich and salad prep units.
- Cover all cold and hot food products on buffet lines or steam tables.
- Monitor and record the temperatures of all potentially hazardous food products.
- Discard any potentially hazardous products that have been in the temperature danger zone (above 41°F or below 135°F) for more than two hours.
- Frozen foods that have thawed but are below 41°F (ice crystals still present) can be used or refrozen.
- To discourage pilferage of discarded products, pour liquid bleach or soap over items.
- Keep an inventory of all discarded products for health department review.
- Check to see if the water supply was comprised. Follow *Water Emergency Guidelines*, if necessary.
- Wash, rinse, and sanitize all surfaces that have come in contact with unsafe food products.
- Purchase fresh food after power is restored and equipment is operating properly. Have receipts or invoices available for health department review.

You are responsible for maintaining food products in a wholesome condition, thereby reducing the chances of a food-borne illness to your customers. By adhering to the guidelines listed above, you can prevent serious illnesses from occurring during extended periods of power loss.

Please report extended power outages, those lasting 4 hours or more, to the Northern Kentucky Health Department.

If you have any questions or to report a power outage at a food service establishment, please call XXX-XXX-XXXX.

Appendix C

Water Emergency Operational Procedures for Retail Food Establishments
(Information provided by KY Food Safety Branch)

During a water service supply emergency, including boil water advisories, chemical contamination, or pressure reduction, water may serve as a source of contamination for food, equipment, utensils, and hands. In order to protect public health, the following guidelines are to be followed until a water service supply emergency has been lifted.

NOTE: In case of a total loss of pressure (no water) or a chemical contamination, establishments shall close immediately.

Hand washing – Tap water may be used. Follow up with hand sanitizer after washing hands.

Drinking Water – Use bottled water only. Disconnect fountains or post *Do Not Drink* signs.

Ice – Shut off ice machine and leave off until the water service supply emergency has been lifted.

Soda (Pop) Fountains – Shut off dispensing fountains. Use canned or bottled drinks only.

Coffee & Tea – Use bottled water, or water that has been boiled for 3 minutes before brewing.

Fruits & Vegetables – Use bottled water, or water that has been boiled for 3 minutes, to clean fresh fruits and vegetables. Pre-packaged, ready-to-eat (pre-washed), salad mixes may be used. Spray units or misters, which periodically spray water on products to maintain freshness, shall be shut down. Leave off until emergency has been lifted. Clean and sanitize before use.

3 Compartment Sinks – Washing, rinsing, and sanitizing procedures shall be followed with a chlorine (unscented bleach) solution of 50-100ppm, not to exceed 200ppm. Other approved sanitizers, such as quaternary ammonia, can be used. Mix in accordance with manufacturer's guidelines.

Dishwashers – Automatic dishwashers, sanitizing with chemical or hot water, can be used provided the machine is operating in accordance with manufacturer's guidelines.

Wiping Cloths – Wiping cloth buckets shall be maintained with a chlorine (unscented bleach) solution of 50-100ppm, not to exceed 200ppm. Other approved sanitizers, such as quaternary ammonia, can be used. Mix in accordance with manufacturer's guidelines. Wiping cloths shall be stored in buckets when not in use.

After the emergency is lifted, any equipment that is connected to the municipal water supply shall be cleaned and sanitized per manufacturer's guidelines. Replace any in-line filters.

Appendix D

Food Preparation Guidelines for Non-Licensed Entities During a Disaster Response

Natural disaster events often bring out the best in people who have the desire to do all they can to help those in need of assistance. Understandably, the importance of considering the need to follow safe practices to reduce further harm can sometimes be lost in the efforts. One of the roles of the Northern Kentucky Health Department is to take steps that enable recovery to move forward without placing additional public health risk to volunteers or those in the community.

The following guidelines are to assist you in preventing a food-borne illness to those in the community who need your help.

