

Food safety best management practices for mobile farmers market operations

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ABSTRACT

There are over 200 farmers markets in the state of Virginia. They are regulated by local and state governments. They use the 2013 U.S. Food Code and Cottage Food Laws and regulations that work for farmers markets. How do you adapt these for mobile farmers markets? With more than a dozen mobile farmer markets operating in the state of Virginia, a standard should be applied when it comes to them handling raw agricultural products. How do we go about this when they are not considered the same as a brick and mortar farmers market, but rather regarded as a delivery service? Could we use the same regulations and practices used in governing brick and mortar markets to satisfy this niche? Due to them becoming wildly popular, it's imperative that we find an applicable method to avoid any slipping through the cracks for this newer market. Ensuring, they fall under the same regulations as a brick and mortar market could also serve as a double-edged sword. Although, they have many similarities they also have vast differences. A conflict that comes into play are the transient properties of the mobile market which affect the temperature, amount of handling, and the possible introduction of foodborne illness. In this thesis I would like to explain why the need for mobile farmers markets arose and how coming up with best management practices can sustain it for years to come.

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Definition of Terms

- Locally Grown: Food and other agricultural products that are produced, processed, and sold within a certain region, whether defined by distance, state border, or regional boundaries. The term is unregulated at the national level, meaning that each individual farmers market can define and regulate the term based on their own mission and circumstances.
- GAP: Good Agricultural Practices (GAPs) are a collection of recommended principles for on-farm production, post-harvest processing, and storage of food that reduce risks of microbial contamination.
- USDA: United States Department of Agriculture; this agency forms policy and procedures for food production and processing at the national (federal) level, regulates interstate commerce of agricultural products, promotes markets for U.S. agricultural products domestically and abroad, implements various food assistance and education programs, and manages on-farm natural resource conservation programs.
- GAPs/GHPs Verified: Good Agricultural Practices (GAP) and Good Handling Practices (GHP) are audit programs through the USDA that verify that produce is produced and handled in a safe and responsible way that reduces the likelihood of contamination and the spread of foodborne illnesses.
- Food: a raw, cooked, or processed edible substance, ice, beverage, or ingredient used or intended for use or for sale in whole or in part for human consumption or chewing gum.
- Ready-to-eat food: Is in a form that is edible without additional preparation to achieve food safety. Ready-to-eat food include: Raw fruits and vegetables that are washed as specified under 12VAC5-421-510.

Introduction

The USDA defines a food desert as parts of the country void of fresh fruit, vegetables, and other healthful whole foods, usually found in impoverished areas. This is largely due to a lack of grocery stores, farmers' markets, and healthy food providers (USDA ERS, Access to Affordable and Nutritious Food: Measuring and Understanding Food Deserts and Their Consequences, 2009). In Virginia, approximately 17.8 percent of the population lives in a food desert (USDA ERS, Food Access Research Atlas, 2013a). Which equates to 1,424,182 residents of the state of Virginia. This demographic could benefit from being served by mobile farmers markets in Virginia. Mobile farmers markets are vehicles, usually refrigerated trucks, filled with locally-sourced produce and fresh foods that sell these items in communities or neighborhoods that have limited access to locally-produced, healthy foods (Willis 2014) The need for mobile farmers market is just as apparent as the need for guidelines and best management practices.

Currently, the USDA FNS defines a Farmers Market as two or more farmer-producers that sell their own agricultural products directly to the public at a fixed location, which includes fruits and vegetables, meat, fish, poultry, dairy products, and grains (USDA FNS, 2017). By this definition, a mobile farmers market cannot be governed by these current regulations and guidelines because it is not a fixed location. Another category it could possibly fall under would be Direct Marketing Farmers. Which is defined as farmer-producers that sell their own agricultural products directly to the public, which includes fruits and vegetables, meat, fish, poultry, dairy products, and grains (USDA FNS, 2017). This designation does not fit either because more times than none produce sold on a mobile farmers market often comes from multiple farmers and sometimes other states.

I also want to compare mobile farmers markets to how they could be defined by USDA AMS. A Farmers Market Directory defines a Market that features two or more farm vendors selling agricultural products directly to customers at a common, recurrent physical location (USDA FNS, 2017). This would not work either to define a mobile farmers market because it makes stops in locations that might not be in a common or recurring physical location. Another way it could be defined is by the definition of an On-Farm Market. Which is defined as a farm market managed by a single farm operator that sells agricultural and/or horticultural products directly to consumers from a location on their farm property or on property adjacent to that farm. This is not applicable because it would need to be on a farm or adjacent to a farm to fit that description.

Organizations that make designations for Farmers Markets or Farm Markets do not have an appropriate way to define mobile farmers markets. A definition or designation must be created with parameters to define it. Then best management practices can be put into place for guidance. People who sell and buy from mobile farmers markets need two things. The first is creating a way to guarantee that produce that is sold to the mobile farmers market will be handled and resold in a proper manner. Avoiding, contamination that will hurt consumers and damage their brand. Second, buyers need a standard of responsibility to hold the person or persons who are operating the mobile farmers market too.

Statement of the Problem

Mobile farmers markets are on the rise in not only our region and state but all over the United States of America. Food insecurity has given rise and purpose to this once niche market now pushing it to the forefront. For example, in Virginia, the number of mobile farmers markets has gone from one or two in Hampton Roads area to eight, just in the last 5 years. The USDA and other government departments do not clearly define what a mobile farmers market is. So how can you come up with the best food safety management practices for something that has no definition?

Project Objectives:

- To create a definition for a mobile farmers market.
- To create a framework of food safety best management practices for a mobile farmers market

Background:

An article by Harrison, et al. (2013) provides justification for why mobile farmers markets need a specific designation instead of being lumped in with food carts and other mobile means of direct sales. Over the year's foodborne illnesses have increased due to a growing need for fresh produce. Consumption of more raw produce aids in many mistakes with handling food safely. There are no publications directly doing research on food safety when it comes to a mobile farmers market, so this article will serve as an example. In this survey of food safety practices on small to medium-sized farms and in farmers markets, data were collected from 226 farmers and 45 market managers. (Harrison, et al., 2013). Responses from market managers indicated that over 42% have no food safety standards in place for the market. Only 2 to 11% ask farmers specific questions about conditions on the farm that could affect product safety. Less

than 25% of managers sanitize market surfaces. Only 11% always clean market containers between uses. Over 75% of markets offer no sanitation training to workers or vendors. While farmers and market managers are using many good practices, the results indicate that some practices being used may put consumers at risk of foodborne illness. (Harrison, et al., 2013). From this, you can gather there is a need for training or better best management practices for farmers markets. A similar need is just as important for mobile farmers markets.

