

**Identifying Emergency Preparedness and
Readiness to Respond to Issues Faced by School
Nutrition Professionals**



National Food Service Management Institute
The University of Mississippi
1-800-321-3054

2012

This project has been funded at least in part with federal funds from the U.S. Department of Agriculture, Food and Nutrition Service through an agreement with the National Food Service Management Institute (NFSMI) at The University of Mississippi. The contents of this publication do not necessarily reflect the views or policies of the U.S. Department of Agriculture, nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. government.

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Suggested Reference Citation:

Cross, E. & Lofton, K. L. (2012). *Identifying Emergency Preparedness and Readiness to Respond to Issues Faced by School Nutrition Professionals*. University, MS: National Food Service Management Institute.

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**National Food Service Management Institute
The University of Mississippi**

Building the Future Through Child Nutrition

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PURPOSE

The purpose of the National Food Service Management Institute is to improve the operation of child nutrition programs through research, education and training, and information dissemination.

MISSION

The mission of the National Food Service Management Institute is to provide information and services that promote the continuous improvement of child nutrition programs.

VISION

The vision of the National Food Service Management Institute is to be the leader in providing education, research, and resources to promote excellence in child nutrition programs.

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**IDENTIFYING EMERGENCY PREPAREDNESS AND READINESS TO RESPOND TO
ISSUES FACED BY SCHOOL NUTRITION PROFESSIONALS**

EXECUTIVE SUMMARY

School nutrition (SN) professionals have the responsibility of providing meals at scheduled times every day that schools are in session. Emergencies, which can include natural disasters, acts of violence, or illness, can occur anywhere with little or no warning and may cause short- or long-term food service disruptions. During an emergency, SN directors may face the challenge of providing meals despite damaged or inoperable food production facilities. A variety of emergency preparedness (EP) resources are available to SN professionals to address various emergencies that occur in schools (Story, 2006). However, research is limited on the effectiveness of EP resources in research literature. Although there is no federal requirement or mandate for emergency plans in schools at the time of this report; many states have laws or regulations requiring schools to develop, implement, and evaluate EP plans and conduct emergency drills on a regular basis (Council on School Health, 2008; United States Department of Agriculture [USDA], Food and Nutrition Service [FNS], 2004).

The purpose of this study was to identify SN directors' perceptions of the effectiveness of their EP plan and the directors' role in evaluating and implementing procedures to assure safe and nutritious food for students during emergency situations. The study was conducted in two phases. Phase I consisted of an expert panel of SN directors and state agency personnel representing the seven United States Department of Agriculture (USDA) regions that had assisted in the development of EP policies/procedures and/or had experienced an emergency in their SN program. The expert panel met at the site of the National Food Service Management

Institute, Applied Research Division (NFSMI, ARD). The agenda for the meeting was planned so that the issues addressed during the panel's discussions supported the development of a survey for Phase II of the research study. During the meeting, panel discussion topics included:

- common elements of EP plans;
- the extent to which EP plans were followed during an emergency/crisis;
- methods to evaluate the effectiveness of EP plans;
- types of training for EP;
- barriers to implementing an EP plan;
- expected and unexpected outcomes of emergency planning; and
- coordination among SN program personnel and other stakeholders to address emergencies.

A summary of the expert panel discussions was sent to panelists to confirm. The researchers then utilized the data to draft a quantitative survey in Phase II. A review panel of 14 SN professionals, including six members of the expert panel, examined and piloted the survey instrument and related documents. Revisions were made according to review panel recommendations. The survey was then formatted, printed, and mailed to a random sample of 700 SN directors representing the seven USDA geographic regions.

A total of 182 surveys were returned for a response rate of 26%. A majority (56.1%) of SN directors indicated that they had more than five years tenure in their current positions and were experienced in managing emergency situations. All respondents reported having an EP plan of which two-thirds (66.5%) of them were using their district's plan and one-third (33.5%) reported maintaining a separate SN EP plan. Additionally, respondents reported that EP plans had been implemented in a variety of emergency situations with lockdowns (51.4%) and power

failures (41.3%) as the most commonly reported emergency events. The majority of the respondents (52.8%) indicated that they were unaware of major barriers to successfully implement their most recent EP plan. However, the challenges cited most frequently (16%) were lack of staff to implement the plan and missing elements of the plan to guide in recovery efforts (29.7%). SN directors indicated that security provisions for deliveries (28%) and information about funding and other resources for emergencies (19.8%) were also necessary elements missing from EP plans. After experiencing a crisis, respondents indicated that they had provided advice and suggestions (54.5%) that contributed to the development, implementation, and revision of EP plans and served on committees to address EP issues (40.4%). Most respondents (63.9%) perceived that their current EP plan is effective for all types of emergencies but more training is needed in food safety/sanitation (83.1%), maintaining foodservice operations during emergencies (76.2%), EP drills (72.1%), and Hazard Analysis Critical Control Point management system (70.9%). Results of this study will provide baseline information for assessments of SN EP plans as well as develop resources and training materials to enhance SN professionals' ability to respond and recover from a variety of emergency situations.