- Food prepared or canned from a residential kitchen should not be used.
 - All food must be prepared on site, see attachment for *Temporary Food Service Set-up Guidelines*, or at a health department permitted kitchen.
- Wild game or any other meat not inspected by the USDA is prohibited.
- Always consider the source and condition of donated food items.
- Have a calibrated stem thermometer to check the temperature of perishable foods.
 - Perishable food must be maintained at temperatures below 41°F or above 135°F.
- Prepare food items near a hand sink and ware washing facilities. If not possible, please see attachment for *Temporary Food Service Set-up Guidelines*.
- Sanitize all food contact surfaces and utensils using a tablespoon of unscented bleach for every gallon of water, yielding a concentration between 50-100ppm. Allow items to air-dry before use.
- Wash hands prior to food preparation and frequently thereafter.
- Prepare raw animal food such as chicken, meat, and fish separately from cooked and ready-to-eat food such as lettuce and fruits.
- Cook raw animal food to the required minimum temperature.
 - Chicken: 165°F
 - Hamburger & Eggs: 155°F
 - Beef Steaks: 145°F (155°F, if marinated or tenderized)
 - Pork & Fish: 145°F
- Cool cooked food from 135°F to 70°F in 2 hours, and then to 41°F in the next 4 hours.
 - Food between 135°F and 70°F for more than 2 hours shall be discarded.
 - Methods for cooling include reducing size of food storage containers and using shallow, stainless steel pans.

Food safety during a disaster response is very important. Improperly cooked food items, food items not kept at proper temperature, unsafe sanitary practices, and other factors can lead to food-borne illnesses.

If you have any questions or would like additional information, please call xxx-xxx-xxxx.

Appendix E

Temporary Food Service Set-up Guidelines

(Information provided by KY Food Safety Branch)

*All temporary food operations must complete an application and be inspected prior to service***Requirements**

1. Adequate supply of clean water available to allow for food preparation, hand washing, and utensil washing and sanitizing.

2. A hand sink with running water, or a hand wash station, with soap and paper towels. Food service employees must thoroughly wash hands prior to preparing food, between tasks, after using the restroom, handling trash, and handling raw or uncooked food. Wash hands frequently and throughout the day.



Cooler with a spigot-type valve. Cooler should be at least 5 gallons.



Bucket to catch dirty water

3. Utensil sanitizing station consisting of a 3 compartment sink with running water or 3 containers or buckets for washing, rinsing, and sanitizing. Unscented bleach may be used as a sanitizer. Use only 1 tablespoon for every gallon of water, yielding a concentration between 50-100ppm.

The containers should be at least 2 ½ gallons and labeled.



Wash



Rinse

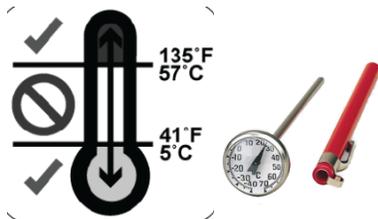


Sanitize

4. Animal and insect exclusion. If operating outside, measures will need to be taken to minimize the potential for contamination of food by using a canopy and fans.



5. Equipment provided for maintaining perishable food items at safe temperatures, such as refrigerators, freezers, coolers with ice or warmer cabinets. Perishable foods must be maintained at temperatures below 41°F or above 135°F. Appropriate thermometers must be provided for monitoring food and food storage equipment.



6. Conveniently located, approved restroom facilities available.

Additional Considerations

- All food items must be from an approved source. No wild game or any meat not inspected by USDA or other official Governmental Regulatory Agency. Receipts and invoices may be required to verify the source. Food prepared in unapproved facilities such as home kitchens is prohibited.
- Persons who are ill or exhibiting symptoms of illness should not prepare or serve food.
- Food handlers must practice good hygiene. Clothing and aprons should be clean and hair restraints provided.
- No bare hand contact with ready-to-eat food items. Use utensils, disposable gloves, deli paper, etc.
- Food should be rapidly heated to the required cooking temperature using equipment designed for such a purpose prior to being held at 135°F for hot storage.
- Test papers should be available to test sanitizer concentration levels.
- Wiping cloths while being used must be kept clean and sanitized through the use of approved sanitizing solutions. Store wiping cloths in sanitizing solution between uses.
- Bulk processing is prohibited. Only items requiring limited on-site preparation regarding cutting, assembly, and cooking is allowed.
- No smoking, drinking, or eating in food preparation areas.
- Pets, children, and unauthorized personnel shall be excluded from food preparation areas.
- Trash containers appropriate to the situation with tight-fitting lids must be provided. Garbage must be properly contained so as not to attract pests.