Farmers markets do not make a large portion of the direct produce sales for the industry and country, but according to this report, Direct-to-consumer marketing represented \$1.2 billion in sales in 2007, up from only \$551 million in 1997, and sales of edible products accounted for 0.8% of total agricultural sales in 2007. (Harrison, et al., 2013). With these numbers, more attention should be paid to this important aspect of the farmers market because all it takes is one incident and it would affect not only the individual farmer or farmers in question. It also affects the marketplace. This survey was conducted over multiple states with the help of university, local, and government agency which showed not only the scope but seriousness of the issue. The survey was done to check not only the food safety standards of farmers markets but all so the farms they get there produce from. Reason being is the farms are where the foodborne illness starts. Knowing how they handle the produce from the field to the package house will show if the produce is being exposed to foodborne illnesses.

Most farmers used tested water sources for irrigation, although 30.5% of respondents used surface water from streams or ponds, untested well water, or rainwater for irrigation. (Harrison, et al., 2013). This statement right here from the journal was why the food modernization act was needed. Being preemptive or proactive is the way to stop a good portion of foodborne illness. Only 39% of the farmers used sanitizers on surfaces that touch produce at

the farm. (Harrison, et al., 2013). With less than 50% of producers in this study sanitizing their surfaces the likelihood of foodborne illnesses is high. Only 33% of farmers always cleaned the containers used to transport produce to market between uses. (Harrison, et al., 2013). This is an example of how uncontaminated produce may be introduced to contamination. Lack of food safety knowledge or lackadaisical practices creates long-term damage.

However, many of the markets had no food safety plan or standards in place. Most market managers reported that they do not ask farmers questions about how the products are grown or handled before they are brought to market. The use of sanitizers is limited on food contact surfaces at the markets and cooling of produce in the marketplace. When cooling was used, portable picnic coolers with ice were the most common method. This method raises concerns about the safety of the water used in making ice and in the sanitary handling of it in an outdoor market. In addition, many markets also allow sampling of products but offer no training for vendors on how to do this safely. (Harrison, et al., 2013). If sanitary practices are lacking at stationary brick and mortar and farmers markets, the mobile market is likely to be insufficient as well. A mobile market constantly changes locations every 1-2 hours with varying temperatures aboard the vehicle, no restroom, and a limited supply of wash water for cleaning hands, utensils and fresh produce while the vehicle is on the road.

Methodology

A. Determine the need for a mobile farmers market

The point of this project is to create a definition for the term mobile farmers market and to create food safety best management practice for mobile farmers markets. This came about because of the recent and continual popularity of this motorized direct marketing of raw agricultural products. An internet search for the definition of a mobile farmers market does not yield anything concise. The USDA nor the Virginia Department of Health specifically define it. They may either discuss these as similar to with food trucks, call them a delivery service or do not know how to define mobile farmers markets at all.

This project began with the city of Suffolk Extension Office plan to acquire a mobile farmers market to service the over 11,000 people who were food insecure. Went into to the community to gauge what people's eating habits, food safety knowledge, and overall interest in a mobile farmers market was. Which lead me to find that there was a gap in a definition and food safety best management practices for what I wanted to do.

This research included people who live in a food desert and those who live in more affluent areas of the city. Even though there are best management practices for farmers markets and food trucks, there are none for mobile farmers markets which lie in between both areas. The target population was the 11,000 plus individuals who would be benefiting from gaining access to a mobile farmers market in their area. This information is applicable to any locality that is a mixture of rural and urban settings. A survey (Appendix A) was given to people who lived in the 23434-zip code of Suffolk, Virginia which was an urban area of the city. There were 115 adults who filled out a survey for the subject area.

Qualitative research was used because I was analyzing and interpreting what people were saying and doing when they filled out the surveys. The information I gathered from participants was used to support the premise that a mobile farmers market would work in the area.

Qualitative methods are characterized by flexibility and freedom in terms of structure and order given to the researcher. (Kumar, 2011). I was looking to understand the need for food safety best management practice by understanding how it correlated to the needs of the participants taking the survey.

Survey data collection occurred during a food desert demonstration at the City of Suffolk Cooperative Extension Office during the months of June 2015 to- April 2016. The pre- and post-survey was given to all the adults that participated. Participants were from the zip code 23434 which is the downtown area of Suffolk, VA. The survey was given as people arrived and a post-survey was provided as they were leaving to be filled out before they left.

The Virginia Department of Health categorizes mobile farmers markets as a “Mobile Food Vendor” – (also includes Food Cart/Lunch Truck as listed above but Non-Fixed Location). (VDH, 2017). The Virginia Department of Agriculture and Consumer Services labels them as “Other: Mail order sales and internet marketing, Farm-to-Institution, Mobile”. (VDH, Food Regulations, Virginia Department of Health, 2017). There is no clear-cut or concise definition or designation for it. VDH goes on to describe the category they put mobile farmers markets in.

A vehicle-mounted foodservice facility designed and operated to frequently move. Such units operate from a commissary or base of operations for re-supply and cleaning. Meets VDH definition of mobile food unit, requires permit for both commissary and mobile food unit issued by local health department where commissary is located. Assuming the vendor does not move within 30 minutes (which would be a peddler), an Itinerant Merchants’ license is needed. They

may be considered "temporary outdoor sales lots and stands". Allowed in B-3 or above, with property owner permission, 200 feet from any R district and with location demonstrating five additional parking spaces over what is required. Valid mobile food unit permit with Health authorizes operation throughout the state. May attend/serve at temporary events without additional temporary food permit. (VDH, 2017)

B. Food safety management for mobile farmers markets

Some Virginia regulations may apply to mobile farmers markets loosely because they are not mentioned directly, but indirectly when they mention the term mobile. With what is known about cleanliness when handling raw agricultural products. I feel some are necessary and others are long-term goals that I feel could be worked towards as more concrete research is done into mobile farmers markets themselves. Some of these regulations do not include mobile farmers markets just by their verbiage alone. Some of the Virginia regulations that apply to similar other areas and that can be used to create the framework of mobile farmers markets are listed in Appendix B.