INTRODUCTION

School nutrition (SN) programs provide nutritious meals for children at scheduled times every day school is in session. However, emergencies or crises can occur anywhere with little or no warning and have the potential to disrupt food service production and meal service. Therefore, SN directors may face the challenge of providing meals despite damaged or inoperable food production facilities during times of distress.

Many schools are impacted by emergency events that disrupt the school day. Most of these events have been identified as natural disasters (i.e. floods, ice storms, and fire) which cause widespread, long-term damage. In 2010, the National Oceanic and Atmospheric Administration (NOAA) identified 13 states with communities that experienced a higher number of injuries, fatalities, and property damage caused by natural disasters. Findings from NOAA's annual sustainability assessment of resources during natural disasters for major cities concluded that no geographic location in the United States (U.S.) is invulnerable to natural disasters (NOAA, 2010).

Emergencies such as natural disasters, accidents, intentional threats, and attacks can have a catastrophic impact on infrastructure and basic services of local government agencies, hospitals, and schools. Crises such as these in schools have become a focal point of policymakers prompting school officials to include additional provisions to protect schools as safe havens for learning and nurturing children (Department of Homeland Security, 2008). A variety of EP resources is available to school officials and SN directors (Story, 2006). However, research is limited on the effectiveness of the emergency preparedness (EP) literature, the role of the SN program, and the unique aspects of planning for and feeding children during and after a crisis. Although there are no federal requirements or mandates for schools to implement emergency

plans, the U.S. Department of Education's Office of Safe and Drug-Free Schools' Center for School Preparedness; Department of Homeland Security's National Incident Management System; the United States Department of Agriculture's Food and Nutrition Service, and the Office of the Superintendent of Public Schools provide grants, training, technical assistance, and other resources to schools to plan and evaluate school-based EP plans with drill exercises which include local emergency management systems and first responders (U.S. Department of Education. Readiness and Emergency Management for Schools Technical Assistance (REMS TA) Center, n.d.). Many states have laws or regulations requiring school emergency plans (Council on School Health, 2008) and provide guidance for crisis prevention, but only 11 states provide funding for emergency planning (General Accounting Office, 2007).

Research Objectives

The objectives of this study were to identify SN directors' perceptions of the effectiveness of their EP plan, their role in evaluating and implementing procedures to assure safe and nutritious food during an emergency, and to identify barriers to implementing SN EP procedures. The specific objectives were to:

- identify the barriers to implementing an EP plan;
- examine the extent of collaboration between SN directors and school administration for developing and evaluating EP plans;
- identify ineffective components of emergency plans implemented during a crises;
- identify effective solutions not part of the original plan that emerged during an emergency;
- determine the SN department's level of coordination with school administration, other school districts, city, and state agencies;
- identify resource constraints, resource needs, and availability to school districts/SN programs;
- identify general EP plan components that could be used in various situations; and
- examine frequency of practice drills and other preparation tactics.

To accomplish these objectives, the researchers used the following definitions:

- **Emergency** or crisis is intentional, accidental, or natural phenomena that has the potential to cause short- or long-term damage to human life, property, and/or the environment (Department of Homeland Security, 2008).
- **Natural disasters** include, but are not limited to floods, earthquakes, tornadoes, hurricanes, droughts, dust storms, lightning, landslide/debris flows, wildfires, wind storms, ice storms, snow storms, and blizzards.
- **Facility emergencies** include, but are not limited to, fire, electrical, water leak/damage, building collapse, power failure, and equipment failure.
- **Biohazard emergencies** include, but are not limited to, chemical contamination, intentional alternations to food and/or water, and toxic chemical accidents.
- **Terrorism emergencies** include, but are not limited to, bomb threats, lockdowns, missing child, biological threats, and civil disturbances.
- **Health-related emergencies** include but are not limited to anaphylactic reaction, quarantine, TB and H1N1 virus, and other contagious infections and/or diseases.

METHOD

Research Plan

This research project was conducted in two phases. Phase I utilized an expert panel consisting of school nutrition (SN) directors representing the seven United States Department of Agriculture (USDA) regions who had experience in planning and implementing emergency preparedness (EP) plans. The purpose of the expert panel was to explore issues related to the EP plans of SN programs. An extensive review of the literature was conducted by the researcher on the availability of EP resources, types of emergency situations that may affect the operation of SN programs, and the experiences of school districts during emergency situations. The information gathered from the literature review, EP resources, and previous research was used to develop the moderator's guide for the expert panel discussions with SN directors. The guide consisted of questions about SN directors' perceptions and EP experiences planning and implementing EP plans. Phase II consisted of the development and dissemination of a national survey to identify and confirm SN directors' perceptions of their plan's effectiveness.

Informed Consent

The researcher for this project followed consent procedures established by the Human Subjects Protection Review Committee at the University of Southern Mississippi. There were no identifying codes used to recognize participants from either the expert panel or the review panel in Phase I or Phase II of this study. Expert and review panel members' agreement to participate in the research activities associated with this study served as consent to participate in the study.

