Chapter 11:

Transportation

Learning Objectives

After completing this chapter, you will be able to:

- Identify the potential risks to food products while in transit to market
- Protect products from potential contamination during transport
- Develop a transportation plan including written standard operating procedures and record templates

Chapter 11: Transportation

Liane and Pam Clean Up!

Liane and Pam load harvested produce, along with the soil, pests, stones, etc., directly into their trucks in the field. They also use the vehicles to carry farm supplies including pesticides, fertilizers and lubricants back from town. Sometimes they let their new puppy ride along but only in a crate in the box.

Liane and Pam always vacuum and wash their truck and canopy before loading the clean produce for transport to market. Their puppy stays home. They know that it's important to keep the truck clean to minimize the risk of contamination from non-food products.

Elizabeth and Mike Keep Cool

Currently, Elizabeth and Mike transport the frozen poultry and pork to the local market on Thursdays. They use a pickup truck with a freezer on the back that is powered by a generator. The same truck is used to transport their poultry to the Saturday market in the city in central Alberta. With the addition of pork to their product line at the urban market, Mike and Elizabeth realize they have to increase the freezer capacity of their vehicle.

With the potential growth of their business and their son's growing interest in the family enterprise, they decide to purchase a large cube van with a refrigeration unit rather than a second freezing unit for their pickup. This vehicle will be used to transport product to the large urban market.

Mike and Elizabeth research the requirements and investigate the costs of using a federally registered facility for their pork. They learn that a federally inspected product has to remain in the federal system. So, if they store their federally inspected pork in a provincially registered facility in Alberta, they cannot legally sell their products in British Columbia.

Selling their meat and poultry products at the British Columbia farmers' market means that Mike and Elizabeth will have to transport from two different facilities. Their pork products will come from the federally registered facility in Alberta. They will then travel to B.C. to load the chicken from the provincially registered storage facility and continue on to the market.

Their other option is to haul all their animals, birds and pigs to British Columbia and have them slaughtered, processed and stored there. Mike and Elizabeth decide to investigate this second option. They need to find the appropriate facilities and evaluate the costs for each option. The search is on…

Hazards

Transportation of most food products to market presents primarily three types of hazards. Food can become contaminated by chemical hazards such as:

- Residues from cleaning products used to clean the vehicle or container
- Non-food materials transported unprotected with food in the same load
- Residues from previous loads of farm supplies transported in the market vehicle

Food is subject to biological contamination by microorganisms in numerous ways, such as when:

- Food products are transported with pets or other animals
- Staff has poor hygienic practices
- Temperature control is inadequate

For example, the growth of *Salmonella* on fresh chicken if transported to market unrefrigerated is a biological hazard.

During transport, food can also be contaminated by physical hazards including:

- Pieces of metal or glass contaminating bulk goods
- Wood slivers from pallets

Bulk goods are more susceptible to physical hazards during transit than packaged products.

Transportation Practices

All your efforts to safely produce your food products can be undone if they are not transported safely to market. Your raw materials, ingredients, packaging and final products should be handled and transported in a sanitary manner to prevent contamination.

When transporting food, you need to consider two food safety issues:

- Keeping food at the proper temperatures, especially potentially hazardous foods
- Protecting food from contamination

Potentially hazardous foods must be transported at proper temperatures. Maintaining the proper temperatures while transporting perishable products will also maintain the shelf life of these products.

Temperature Control

When transporting potentially hazardous foods, they **must** be kept out of the danger zone. Cold foods **must** be kept at or below 4ºC and hot foods at 60ºC or hotter. In most cases it is best if you transport your food at cold temperatures and reheat at the market, if required. Frozen food **must** be transported at temperatures that do not permit thawing. Transport perishable food that may be damaged by freezing, such as fresh fruits and vegetables, at temperatures between 0-4ºC.

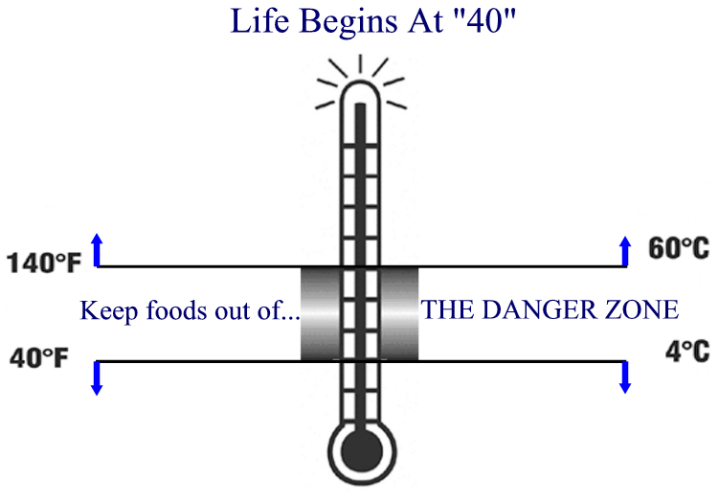

Figure 11.1 **Danger Zone Temperatures**

During transit keep your food out of the danger zone. Transport potentially hazardous foods at 4ºC or less.

Keep cold foods cold and hot foods hot.

Perishable – any food product or ingredient that is susceptible to deterioration or loss of quality when subjected to temperature abuse.

Potentially hazardous food – any food that is capable of supporting the growth of pathogenic microorganisms or the production of toxins, has a pH greater than 4.6 and a water activity (A_w) of 0.85 or more.

pH – scale by which the acidity and/or alkalinity of a food is measured. The lower the pH number, the more acid is in the product. pH values range from 0 to 14. The value for pure distilled water is 7, which is considered neutral.