C. Mobile farmer market design considerations to optimize service and food safety

When I started to think what I wanted a mobile farmers market to look like. At first, I was looking for something flashy, eye-catching, and something that draws people in. After, looking at other designs from school buses to trailers. I looked at making a mobile trailer that resembles a farmer's market stand, allowing people to have the same feeling of a Saturday morning at the market. The design must be something that is inviting and cost-effective. An organization

called Foodshare in Toronto, Canada had the perfect model and prototype. That the mobile farmers can be marketed after. They used Local Farmers Community gardens, Farmers' markets, Local gardeners, Urban farms, Food distribution companies, Local grocery stores, Local consumer food, co-ops to fill their mobile farmers market.

“We installed shelves for storing produce and extra supplies (shopping bags, staplers and receipt paper, pens, chalk, etc.). We intended to sell other products like eggs and meats, so we installed two chest freezers that charge overnight, and we also mounted a generator as a backup energy source. The key part of our retrofit was a pull-out drawer that we use as the base for our market stand. When we arrive on site, we simply roll up the back door of the truck, set up a camper awning, and pull-out our drawer. This section is probably one of the most important but is also highly dependent on the specifics of your program and your local laws. We operate our Mobile Farmer's Market as a Mobile Food Vendor and are required to comply with all local laws pertaining to such a vehicle. We register with the Health Department annually and though sometimes there's confusion about how we should be classified we always manage to dot the I's and cross the t's. The key to permitting is to start early! Do not wait until you have a day or even a week before you want to roll your program out. Some municipalities require inspections, comprehensive registrations and more, so do your research and plan. All in all, our set up takes about 5-10 minutes” (Foodshare, 2015).

Suggested food handling guidelines, from field to table, for Farmers Markets, fairs, and festivals was produced by Loyola University New Orleans. It breaks down foods at farmers markets into categories and gives suggestions for handling, prevention of cross-contamination and other preventive methods that would be beneficial to someone who was trying to start a mobile farmers market. I very much think that most of the recommendations are applicable to the

creation of a mobile market. This paper breaks down direct marketing for local farmer by categorizing food based on food safety risk and how it is produced, transported, and displayed.

Regarding farmers markets, local regulatory officials are most concerned with public health and sanitation. Also with regulation varying from area to area and sometimes between health districts, the process of food safety can get a little confusing and hard to know what is allowed and what is not allowed. Implementing the recommendations from this document can help guide potential farmers who want to create mobile farmers markets.

These suggested food handling guidelines categorize foods by the foodborne illness risk they may pose. Category 1 includes those foods that historically have not been identified as sources of foodborne illnesses. They are generally comprised of a single source or raw material. The packaging is simple and used as protection during display or transportation. The packaging is not integral to the preservation of the product's shelf life. Production handling is limited to minimal cleaning, peeling or shelling, cutting and packaging. Storage temperatures can be ambient or refrigerated. Category 2 included foods that historically have been identified as the source of a few foodborne illness (often these few illnesses have been associated with poor handling and improper use of sanitation procedures). Two primary packaging formats are used. The first is a simple bag, which is used for protection of the food. Second is glass or plastic bottles or jars. These containers are integral to the preservation of the product and serve as a barrier to spoilage. Production handling requires some or most of the following: batching, mixing, blending, cooking or baking, and bottling or packaging. Storage temperatures include ambient, refrigerated and frozen. Category 3 includes foods that historically have been the source of most foodborne illness. The illnesses they produce are serious and some cases can be life-threatening. The raw materials used in category 3 products are excellent hosts for rapid bacterial growth. A clean

process environment and controlled refrigerated storage and transfer temperatures are essential to the sale of safe products. Canned or pickled products must carefully adhere to established home canning preparation procedures and processing conditions in a pressure cooker. The packaging is integral to the preservation of the food product. Storage temperatures can include ambient, refrigerated or frozen. Category 4 includes foods that historically have been the source of some foodborne illness. Illnesses caused by category 4 products can be very serious. Preparation of these foods involves extensive food handling, multiple raw materials, several handling processes- and consequently multiple opportunities for contamination. The specific food safety standards that would be applicable to mobile farms markets are listed in Appendix C.

I've only used the categories 1 and 3 because those are the categories that contain foods that are normally carried by mobile farmers that I have researched from Arcadia in Virginia and Go Fresh Mobile Market in Springfield, Massachusetts. There is not a clearly defined list of mobile farmers market. I choose the two above because when I researched mobile farmers markets these are two of the mobile markets that appeared the most on different websites and blogs. The USDA AMS does maintain a list of farmers markets in the United States but it does not contain which markets have a mobile component.

Conclusions

In retrospect, after all, I have seen there is a headway being made to separate Mobile farmers markets from their brick and mortar counterparts and the food trucks they are associated with. The 2010 Senate Bill 198 in the Maryland Legislature instituted the Producer Mobile Farmers Market License that effectively prohibited municipalities from enacting any food safety licensing fees above and beyond those required by the state. This cut down on any confusion that might arise from overlapping and duplicate laws and regulations. Also, the upcoming 2018 Farm Bill does not have any language specifically talking about mobile farmers markets, though it does make headway with a food safety outreach program. This targets small and medium-sized farms, beginning farmers, socially disadvantaged farmers, small food processors, or small fresh fruit and vegetable merchant wholesalers. Twenty million dollars for each of fiscal years 2018 through 2022 will be used for this endeavor. These funds will be used to establish a national food safety cost-share program to reimburse producers and handlers of agricultural products for costs incurred in obtaining food safety certification and in making necessary changes and upgrades to practices and equipment to improve food safety. Up to 75% or \$1500 can be used to reimburse a person for certification and up to \$5000 for upgrades. This shows that there are strides being made, but more are needed. As the area of mobile farmers markets continue to grow I hope we as professionals continue to grow with it and provide research-based information to support it.