Appendix F

Residential Guidelines for Food Safety During Power Outages

During extended periods of power loss, safe storage of perishable food products is very important. Extended power outages, those lasting 4 hours or more, creates an environment where residential refrigeration and freezer units may have difficulty in maintaining proper temperature. Perishable food products held at temperatures above 41⁰F for extended periods of time will allow bacteria to grow to unsafe levels which can cause illness if eaten.

If your home is without power, the following guidelines are to assist you in preventing a food-borne illness to you and your family.

- Keep refrigerators and freezers closed during power outages.
- Note the time the outage occurred, and for how long.
- Keep a calibrated stem thermometer with the ability to read down to 0⁰F.
- An unopened refrigerator can maintain perishable items for up to 4 hours without electricity.
- To prolong product safety, food in a refrigerator less than 4 hours without power may be placed in a cooler to protect items from environmental hazards. The cooler can be placed outside or in an un-insulated garage, provided the temperature stays below 41⁰F. Additionally, ice may be used to maintain product temperature.
- Frozen foods in unopened freezers can be maintained for 24 hours if half-full and 48 hours if completely full.
- Frozen foods that have thawed but are below 41⁰F (ice crystals still present) can be used or refrozen.
- In general, food above 41⁰F for more than 2 hours should be discarded.

When in doubt, perishable food products that may have been out of the safe temperature range should be disposed of to prevent illness. Never taste food to determine its safety. Also, you can't rely on odor or appearance in determining which foods are safe to keep. Discard items that have come into contact with raw meat juices.

Additional information can be found at Foodsafety.gov

If you have any questions, please call xxx-xxx-xxxx.

Appendix G

List of Competencies Used in CE

Tier 1 Core Public Health Competencies

Domain #1: Analytic/Assessment
Identify the health status of populations and their related determinants of health and illness (e.g., factors contributing to health promotion and disease prevention, the quality, availability and use of health services)
Describe the characteristics of a population-based health problem (e.g., equity, social determinants, environment)
Collect quantitative and qualitative community data (e.g., risks and benefits to the community, health and resource needs)
Domain #2: Policy Development and Program Planning
Gather information relevant to specific public health policy issues
Describe the public health laws and regulations governing public health programs
Incorporate policies and procedures into program plans and structures
Apply strategies for continuous quality improvement
Domain #3: Communication
Communicate in writing and orally, in person, and through electronic means, with linguistic and cultural proficiency
Convey public health information using a variety of approaches (e.g., social networks, media, blogs)
Participate in the development of demographic, statistical, programmatic and scientific presentations
Apply communication and group dynamic strategies (e.g., principled negotiation, conflict resolution, active listening, risk communication) in interactions with individuals and groups
Domain #4: Cultural Competency
Recognize the role of cultural, social, and behavioral factors in the accessibility, availability, acceptability and delivery of public health services
Domain #5: Community Dimensions of Practice
Identify stakeholders
Collaborate with community partners to promote the health of the population
Identify community assets and resources
Inform the public about policies, programs, and resources
Domain #6: Public Health Sciences
Describe the scientific evidence related to a public health issue, concern, or, intervention
Retrieve scientific evidence from a variety of text and electronic sources
Domain #7: Financial Planning and Management
Translate evaluation report information into program performance improvement action steps
Domain #8: Leadership and Systems Thinking
Identify internal and external problems that may affect the delivery of Essential Public Health Services
Participate in mentoring and peer review or coaching opportunities

Public Health Management Concentration Competencies

- Develop operational management skills for assessment, planning and research in public health settings.
- Recognize organizational behavior theories and realize how these can be used to enhance organizational effectiveness.
- Apply system-thinking and evaluation methods to assess operational effectiveness.
- Determine how different environments produce different health needs and problems.