Phase I: Expert Panel

State agency directors representing the seven USDA regions were e-mailed and asked to recommend SN professionals to participate in the research study. The researchers requested that those recommended for selection be SN directors who had assisted in the development of EP policies/procedures and/or experienced an emergency in their SN program. The emergency could have been an accidental, natural, or intentional event at schools where SN directors/school administrators had used an EP plan to respond to a school-related crisis. Researchers compiled a list of contacts from state agencies and reviewed information about the SN directors who met the research criteria to serve on either the expert panel to discuss various aspects of EP or a review panel to pilot test the survey developed from the expert panel discussions. Eight SN directors were selected as participants for the expert panel. An invitation was e-mailed to potential participants that included the purpose of the study and expert panel meeting, as well as informed consent information. For those who agreed to serve on the panel, confirmation letters were mailed to them with additional information regarding the upcoming meeting and travel arrangements.

The National Food Service Management Institute's Applied Research Division (NFSMI, ARD) at the University of Southern Mississippi in Hattiesburg, Mississippi was the site of the expert panel meeting. The meeting was facilitated by two researchers with trained facilitation and recording experience to capture participants' comments electronically. The agenda for the meeting was planned to address issues related to the research objectives so that the discussion supported the development of a survey for Phase II of the research project. During the day-and-a-half meeting, panelists were guided in discussions to:

- identify the barriers to implementing an EP plan;
- describe the extent of collaboration between SN directors and school administration for developing and evaluating EP plans;
- identify the ineffective components of emergency plans implemented during a crisis;
- identify effective solutions not part of the original plan that emerged during an emergency;
- discuss the SN department's level of coordination with school administration, other school districts, local government, and state agencies;
- identify resource constraints, resource needs, and availability of resources for school districts/SN programs;
- identify general EP plan components that could be used in various situations; and
- discuss the frequency of practice drills and other EP strategies and tactics.

Researchers reviewed and summarized the results of the expert panel discussion. The discussion summary was e-mailed to each of the expert panel members to confirm the dialogue and provide additional comments and suggestions. All expert panel members ($n = 8$) confirmed the discussion summary, and seven panelists provided additional comments. The information gathered during the discussion and review of literature served as the foundation for the development of a quantitative survey in Phase II of the study.

Phase II

Survey Development

In Phase II of the study, researchers utilized survey methodology to explore SN directors' perceptions of the effectiveness of their EP plans and their roles in evaluating and implementing procedures to ensure students access to safe, nutritious food during an emergency. A survey was developed by NFSMI, ARD researchers incorporating information from the literature review and results of the expert panel discussions. Issues identified by the expert panel that were incorporated in the development of the survey included the following:

- common elements of EP plans and perceived barriers;
- collaboration among stakeholders;
- emergency plan underperformance issues;
- unplanned, successful outcomes;
- coordination within school and with external stakeholders;
- level of preparedness with available resources;
- methods to evaluate; and
- demographic information.

Survey Review Panel

The survey was evaluated and piloted by a review panel of 14 SN directors identified by state agency representatives in Phase I of the study and six members of the expert panel. Review panel participants were asked to complete the survey and to evaluate the content, clarity, and readability of the cover letter and survey instrument. Feedback from the review panel was incorporated into the final version of the cover letter and survey.

The final survey instrument, titled *Emergency Preparedness Plans for School Nutrition Programs*, consisted of 10 sections and was formatted into a scannable survey using Magenta 5.0 Forms Designer software. This design program creates scannable surveys which allow respondents to record their replies using a number two pencil. The first section of the survey, *Emergency Preparedness Plan*, consisted of two statements in which participants were asked to choose one statement that best described whether or not their SN department had an EP plan. The second section, *Sources of EP Information*, ($n = 10$ survey items) asked participants to select all of the resources accessed for EP information. *EP Plan Provisions*, the third section, consisted of six sub-sections and provision items identified in the literature and by expert panel members as primary elements included in SN programs' and school districts' EP plans. The sub-sections were the following:

- *Natural Disaster Provisions* ($n = 13$);
- *Facility and Equipment Provisions* ($n = 11$);
- *Biohazard Provisions* ($n = 6$);
- *Terrorism Provisions* ($n = 5$);
- *Health-Related Provisions* ($n = 8$); and
- *Provisions for Illegal Acts* ($n = 6$).

Each subsection included one item for selection that no provisions from the sub-section were included in the respondents' plan. Respondents were asked to choose all of the provisions under each sub-section included in their EP plan.

The fourth section, *Elements of an EP Plan*, consisted of 20 items identified as major elements in EP plans. In this section, respondents were prompted to select all of the elements of their EP plans such as emergency menus, recovery plans, and communication provisions.

Recovery Procedures were included in the fifth section and consisted of seven items in which respondents were asked to choose all of the recovery items included in their EP plans. The sixth section, *Use of EP Plan*, consisted of four sub-sections in which respondents were asked to select all of the items that applied to the use of their EP plans. The sub-sections included a description of use of the respondents' EP plans ($n = 3$); types of emergency situations ($n = 35$); required modifications to EP plans after emergency situations were experienced ($n = 15$); and challenges and barriers faced using their EP plans ($n = 22$).