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Appendices

Appendix A - Mobile Market Participant Survey

This survey was the second part of a 2-year study. Which addresses food deserts in the city of Suffolk. I was given money from the OBICI healthcare foundation to address these issues. I address these issues by figuring out the complex issues each of the food deserts in the area faced. Next, I held townhall meetings in each area informing residents what I was doing and how it would benefit them. I held a series of demonstrations between 2015-2016 addressing the areas that the residents needed help in financial literacy, vegetable identification, nutrition, and cooking demonstrations. Over 200 adults and 100 children participated in the program. The participants were each given a before and after survey, asking about their health and life. The last and most important question that was asked on the after survey was “If a mobile farmers market was to become available in your area would you support it. All participants answer yes. This answer with the combined research was enough to convince the OBICI Healthcare Foundation to fund the creation of the mobile farmers market.

Mobile Market Participant Survey

Are you Eating Healthy?

In 2016, your neighborhood may be selected to participate in a healthy eating program that teaches you how purchase, prepare and eat Virginia grown produce. Selected neighborhoods will have the opportunity to shop directly from a mobile market that comes to their neighborhood on a regular basis.

Please indicate your neighborhood location/name:

Neighborhood Name: _____

Location: _____

What is the best day to deliver to your neighborhood?

Tue Wed Thurs

What is the best time to deliver to your neighborhood?

Morning, 10AM-noon

Early Afternoon, 1PM-3PM

Late Afternoon, 4PM-6PM

Please check the number of servings of VEGETABLES you typically eat each day.

0 1 2 3 4 5 6 or more

- Lack of Transportation
- Lack of Money
- May not have type of produce I want
- Other: _____

Please rate your cooking skills:

- 1
- 2
- 3
- 4
- 5

Poor

Excellent

List your favorite VEGETABLES, in order of preference:

List your favorite FRUITS, in order of preference:

Contact Information:

Name:

Address:

City, State:

Zip Code:

Phone Number:

Email:

Thank you for participating in the survey and if you have any questions please contact: Marcus J. Williams with Virginia Cooperative Extension City of Suffolk Unit Office at 757-514-4332 or mjwil@vt.edu

Appendix B – Virginia regulations pertaining to mobile farmers markets

"Food establishment" includes (i) an element of the operation such as a transportation vehicle or a central preparation facility that supplies a vending location or satellite feeding location; (ii) an operation that is conducted in a mobile, stationary, temporary, or permanent facility or location where consumption is on or off the premises and regardless of whether there is a charge for the food; and (iii) a facility that does not meet the exemption criteria identified in subdivision 6 of this definition or a facility that meets the exemption requirements but chooses to be regulated under this chapter. 12VAC5-421-10. Definitions.

"Food establishment" does not include: An establishment that offers only prepackaged food that is not time/temperature control for safety food; A produce stand that only offers whole, uncut fresh fruits and vegetables; A food processing plant, including those that are located on the premises of a food establishment; § 53.1-68 of the Code of Virginia.

12VAC5-421-130. Clean Condition of Hands and Arms.

Article 3. Personal Cleanliness: Food employees shall keep their hands and exposed portions of their arms clean. §§ 35.1-11 and 35.1-14 of the Code of Virginia.

12VAC5-421-140. Cleaning Procedure of Hands and Arms: Except as specified in subsection D of this section, food employees shall clean their hands and exposed portions of their arms or surrogate prosthetic devices for hands or arms for at least 20 seconds, using a cleaning compound in a lavatory that is equipped as specified under 12VAC5-421-2190.P. Food

employees shall use the following cleaning procedure in the order stated to clean their hands and exposed portions of their arms, including surrogate prosthetic devices for hands and arms:

1. Rinse under clean, running warm water;
2. Apply an amount of cleaning compound recommended by the cleaning compound manufacturer
3. Rub together vigorously for at least 10 to 15 seconds while:
 - a. Paying attention to removing soil from underneath the fingernails during the cleaning procedure;
 - b. Creating friction on the surfaces of the hands and arms or surrogate prosthetic devices for hands and arms, fingertips, and areas between the fingers;
4. Thoroughly rinsing under clean, running warm water;
5. Immediately follow the cleaning procedure with thorough drying using a method as specified under 12VAC5-421-3030.P

12VAC5-421-160. When to Wash.

After touching bare human body parts or hair other than clean hands and clean, exposed portions of arms; After using the toilet room; After caring for or handling service animals or aquatic animals. Except as specified in 12VAC5-421-220 B, after coughing, sneezing, using a handkerchief or disposable tissue, using tobacco, eating, or drinking; When switching between working with raw foods and working with ready-to-eat foods. After engaging in other activities that contaminate the hands.

12VAC5-421-510. Washing Fruits and Vegetables.

Whole, raw fruits, and vegetables that are intended for washing by the consumer before consumption, raw fruits and vegetables shall be thoroughly washed in water to remove soil and other contaminants before being cut, combined with other ingredients, cooked, served, or offered

for human consumption in ready-to-eat form. Fruits and vegetables may be washed by using chemicals as specified under 12VAC5-421-3390.

12VAC5-421-2080. Pure Water Standards.

Except as specified under 12VAC5-421-2090:

1. Water from a waterworks shall meet water quality and quantity standards in accordance with 12VAC5-590, and Water from a private well shall meet the water quality standards in accordance with 12VAC5-630-370 and not exceed 10 mg/L of nitrate (as N).

12VAC5-421-2160. Alternative Water Supply.

Water meeting the requirements specified under 12VAC5-421-2050 through 12VAC5-421-2130 shall be made available for a mobile facility, for a temporary food establishment without a permanent water supply, and for a food establishment with a temporary interruption of its water supply through:

1. A supply of containers of commercially bottled drinking water;
2. One or more closed portable water containers;
3. An enclosed vehicular water tank;
4. An on-premises water storage tank; or
5. Piping, tubing, or hoses connected to an adjacent approved system in a manner approved by the department.

12VAC5-421-2310. Using a Handwashing Sink.

A handwashing sink shall be maintained so that it is accessible at all times for employee use. A handwashing sink shall not be used for purposes other than handwashing. An automatic handwashing facility shall be used in accordance with manufacturer's instructions.

12VAC5-421-2360. Mobile Water Tank Approved Materials.

Article 3. Mobile Water Tank and Mobile Food Establishment Water Tank

Materials that are used in the construction of a mobile water tank, mobile food establishment water tank, and appurtenances shall be:

1. Safe;
2. Durable, corrosion resistant, and nonabsorbent; and
3. Finished to have a smooth, easily cleanable surface.

12VAC5-421-2500. Mobile Holding Tank Capacity and Drainage.

Article 4. Sewage, Other Liquid Waste, and Rainwater

A sewage holding tank in a mobile food establishment shall be:

1. Sized 15% larger in capacity than the water supply tank; and
2. Sloped to a drain that is 1 inch (25 mm) in inner diameter or greater, equipped with a shut-off valve.

12VAC5-421-2860. Wall and Ceiling Coverings and Coatings.

Wall and ceiling covering materials shall be attached so that they are easily cleanable, except in areas used only for dry storage, concrete, porous blocks, or bricks used for indoor wall construction shall be finished and sealed to provide a smooth, nonabsorbent, easily cleanable surface.

Appendix C – Food safety recommendations for mobile farmers markets

Category 1 Foods only need the least possible cleaning to remove dirt or filth. This category includes those foods that historically have not been identified as sources of foodborne illnesses. They are generally comprised of a single source or raw material. The packaging is simple and used as protection during display or transportation. The packaging is not integral to the preservation of the product shelf life. Production handling is limited to minimal cleaning, peeling or shelling, cutting and packaging. Storage temperatures can be ambient or refrigerated. Products include: raw vegetables, raw fruits, edible plants, eggs, honey, shelled peas and beans, cut washed and unwashed bagged vegetables, nuts (raw, roasted or boiled), garlic, spices, grains (including meal) and, herbs (fresh and dried) (Drake & Swango, 1998).

Eggs: must be wiped to remove visible dirt and stored under refrigeration (below 45 degrees) once collected. Egg producers are exempt from the Virginia Egg Law and do not need inspection if selling less than 150 dozen of their own eggs per week or less than 60 dozen of another producer's eggs per week. The product name (term "fresh eggs" can only be used if product meets requirements for Grade A or higher). Labeling must contain safe handling instructions, the name & address of packer, Grade (AA, A, B) or "Ungraded" if not inspected. Reusing egg cartons runs the risk of cross-contamination; therefore, patrons could be asked to bring their own. (Boyer & Eifert, 2017)

Other production requirements include, if recycled packages are used, the previous pack date, grade, size, and brand name must be completely obliterated. The box must say "Unclassified eggs-Keep refrigerated below 41 degrees," and indicate the name and address of

the producer as well as the date of packaging. If eggs are sold in filler flats, a sign must be posted above or beside the eggs with the above information listed. Any raw foods identified as “ready to eat,” “plate ready,” or “not requiring further washing” must be prepared and packaged using the minimum facility requirements when cutting or shelling vegetables. Citrus must meet the maturity test of required soluble solids in relation to the percentage of anhydrous citric acid. It does not need to be washed or sized, but it must be clean and sold by weight, volume or count. No false or misleading statement or designation of quality, grade, trademarks, trade names, area of production, or place of origin of any fruit or vegetable is permitted. Fruits or vegetables labeled as Louisiana grown or produced product must have proof of origin. (Drake & Swango, 1998)

For Category 1 products: Minimum storage standards for products sold at a farmer’s markets or food fairs must be harvested within a reasonable time of the designated hours of operation. Raw produce must be stored in clean containers and bins to prevent contamination by dirt or filth. Storage containers must be clean and free from foreign objects, insect and rodent debris, and any form of dirt or filth. Damaged containers that cannot be properly cleaned must be discarded. To prevent insects and rodents entering boxes, crate, consumer containers or possible contamination by filth from direct contact with the ground, containers must not be stored directly on the ground. Refrigeration of fresh whole fruits and vegetables is at the discretion of the vendor. It is recommended that vegetable that have been shelled or washed and cut should be stored in closed containers under refrigeration (under 45 degrees) or below to extend the shelf life of the product. Eggs must be stored in single layers to avoid breakage and allow for even circulation or refrigerated air. They may be stored in flats on cardboard cases. All eggs must be stored under refrigeration (under 45 F). Flats or cases must not be stored directly on the floor of the

refrigerator, but rather on racks that allow for proper cool air circulation. (Drake & Swango, 1998)

Minimum transportation standards established for the storage of category 1 products must be maintained during transportation to a market or fair for sale. Noncommercial vehicles can be used to transport products. The area in the vehicle designated to hold product during transportation must be inspected prior to each shipment for dirt, filth and old and decaying pieces of the food products (which must be removed) to avoid attracting rodents or insects, or contaminating clean containers of product. If products are not entirely enclosed in boxes or containers they must be covered with tarpaulin or equivalent. Products requiring refrigeration must be transported in a refrigerated unit, a cooler, or a plastic lined cardboard box. The unit, cooler, or box must maintain a temperature of 45 F or below. The products in category 1 requiring refrigeration are eggs. (Drake & Swango, 1998)

Category 3 products includes foods that historically have been the source of most foodborne illness. The illnesses they produce are serious and in some cases, can be life-threatening. The raw materials used in category 3 products are excellent hosts for rapid bacterial growth. A clean process environment and controlled refrigerated storage and transfer temperatures are essential to the sale of safe products. Canned or pickled products must carefully adhere to established home canning preparation procedures and processing conditions in a pressure cooker. The packaging is integral to the preservation of the food product. Storage temperatures can include ambient, refrigerated or frozen. Products included in category 3; Raw or frozen meats (beef, lamb, mutton, pork, goat), Raw or frozen small poultry, Raw and frozen game bird and rabbit, Raw and frozen fin fish and seafood (turtle, alligator, frogs, crustaceans),

Live seafood (shellfish, crustaceans, oysters), Fluid milk and fresh dairy products, Cheese, Canned and pickled products, Cures sausage or meat. (Drake & Swango, 1998)