Respondents were asked to indicate their level of agreement to perception statements in section seven, titled *Perceptions*. This section included eight statements anchored on a 4-point Likert Scale ([4=*agree*] to [1=*disagree*] with [0=*don't know*]). Section eight, *Evaluation of the Emergency Preparedness Plan*, included seven questions that asked respondents to:

- select the items under each statement that relate to their contributions to evaluate their EP plans;
- indicate how the SN program was included in the school district's EP plans;
- indicate the SN program's participation in EP drills;
- select the frequency of evaluations and revisions to the EP plan; and
- identify the SN programs' and school districts' stakeholders and community emergency responders responsible for assisting and evaluating the SN programs' and school districts' EP plans.

Training, the ninth section, consisted of two sub-sections that asked respondents to indicate the types of training provided to effectively implement EP plans ($n = 13$) and select the frequency of EP-related training ($n = 5$) for the SN program and/or school district. The last section of the survey, *Demographics*, consisted of two questions that asked respondents to

indicate the United States Department of Agriculture (USDA) region in which they worked and years of experience in their current position.

Sample and Survey Distribution

A random sample of 700 SN directors representing the seven USDA regions was selected for the study from a database of school districts maintained by Market Data Retrieval, a company specializing in the school market. Pre-notice letters were mailed to each SN director. These letters explained the purpose of the study and requested their participation by completing and returning the forthcoming survey which would be mailed in one week. One week later, a survey packet consisting of a survey cover letter, the survey instrument, and a self-addressed, postage-paid envelope for returning the completed survey was mailed to all 700 SN directors. The cover letter informed participants of the purpose of the study, requested their participation, informed them of their rights and confidentiality of their responses, and provided the researchers' contact information for questions or concerns. No identifying codes were placed on the survey, thus preserving the anonymity of all respondents. Participants were asked to return the completed surveys within a three-week time period. A reminder postcard was sent to the participants two weeks after the initial letters were mailed to encourage directors to complete and return the survey if they had not already done so.

Data Analysis

Survey data were analyzed using the statistical package SPSS Version 15.0 for Windows. Descriptive statistics included means, standard deviations, and frequencies of total responses.

RESULTS AND DISCUSSION

A total of 182 surveys (26% response rate) were completed and returned by school nutrition (SN) directors who have had opportunities to respond to emergencies. A majority (55.4%) of the SN directors have held their current job position for ten years or less. Two-thirds (66.5%) of the survey respondents indicated that their SN program did not have an Emergency Preparedness (EP) plan but followed the plan provided by their school district. The remaining third (33.5%) indicated that their SN department has an EP plan specific for SN operations.

Responses to the *EP Plan Provisions* section of the survey are presented in Tables 1-6. When asked which provisions for natural disasters were included in their SN/school district EP plan, the four most commonly identified were snowstorms/blizzards (66.5%), tornados (52.8%), ice storms (49.4%), and floods (45.4%). Only eight percent responded that their plans did not include natural disaster provisions. Fewer respondents indicated that drought (5.1%), land/mud slides (4.0%), and dust storms (3.4%) were natural disasters included in their EP plans.

Table 1

Natural Disaster Provision Responses^a (n=176)

Natural Disaster Provisions	Percent of Cases	Number^a
Snow storms/blizzards	66.5	117
Tornados	52.8	93
Ice storms	49.4	87
Flood	45.5	80
Hurricanes	31.3	55
Wind storms	27.8	49
Lightning	24.4	43
Earthquakes	19.9	35
Wildfires	15.9	28
Natural disaster provisions ARE NOT included in our SN program's/school district's plan	8.0	14
Drought	5.1	9
Land/mud slides	4.0	7
Dust storms	3.4	6

^aNumber of responses represents multiple selections by each respondent

Under the *Facility and Equipment Provision*, power failure (66.5%) and fire (52.8%) were included in SN/district EP plans by a majority of respondents. More than 41% of the respondents identified electrical or gas/fuel disruptions, water leak/damage, equipment failure, interruption of telephone/computer services, and utility disruption in their EP plans. However, 13% indicated that they did not have facility and equipment provisions included in their EP plans. Table 2 provides details of the *Facility and Equipment Provision* responses.

Table 2

Facility and Equipment Provision Responses^a (n=177)

Facility and Equipment Provisions	Percent of Cases	Number^a
Power failure	66.5	133
Fire	52.8	126
Electrical disruptions	49.4	91
Gas/fuel disruptions	45.5	83
Water leak/damage	43.5	77
Equipment failure	43.5	77
Interruption of telephone/computer services	42.4	75
Utility disruption	41.8	74
Sewer service disruption	32.8	58
Blackouts	28.2	50
Facility and equipment provisions ARE NOT included in our SN program's/school district's plan	13.0	23

^a Number of responses represents multiple selections by each respondent

Provisions for biohazards such as food recalls (77.4%) and food borne illness (67.8%) were included in SN/district EP plans by a strong majority of respondents and are included in Table 3. However, 27 (15.3%) SN programs/districts reported that their EP plans do not include biohazard provisions.

Table 3

Biohazard Provision Responses^a (n=177)

Biohazard Provisions	Percent of Cases	Number^a
Food recall	77.4	137
Food-borne illness	67.8	120
Chemical contamination	48.0	85
Intentional alterations to food and/or water	20.3	36
Toxicological incidents	19.8	35
Biohazard provisions ARE NOT included in our SN program's/school district's plan	15.3	27

^a Number of responses represents multiple selections by each respondent

Provisions for acts of terrorism (Table 4) were included in EP plans and included plans for lockdowns (82.9%), bomb threats (76.8%), and security threats (e.g. threats by a disgruntled employee or other persons) (64.1%). Twenty respondents replied that terrorism provisions were not included in their SN/district EP plan.

Table 4

Terrorism Provision Responses^a (n=181)

Terrorism Provisions	Percent of Cases	Number^a
Lockdown	82.9	150
Bomb threats	76.8	139
Security threats (ex. threats by a disgruntled employee or other persons)	64.1	116
Biological threats	30.9	56
Terrorism provisions ARE NOT included in our SN program's/school district's plan	11.0	20

^a Number of responses represents multiple selections by each respondent

A majority of respondents identified four health-related emergencies that were included in their SN/district EP plan; H1N1 (64.0%), choking (62.2%), anaphylactic reaction (58.1%), and physical injury (57.6%). As many as 24 directors replied that their EP plan had no provisions for health-related emergencies. Table 5 includes all of the results for the *Health-Related Provisions* reported in EP plans.

Table 5

Health-Related Provision Responses^a (n=172)

Health-Related Provisions	Percent of Cases	Number^a
H1N1	64.0	110
Choking	62.2	107
Anaphylactic reaction	58.1	100
Physical injury	57.6	99
Other contagious infections and/or diseases	35.5	61
TB	22.1	38
Quarantine	17.4	30
Health-related provisions ARE NOT included in our SN program's/school district's plan	14.0	24

^aNumber of responses represents multiple selections by each respondent

EP plan provisions for preventing and addressing drugs and illegal acts in the facility was included in 61.8% of SN/district EP plans and are presented in Table 6. Other related provisions noted were theft (49.7%) and missing or exploited children (44.2%). One-fourth (25.5%) of the respondents did not include any illegal acts provisions in their EP plans.

Table 6

Illegal Acts Provisions^a (n=165)

Illegal Acts Provisions	Percent of Cases	Number^a
Drugs in facility	61.8	102
Theft	49.7	82
Missing or exploited children	44.2	73
Civil disturbances	32.1	53
Counterfeit money	27.3	45
Illegal acts provisions ARE NOT included in our SN program's/school district's plan	25.5	42

^a Number of responses represents multiple selections by each respondent

When asked to identify all the major elements included in their SN/district EP plan, the item mentioned by respondents most frequently was “facility evacuation exit route” (77.5%). “Material Safety Data Sheets (MSDS)” were identified by 76.9% of respondents, and “contact information needed by district and other emergency responders” was identified by 70.9% of respondents. The element most lacking in EP plans was “information about funding and other resources for emergencies.” This was included in 36 (19.8%) of the respondents’ EP plan. Table 7 includes the identity of essential EP plan elements included on the survey.

Table 7

Elements of an Emergency Preparedness Plan^a (n=182)

Elements of an Emergency Preparedness Plan	Percent of Cases	Number^a
Facility evacuation exit routes	77.5	141
Material Safety Data Sheets (MSDS)	76.9	140
Contact information needed by district and other emergency responders	70.9	129
Roles and responsibilities of SN directors, managers, and staff	68.7	125
School district designates schools as emergency shelters	65.9	120
Contact information needed by SN director/emergency responder	64.3	117
Guidelines for contact with the media/parents/public	58.2	106
Communication provisions (use of radio and mobile phones)	58.2	106
Elements related to a specific type of emergency (i.e. tornado, hurricane, etc.	53.8	98
Alternative plan to continue SN program operations	52.7	96
Facility and equipment security	48.4	88
Utility shut-off and safety procedures	47.3	86
Inventoried emergency food items and supplies	46.2	84
Procedures for interruption of technological services (i.e. telephone, Internet, equipment)	38.5	70
Emergency menus	35.7	65
Provisions for rotating emergency food items and supplies	30.2	55
Recovery plans	29.7	54
Security provisions for deliveries	28.0	51
Information about funding and other resources for emergencies	19.8	36

^a Number of responses represents multiple selections by each respondent

When reviewing responses related to recovery procedures, the top three procedures reported were facility inspection (49.1%), procedures for facility/equipment sanitation (46.7%), and procedures for reimbursement and/or claims (40.6%). Approximately one-third (36.4%) of the SN/districts did not include recovery procedures in their EP and are presented in Table 8.

Table 8

Recovery Procedures^a (n=182)

Recovery Procedures	Percent of Cases	Number^a
Procedures for facility inspections	49.1	81
Procedures for facility/equipment sanitation	46.7	77
Procedures for reimbursement and/or claims	40.6	67
Recovery procedures ARE NOT included in our SN program's/school district's EP plans.	36.4	60
Procedures for restoration of operations	35.2	58
Procedures for testing equipment	33.9	56

^a Number of responses represents multiple selections by each respondent

When asked about the use of their SN program's/school district's EP plan during a past emergency/crisis, a majority (70.3%) of respondents said that they were able to use their EP plan as written or with modifications (42.4%). Forty-nine (29.7%) respondents considered their EP plan not applicable for the emergency situation faced by their SN program.