Minimum production standards for the handling of Category 3 products requires proper sanitation at all phases of production. The vendor is required to use and follow the minimum facility requirements for baked, pickled, or canned goods, and the appropriate state or federally inspected facilities for other products. All meat that is to be sold must be slaughtered at a USDA/state-inspected facility. The VDACS Office of Meat and Poultry Services (OMPS) provides free inspections for amenable species (cattle, hogs, sheep, goats, chickens, turkeys, ducks, geese, guineas, ratites and squabs). Exemptions to government inspection include a: 1,000 Bird Exemption and, 20,000 Bird Exemption., Custom Exemption: with permit from OMPS, allows businesses to slaughter animals, only for their owner's consumption, without an inspector present. Evidence of the exemption must be provided to the market or food fair staff. The labeling should be as follows: Product Name, Net Weight, List of Ingredients, Name/address of Responsible Party, Inspection Legend (plant number that did the work), Safe Handling Statement, and for Custom Exemption: "NOT FOR SALE"; 20,000 Bird Poultry Exemption Label, if applicable. (Boyer & Eifert, 2017)

The birds must be healthy and free of drugs and antibiotics. The processing premises must be sanitary. The approved vendor, regardless of inspector status, must raise all poultry sold. Make sure all products are kept at 41°F or lower. Approved forms: Whole chickens can be sold either fresh or frozen. They must be pre-wrapped and weighted at the point of processing. The unit of sale will be the whole bird by weight. The label must contain the net weight of the chicken, the vendor name, and address. (Drake & Swango, 1998) Approved forms: All milk and fresh dairy products must be pasteurized. They must be bottled or packaged at the point of

pasteurization. All fresh dairy products must be stored under refrigeration (41 F or below). All dairy products to be sold must be inspected. Sale of raw milk is prohibited. Sale of cheese made from raw milk must be aged at least sixty days above 35 degrees. Contact the VDACS Office of Dairy & Foods. Approved forms of refrigerated storage for fresh dairy products are battery operated coolers or refrigerator trucks. The unit of sale will be by volume. The label must follow the state labeling guidelines. Which is Product Name, Net Weight, Ingredient Statement, Name & Address of Manufacturer/ Distributor, Sell-by date. Products offered as samples should be prepped on-site or in your VDACS approved facility. Un-refrigerated samples may be left out for tasting no more than 4 hours (any leftovers that cannot be re-cooled or used again, they must be thrown away) Please keep your most recent VDACS inspection reports on hand with you at the market. (Boyer & Eifert, 2017) Fresh dairy products include milk, flavored milk, buttermilk, cream, crème fraiche, yogurt, ricotta, fromage blanc, cottage cheese, creole cream cheese, fresh mozzarella, butter. Beef, lamb, mutton, goat, and pork All beef, lamb, mutton, goat, and pork must be federally inspected, and vendors are subject to USDA inspection requirements.

Approved forms: All legal cuts of the above-mentioned meats (including sausage) can be sold frozen. They must be proportioned, pre-wrapped, and weighted at point of processing. The unit of sale will be the prepackaged cut or portion of meat. All meats are subject to the federal USDA grade and inspection. The outer packaging must follow federal labeling guidelines.

Cheese Individual varieties of cheese have been listed on the following page according to moisture content. The moisture content of the cheese will determine the storage and transportation requirements for refrigeration for each variety. Cheese must be pre-portioned, weighted, and wrapped before it is transported to the market or food fair. The unit of sale will be

the pre-wrapped portion. The net weight of the cheese must be clearly marked on the package.
(Drake & Swango, 1998)

Canned or pickled low acid foods the handling of these products requires proper sanitation at all phases of production. The vendor must use the Minimum Facility Requirements Acidified low-acid foods (pickled products, salsa, pumpkin/sweet potato butter, barbeque sauces, chow-chow, relishes, hot pepper jelly, hot sauces, garlic in oil, etc.) must achieve a pH of 4.6 or lower (verified by an electronic pH meter you purchase). Low-acid canned foods are not permitted to be made in the home. Completion of 'Better Process Control School' course and process approval by a processing authority strongly advised (Virginia Tech Food Innovations Program: Food Testing Services). Must not exceed \$3,000 in total annual gross sales for all acidified products produced. The foods should be labeled as follows the standard label must contain: Product name, Net weight, Ingredient statement, Name & address of manufacturer/distributor/packer, Nutritional labeling (exemptions apply, List of allergens, NOT FOR RESALE – PROCESSED AND PREPARED WITHOUT STATE INSPECTION You must also have a label displaying the name, physical address and telephone number of the person preparing the food product and the date the food product was processed. All acidified foods must have a unique identifying code visible to the naked eye. Only fruits, vegetables and cooked eggs may be sold in this form. (Boyer & Eifert, 2017)

Category 3: Minimum storage standards. All products must be stored in a clean environment to avoid contamination by dirt or filth. Individual containers must be clean on the outside surface of the container and closed to avoid attracting rodents or insects. Storage containers must be cleaned and sanitized after each use. Containers must be cleaned using hot, soapy water, rinsed with hot water, and sanitized with a mild bleach solution using 2 oz.

household bleach to 1 gallon of water. Damaged containers that cannot be cleaned must be discarded. Storage containers and consumer containers must never be placed on the floor or ground. Storage containers must not be stored directly on the floor of a refrigeration or freezer, but placed on racks to allow for proper cool air circulation. All frozen food must remain fully frozen always. (Drake & Swango, 1998)

Category 3: Minimum transportation standards the standards established for the storage of category 3 products must be maintained during transportation of product. Noncommercial vehicles can be used to transport products. The area of the vehicle designated to hold product during transportation must be inspected prior to each shipment for dirt, filth and old or decaying pieces of food product (which must be removed) to avoid attracting rodents or insects or contaminating clean containers of product. Products requiring refrigeration must be transported in a refrigerated unit, a cooler or plastic lined cardboard box (with the exception of fresh dairy products which MUST be transported and held in a battery-operated cooler or refrigeration truck). The cooling source can be crushed ice or cold gel packs (blue ice). The unit, cooler or box must maintain the temperatures referenced in individual descriptions. These include:
Refrigerated temperatures for meat and cheese (41 F or below) Refrigerated temperatures or milk (41 F or below) Freezing temperatures for frozen goods (0F or below) (Drake & Swango, 1998)

Below are recommendations if the mobile market decided to have samples available for customers to sample. It is recommended that all samples be prepared prior to the start of the route. Samples must be placed in sampling cups or paper wrappers (i.e., candy or muffin wrappers). Toothpicks should be provided to aid customers in sanitary sampling. To avoid hand contact with, or contamination, of a food sample by a vendor or potential customer, no common knives or utensils can be used. If samples must be cut up or arranged on site, vendors must wear

gloves when hand contact is unavoidable. In such cases, only disposable utensils should be used, and they must be discarded immediately after use. It is recommended that each vendor supplying samples provides a small garbage can for used sampling containers or utensils. (Drake & Swango, 1998)

All products sold on the mobile farmers market must make the following information available for their customers by label, handout, or a sign posted on their individual Market stall: - vendor name; and - address (name of city and state is sufficient. Supplying a card or leaflet for the customer to take home is recommended. Products subject to state and federal inspection must contain the following information: - product name; - ingredient statement in decent order of predominance; - net weight of product; - vendor name and address; and - inspection seal (provided by USDA for USDA products only). All bakery items must be protected from possible contamination. If items are not prewrapped, they must be displayed behind a physical barrier to protect the food from contamination by a potential customer and from flying insects (i.e., a sneeze guard). Vendors must wear protective gloves or use disposable paper when handling unwrapped bakery items. (Drake & Swango, 1998)

No visitor to the mobile farmers market or potential customer may be allowed to touch unwrapped products prior to point of sale. All storage containers must be clean and stored off the ground, except for ice chests, which can be placed directly on the ground (but then should not be placed on tables that will hold food — for concerns of cross-contamination). Frozen food must remain frozen during Market hours. Products must not be allowed to thaw at any time. A sample of the product can be displayed for customer inspection but cannot be sold if it has risen above the required minimum temperature. All coolers, ice chests and refrigerated storage units used to hold refrigerated or frozen products must be equipped with a thermometer. The thermometer

must be suitable to measure cold temperature (Range 0 F - 60 F). The thermometer must be secured to the walls of the storage unit to ensure that the thermometer is measuring the ambient temperature inside the unit. The temperature wand must not come in direct contact with the source of the refrigeration (i.e., ice or blue ice). Pre-packaged foods cannot be opened during operation hours. If a pre-packaged item is opened, it cannot be sold to a consumer. The food item must be disposed of or removed. No smoking is allowed. Proof of any required courses, permits, certification and copies of leases for commercial kitchens must be provided for those that inquire. Refrigeration. Facilities used to process perishable raw materials will need to have a refrigerator with a temperature at or below 41 F or a freezer with a temperature below 0F, or both. Separate refrigerators and freezers are recommended, but not required, to avoid cross-contamination of family food with raw materials, and to reduce the load on the capacity of a single unit to provide rapid and complete cooling when the door is being opened for both domestic and production purposes. Any refrigerator and freezer must be equipped with a thermometer so that it can be verified at any time that the proper temperatures are being maintained. (Drake & Swango, 1998)

Waste disposal. To avoid creating any insect breeding ground, all liquid wastes must be disposed of down a drain in a sanitary sewage system. Garbage and other refuse must be disposed of in a safe and sanitary manner that does not create a harborage or breeding ground for rodents or insects. Care must be taken to dispose of all garbage well away from any area involving the production or growing of food. Production and Storage Containers and Utensils. Containers and utensils for use during production and storage must be of a material that can be easily cleaned and sanitized. To avoid fragments in or contamination of the food products, they must be discarded when damaged or no longer easily cleaned. All containers and utensils must

be cleaned, sanitized and allowed to air dry prior to their use. Care must be taken to avoid the recontamination of containers and utensils while in storage. (Drake & Swango, 1998)

It is the intent of any food handling sanitation program to control the primary sources of food contamination. The following guidelines will form the basis of a sanitation program. The harvest and sale of farm produce: Equipment used to harvest and store, as well as containers and equipment must be cleaned free of dirt, decaying food, sticks and stones before each use.

Storage and packaging areas must be swept clean after each use. Food packagers must wash, sanitize (wash with antimicrobial soap) and dry their hands at the following times as needed:

When reporting to their work area
o After eating and smoking, after use of the toilet, after coughing or sneezing, after handling any product that can contaminate their hands. Fingernails must be short and clean. No food packaging by anyone who is seriously ill (has an illness resulting in vomiting or diarrhea). No eating or drinking of food while processing or preparing food for storage. No smoking while processing or preparing food for storage. Level 2 for the further processing of food products Containers and utensils which come in direct contact with foods during processing must be cleaned, sanitized, and allowed to air dry prior to each use.

(Drake & Swango, 1998)

Appendix D - FOODSHARE TORONTO, Mobile Good Food Market Program, Annual Budget Example

I picked this budget to base the roundabout figures for how much produce, salaries, and truck maintenance would cost for a typical mobile farmers market.

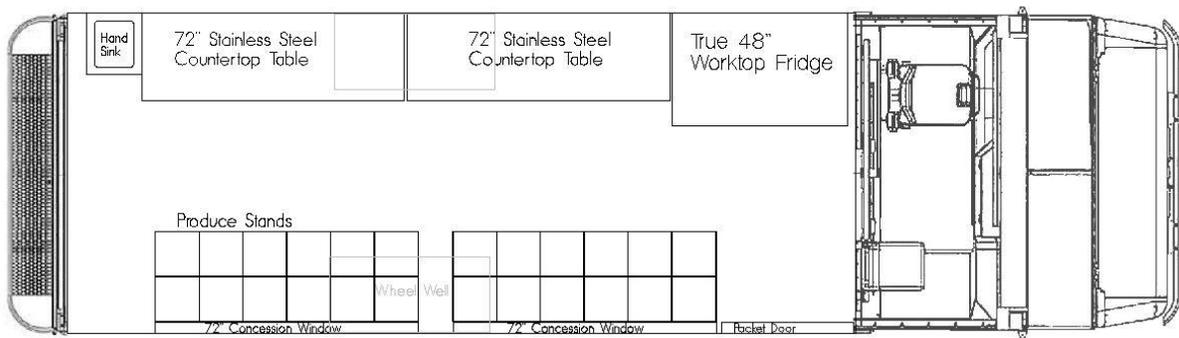
FOODSHARE TORONTO	
Mobile Good Food Market Program	
Annual Budget	