Table 9

Emergency Preparedness Training Needs for School Nutrition Professionals^a (n=165)

Training Options	Percent of Cases	Number^a
Food safety	10.0	143
Maintenance of foodservice operations during a crisis	9.1	82
Emergency drills	8.6	124
HACCP	8.5	122
CPR	8.1	116

^a Number of responses represents multiple selections by each respondent

Five emergency events noted most frequently were: lockdowns (51.4%), power failure (41.3%), snow storms/blizzards (38.5%), and utility disruption (33.0%). Quarantine and mud/landslide emergency situations were mentioned only once (0.6%) by respondents and are presented in Table 10. Table 11 identifies the elements of the SN/district EP plan that required modification after an emergency or crisis. The roles and responsibilities of SN directors, managers, and staff were the elements most frequently modified in the respondents' EP plans (31.9%). Facility evacuation and exit routes were mentioned by only 7.2% of the respondents.

Table 10

Responses to Emergency Situations That Have Required Use of the Emergency Preparedness Plan^a (n=182)

Emergency Situations	Percent of Cases	Number^a
Lockdowns	51.4	92
Power failure	41.3	74
Snow storms/blizzards	38.5	69
Bomb threats	33.0	59
Utility disruption	33.0	59
Equipment failure	24.0	43
Ice storms	23.5	42
Electrical equipment failure	22.9	41
Water/leak damage	21.8	39
We have not had an emergency/crisis	20.7	37
Hurricanes	17.3	31
Theft	16.8	30
Drugs in the facility	16.2	29
Flood	15.1	27
Choking	14.5	26
Fire	13.4	24
Anaphylactic reaction	13.4	24
Gas/fuel disruptions	12.8	23

^a Number of responses represents multiple selections by each respondent

(Table 10 continues)

(Table 10 continued)

Responses to Emergency Situations That Have Required Use of the Emergency Preparedness Plan^a (n=182)

Emergency Situations	Percent of Cases	Number^a
Sewer service disruptions	12.3	22
Wind storms	11.7	21
Counterfeit money	10.6	19
Food contamination	9.5	17
H1N1/other health related emergencies	8.9	16
Foodborne outbreak	8.4	15
Lightning	7.3	13
Wildfires	5.6	10
Missing/exploited children	5.0	9
Blackouts	3.4	6
Earthquakes	3.4	6
Civil disturbances	2.8	5
Biological threats	1.7	3
Dust storms	1.1	2
Drought	1.1	2
TB	1.1	2
Quarantine	.6	1
Mud/landslides	.6	1

^a Number of responses represents multiple selections by each respondent

Table 11

Responses to Modifications Made to School Nutrition Program's or School District's Emergency Preparedness Plan After an Emergency^a (n=138)

Responses to Modifications	Percent of Cases	Number^a
Roles and responsibilities of SN directors, managers, and staff	31.9	44
We did NOT have to modify our SN program's/school district's EP plan.	29.0	40
Alternative plans to continue SN program operations	26.1	36
Specific emergency plans	26.1	36
Contact information	26.1	36
Recovery plans	23.2	32
Communication provisions (use of radio and mobile phones)	19.6	27
Information about funding and other resources for emergencies	17.4	24
Documentation protocol for emergencies and recovery efforts	16.7	23
Inventoried emergency supplies	16.7	23
Guidelines for contact with media/parents/public	15.2	21
Material Safety Data Sheets (MSDS)	15.2	21
Utility shut-off and safety procedures	14.5	20
Procedures for securing documents	12.3	17
Facility evacuation exit routes	7.2	10

^a Number of responses represents multiple selections by each respondent

Respondents identified the challenges experienced while using their EP plan. More than one-fourth (27.8%) of participants indicated that they were unaware or did not know of any barriers (27.8%) for implementing their EP plans. Another one-fourth (25%) of participants replied that they did not have any challenges and barriers with the use of their EP plan. Less than 14.0% of the respondents indicated that other elements such as SN staff’s expectations of pay during a crisis, funding, communication issues, water supply, and staffing challenges had occurred for some participants. This data is presented in Table 12.

Table 12

Challenges/Barriers Experienced While Using School Nutrition Program’s/School District’s Emergency Preparedness Plan^a (n=143)

Challenges/Barriers	Percent of Cases	Number^a
I don’t know.	27.8	40
We do not have any challenges and barriers with the use of our SN program’s/school district’s EP plan.	25.0	36
Lack of SN/school staff to carry out EP plan	16.0	23
Staff’s expectations of pay for work during emergencies/crises	13.2	19
Insufficient funds for recovery needs (i.e., transportation, food and supplies, and equipment)	11.8	17
Lack of communication and/or miscommunication between emergency responders	11.8	17
Inadequate potable water	11.1	16
Staff reluctance to return to work	11.1	16
Low staff performance due to staff’s concern for safety and family	9.7	14
Inability to contact staff to report to work	9.7	14