Expenses	
Cost of Produce	\$100,000
Salaries and Benefits (project coordinator + consideration for produce ordering, packing, outreach, delivery)	\$80,000
Administration Expenses (database programming, computers, office and market supplies)	\$2,000
Volunteer Expenses (\$12 produce voucher for 2 helpers at 6 markets) x 50 weeks	\$7,200
Warehouse Expenses (rent, maintenance)	\$4,000
Truck Expenses (gas, maintenance)	\$10,000
Total	\$203,200

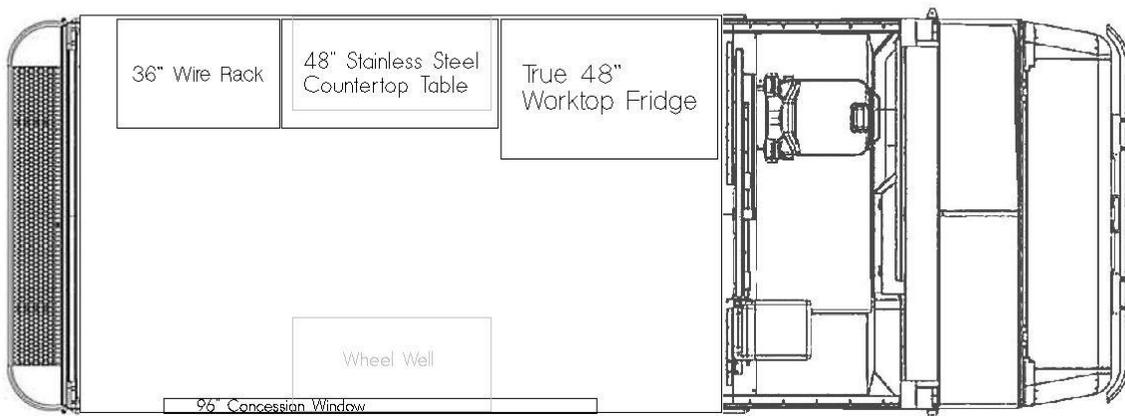
Appendix E – Schematic of a Mobile Farmers Market Vehicle

I helped come up with the schematics for the mobile farmers market. I know I did not want people walking through the inside the vehicle to keep chances of outside contamination low. So, I came with the idea to have the vehicle modified by On the Move Food Trucks out of Texas and Michigan. What I wanted was the storage bins that held the produce to be able to be pushed out of the vehicle, so they can protrude out so that the customers could reach the food without being in the vehicle. Also, I want when it was time to drive to another location that it could be pushed back in to the truck with ease. I want ample counter space to cut product for tasting, a refrigerator for items that need to be refrigerated or for future items.

Mobile Farmers Market 18ft Truck
Detroit Custom Coach 5/17/16



Mobile Farmers Market 12ft Truck
Detroit Custom Coach 5/13/16



Appendix F - Outside design of the mobile farmers market:

Schematic of a Mobile Farmers Market Vehicle: The outside of the vehicle was going to be fashioned with recycled wood to be more eco- friendly but also it would give the vehicle a look that said old school farm stand.



Appendix G – An example of boxes to use on the mobile farmers market to hold produce

I chose these display/ storage boxes because they were aesthetically pleasing and they were able to hold the amount of produce I needed.



Appendix H - Description of the refrigeration used in the mobile farmers market

Doors-2, Shelves-4, length is 48³/₈ inches, depth 30¹/₈ inches, Voltage 115/60/1, Amps 3.0, Cord Length 7 ft., and a Crated Weight 280 lbs. High capacity, factory balanced refrigeration system that maintains cabinet temperatures of 33°F to 38°F (.5°C to 3.3°C) for the best in food preservation. Exterior - stainless steel front, top, and ends. Matching aluminum finished back. Top and backsplash are one piece formed construction. Bacteria and food particles cannot be trapped underneath as with other two-piece worktop units. Interior - attractive, NSF approved, clear coated aluminum liner. Stainless steel floor with coved corners. Insulation - entire cabinet structure and solid doors are foamed-in-place using Ecomate. A high density, polyurethane insulation that has zero ozone depletion potential (ODP) and zero global warming potential (GWP). The cost of the unit is \$2,438.82 at its price point provides the space and durability that would be essential for mobile unit.



Appendix I – A breakdown of the cost of a mobile farmers market

I went with a pre-owned vehicle for economical reason plus it would be the easiest to retrofit. I included an air conditioning unit because even though the unit is mainly open air while driving it would be closed, so the air conditioning will be used to regulate and internal temperature. I picked the waters tanks because I wanted something that could handle at least 8 gallons of fresh water and enough grey water, so it would have to be refilled or dumped more than once a day. I included a drain in the floor so at the end of the business day the floor could be sanitized and rinsed with the least amount of work. Last lighting for the interior and exterior was chosen because of the early evenings in the fall and the late evenings in the summer.

QTY	DESCRIPTION	UNIT PRICE	TOTAL PRICE
1	2002 FORD 18' Farmer's Market Truck 103,000 miles Extended slide out with step down service area Equipment wiring and plumbing in place for installation 1 roof mount A/C unit, 15,000 BTU 4KW gas generator/shore power line 8 gallons fresh/10-gallon grey water tanks Commercial flooring with grey water drain LED lighting Custom wood paneling Produce bleacher Wooden crates	\$60,750.00	\$60,750.00
1	Customer Selected Equipment Group See attached layout and equipment specs	\$6,750.00	\$6,750.00
1	Graphics/Wood Paneling 3M Vinyl Film	\$5,500.00	\$5,500.00
1	Documentation Fee	\$125.00	\$125.00
		SUBTOTAL	\$73,125.00
		SALES TAX	\$0.00
		TOTAL	\$73,125.00