^a Number of responses represents multiple selections by each respondent

(Table 12 continues)

(Table 12 continued)

Challenges/Barriers Experienced While Using School Nutrition Program's/School District's Emergency Preparedness Plan^a (n=143)

Challenges/Barriers	Percent of Cases	Number^a
Lack of documentation protocol for emergency and recovery efforts	8.3	12
No backup system or emergency documentation	7.6	11
Inadequate emergency supplies	7.6	11
There were emergency situations/crises not listed above and not covered by our EP plan	6.9	10
Safety and sanitation issues not covered in the EP plan	6.9	10
Lack of coordination of recovery efforts	5.6	8
Compliance with numerous and/or conflicting agency regulations, policies, and procedures	5.6	8
Inadequate operable equipment	5.6	8
Improper/inadequate documentation of recovery efforts for emergency/recovery finds	4.9	7
Outdated emergency responders' contact information	4.9	7
Insufficient transportation of goods and essential services	4.2	6

^a Number of responses represents multiple selections by each respondent

Another major section of the survey asked respondents to indicate their involvement with evaluating their SN programs'/school districts' EP plans. More than one-third (36.9%) of respondents indicated that their SN program/school district's EP plan was evaluated and updated annually. Some SN programs were included in their school district's EP plan (39.1%) which included SN personnel's involvement in school drills (57%) and participation in the district's EP plans (48%). However, more than half (54%) of the respondents stated that they did not know

how often the district's EP plan is evaluated and updated, and that the primary responsibility for updating the district's EP plan. This lack of knowledge may be associated with their lack of participation in the management of EP plans. The planning, implementation, and evaluation of the school district's EP plans were the responsibility of a school district administrator (49.7%) or the school's emergency response team (24.6%) which may not include a member of the SN program. For respondents whose SN program had EP plans, the person most often responsible for evaluating and updating the SN program's EP plan was the SN director (44.1%). More than half of them contributed to the evaluation process of their SN program's or school district's EP plan by providing advice and suggestions 52 (29.4%) for response and recovery procedures. Other respondents indicated that they were unaware who was responsible for (29.4%) and unaware of how often EP plans were evaluated and updated (26%). When asked about the list of partners included in the SN programs'/school districts' EP plan, more than three-fourths of SN directors identified school district personnel as emergency contacts that assisted with emergency management for the SN program and/or school district. Community emergency responders such as the police (64.2%), local/state/federal emergency management agencies (50.0%), fire department (50.0%), emergency medical personnel (42.0%), and non-profit emergency response organizations (i.e. the Red Cross, Salvation Army) (35.2%) were listed as emergency contacts in the EP plan (Table 13).

Table 13

Partners That Assist With Emergency Management^a (n=162)

Partners That Assist With Emergency Management	Percent of Cases	Number^a
District personnel	79.6	129
School district's facility maintenance personnel	79.0	128
Principal	77.2	125
SN director	74.1	120
Superintendent/school board members	74.1	120
School nurse	66.7	108
Police	64.2	104
Local/state/federal emergency management agencies	50.0	81
Fire marshall/personnel	50.0	81
SN managers	49.4	80
SN staff	48.1	78
School security/police	45.7	74
Emergency medical services	42.0	68
Non-profit assistance organizations (i.e., Red Cross, Salvation Army, etc.)	35.2	57
Environmental health specialists/sanitaricians	33.3	54
Utility companies	29.6	48
Community organizations	26.5	43
Building/safety inspectors	25.9	42
State agency personnel	24.7	40

^a Number of responses represents multiple selections by each respondent

Training is also an important aspect of preparing for an emergency. More than half of the SN directors responding to the survey thought that EP training should be provided once a year (54.1%) and 27.6% suggested twice a year. Responses to types of EP training were similar with no specific EP training option receiving a response rate greater than 10%. The top five EP trainings needed for SN professionals were: food safety (10%), training to maintain foodservice operations during a crisis (9.1%), training that includes drills (8.6%), HACCP (8.5%), and CPR (8.1%). Almost all (92.1%) of the SN respondents have accessed the school district as a source of EP information. Other sources included the health department (47.8%), the child nutrition state agency (46.1%) USDA (39.9 %), and local city/ municipality/community organizations (36.0%) and are listed in Table 14.

Table 14

Sources of Emergency Preparedness Information^a (n=178)

Sources	Percent of Cases	Number^a
School district	92.1	164
Health department	47.8	85
Child nutrition state agency	46.1	82
USDA	39.9	71
Emergency management agencies	36.5	65
Local city/municipality/community organization	36.0	64
Department of Education	31.5	56
National Food Service Management Institute	28.1	50
School Nutrition Association (SNA)	23.0	41
Homeland Security	18.0	32

^a Number of responses represents multiple selections by each respondent

Three-fourths (74.4%) of respondents believed all SN programs should have their own EP plan.

Table 15

Perceptions About Emergency Preparedness Plans

Perception Statement	Don't Know	Disagree	Somewhat Disagree	Somewhat Agree	Agree
I believe that all SN programs should have their own EP plan. (<i>n</i> =168)	1.8% (3)	15.5% (26)	8.3% (14)	25.0% (42)	49.4% (83)
Our SN program's/school district's EP plan is adequately funded. (<i>n</i> =174)	28.7% (50)	24.7% (43)	17.8% (31)	16.7% (29)	12.1% (21)
Our SN program/school district has adequate emergency supplies and resources. (<i>n</i> =170)	11.8% (20)	16.5% (28)	17.6% (30)	36.5% (62)	17.6% (30)
The current SN program's/school district's EP plan can be used effectively in all emergency situations. (<i>n</i> =182)	8.3% (14)	16.0% (27)	11.8% (20)	45.0% (76)	18.9% (32)
School nutrition staff are adequately trained to meet our SN program's emergency needs. (<i>n</i> =171)	1.8% (3)	19.9% (34)	22.2% (38)	42.7% (73)	13.5% (23)
District employees are adequately trained to meet our SN program's/school's emergency needs. (<i>n</i> =169)	6.0% (11)	16.0% (27)	24.3% (41)	38.5% (65)	14.8% (25)
I am adequately trained to meet our SN program's emergency needs. (<i>n</i> =170)	1.2% (2)	11.8% (20)	17.6% (30)	47.1% (80)	22.4% (38)
I feel that the SN program is included in the school district's EP communications, preparations, and drills. (<i>n</i> =172)	.06% (1)	19.5% (33)	15.1% (26)	34.3% (59)	30.8% (53)

More than half (54.1%) of respondents indicated that they agreed/somewhat agreed that the SN/school district has adequate emergency supplies and other resources; felt strongly (63.9%) that their plan could be used effectively in all emergency situations; and believed that

the SN program is included in the school district's EP communications, preparations, and drills (65.1%). Over half of SN directors believed that SN staff (54.1%) and school district employees (53.3%) were adequately trained to meet the SN program's emergency needs.

CONCLUSIONS AND RECOMMENDATIONS

Limitations to the Research Study

One limitation to this research study was that the overall response rate to the mailed survey instrument was 26% which is far lower than desired. Therefore, the low number of responses cannot be used to generalize the results.

Study Conclusions

This research project identified school nutrition (SN) directors' perceptions of the effectiveness of their emergency preparedness (EP) plan, components of their SN programs'/school districts' EP plans, their role in evaluating and implementing procedures to assure safe and nutritious food during an emergency, and identified issues which might be barriers to implementing SN emergency preparedness procedures. Overall, two-thirds of all SN directors completing the survey indicated that they have utilized their school district's EP plan, and only one-third of them had an EP plan that was specific to their SN program. Overall, the SN directors participating in both phases of the study believed that SN programs should have an EP plan and procedures that meet SN operational needs.

SN directors responding to the survey perceived the EP plan they were using as effective in guiding them through an emergency/crisis and recovery. Most of them were able to use their EP plan as written or with modifications implemented as a result of the plan's use during a prior emergency. A large majority of respondents indicated that they were unaware of problems or did not experience any major barriers using their EP plan during emergencies. The school district's EP plan often did not include provisions for auxiliary units, such as the SN program and buildings and grounds department. However, these units are often necessary to meet the emergency needs of the school community. Because of this, the SN directors in this study

indicated that the unique aspects of the SN programs are viewed as important and should be addressed in the planning and management of EP in schools. The challenges most frequently cited were the lack of SN staff to carry out the EP plan and the need for recovery procedures in SN EP plans. Some recovery procedures such as security provisions for deliveries, procedures for facility inspections, and facility and equipment sanitation were included in the EP plan by less than half of the SN responders. This suggests that further research and the development of resources in this area could contribute to improved EP plans that incorporate recovery procedures specific to SN programs.

Survey respondents indicated that a majority of both district and school nutrition staff were adequately trained for SN operations during emergencies/crisis. SN directors/staff were active in evaluating EP plans by providing advice and suggestion to improve EP plans and/or by serving on a committee to address EP issues and concerns. SN directors' roles to participate in the evaluation of EP plans would benefit both SN programs and school districts planning, evaluating, and revising of EP plans. Respondents, however, indicated that additional training is needed on: food safety/sanitation, maintaining foodservice operations during emergencies, emergency preparedness drills, and Hazard Analysis Critical Control Point (HACCP) management systems. These topics emphasize the need for emergency planners to integrate SN procedures into all EP plans. The three major sources of EP information utilized by the respondents were school district personnel, the local health department, and state agencies.

Over half of the respondents indicated that their SN program/school district had adequate emergency supplies and additional resources. However, only one-fourth of them indicated that the SN/school district's EP plan was adequately funded. The issue of funding for EP is of concern to survey respondents and further research in this area would be helpful in allaying these

issues in response to emergencies. Interestingly, the results of this study suggest that SN professionals responding to the survey were prepared to deal with emergency situations. However, they felt that the unique characteristics of SN operations call for further research and investigation of EP program planning and funding.

Education and Training Implications

Results of this study provided baseline information for assessing SN emergency preparedness. Additionally, information from the study will be used to direct the revision and update of existing NFSMI EP resources and the development of resources and training materials to enhance SN professionals' ability to respond to a variety of emergency situations.

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GY 2009 Project 8

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