Water activity – the amount of free water in the food that is available to pathogens; denoted by the symbol A_w. Pure water has a water activity of 1.0.

If the journey to the market is short, you can use insulated coolers to keep the food cold. If the trip is long or if outdoor temperatures are high, you may need to add frozen commercial gel packs or ice packs to the coolers. Ice **must** be made with potable water and should be bagged to prevent melt water from contaminating food.

Pre-cool food products before transporting to market. Use portable coolers if refrigerated vehicle is not available.

Food products **must** be cooled to 4ºC prior to transporting. To help maintain temperatures, place only pre-cooled food into the insulated containers. Do not count on the cooler to bring down the temperature of your food products. Fill the insulated containers as quickly as possible and close as soon as they are filled. Keep your containers closed until the food products need to be removed at the market.

Insulated containers **must** be:

- Clean and in good condition
- Used only for food
- Stored in areas where they can't become contaminated (kept away from chemicals, raw ingredients, pet food, animals, fuel, etc.)

Load and unload the vehicle as quickly as possible to maintain desired temperatures.

Upon arrival at the farmers' market, unload your vehicle as quickly as possible. Place your potentially hazardous products into temperature controlled equipment. If refrigerators or freezers aren't available, keep your products in the coolers.

Preventing Contamination

To prevent contamination, cover your food products during transit. Use food grade containers with lids or apply plastic film over the containers. Materials used to cover food should be suitable for food contact (food grade) to ensure that they don't contain any chemicals that could leach into the food.

Food Grade

"Food grade" applies to packaging materials in direct contact with foods. The Food and Drug Regulations state that no person shall sell any food in a package that may be injurious to the health of a consumer. Injury may result through the transmission of a contaminant from the packaging to the food. This could include fragrances, wood chips, paint or chemical components of plastics.

Potable water - water that is safe for human consumption. It meets provincial water quality standards.

For more information on storage and suitable packaging materials see Chapter 10: Storage.

Before loading your packaged foods into containers, inspect each container to ensure that it is clean and free of contaminants. If you are using reusable containers to transport your products, they should be durable, clean and able to withstand sanitizing. Packaged products don't need additional covering but they should be transported in such a way to protect the packaging from damage or contamination.

All food, equipment and utensils must be transported in covered containers to prevent contamination.

All of your equipment, utensils and food sampling materials to be used at the market **must** be transported in covered containers to prevent contamination.

Keep the vehicles you use for transporting food clean and in good repair. The vehicle body or trailer should have no holes that might allow heat, dust, mice or other contaminants into the cargo area.

Keep vehicles in good repair. Prior to loading, inspect the vehicle for cleanliness, odours, obvious dirt and debris. Food products must be transported to market in a clean vehicle.

Inspect the vehicle for cleanliness, odours, obvious dirt and debris before loading. If the vehicle was recently used to transport pesticides, fertilizers, chemicals, trash or pets, it **must** be cleaned thoroughly. Cleaning methods will depend on the unit, containers, food product and the nature of the contaminant. Write down the cleaning plan for each vehicle.

For more information on cleaning and sanitizing see Chapter 9: Sanitation.

Food grade container – one that will not transfer noxious or toxic substances into the food and has been approved by the CFIA.

Sanitize – a process of heat or chemical treatments to reduce the level of microorganisms to a safe level.

Load, arrange and unload your products in a manner that prevents damage and contamination of food and packaging materials. Keep loading times as short as possible to prevent temperature changes. Deliver directly to the market and unload. Other errands can be done after the market but only if you no longer are transporting potentially hazardous or perishable food items.

Place the filled containers in the coolest part of your vehicle. If the vehicle is air conditioned, it may be better to transport food in the vehicle rather than in the trunk or the back of the truck. If you use a refrigerated cargo vehicle to transport perishable foods, pre-cool the vehicle before loading.

Prevent damage and contamination of food and packaging as you load and unload your vehicle. Separate food and non-food items during transit. DO NOT transport chemicals or pets with food.

Load perishable products like produce off the floor of the vehicle to reduce the risk of physical damage and contamination. This will also ensure good air movement and better temperature control.

If food and non-food items are transported together, you **must** establish procedures to prevent contamination of the food. Restrict the types of non-food items that you transport. Do not transport chemicals and pets with food products.

If food becomes contaminated during transit:

Contaminated food must be discarded. Revisit your procedures to determine what went wrong and how it can be prevented.

- Discard contaminated product in a way that prevents it from being consumed
- Keep a record of the contaminated products and method of disposal

Keeping Records

Records enable you to monitor your activities. Your records should include:

- Temperature logs (temperature records before and after delivery)
- Cleaning records for vehicles and reusable containers
- Staff training

Records List

Make a list of the records you need to keep for each food type and vehicle.

Are your records up-to-date?

Examples of record templates can be found in Appendix F: Record Templates.

Staff Training

Train your staff in hygienic handling of food during transit. Make sure they understand why safe handling is important to prevent foodborne illness. They should know how to:

- Properly load and unload the vehicle
- Protect the food products from contamination during transit
- Maintain proper temperature control
- Properly clean and sanitize the vehicle
- Dispose of food that has become contaminated
- Complete the required records at the appropriate time

Train to Transport

What are the various ways you can use to train your staff on how to transport your food safely?

Food Safety Plan – Transportation

The goal of a transportation plan is to ensure that all products arrive safely at the farmers' market or other farm direct venue in a sanitary manner that prevents direct and indirect contact with contaminants. The cleanliness of your transportation vehicles is important.

Your written transportation plan should include:

- How to inspect vehicles prior to loading
- What vehicles are to be cleaned, and frequency and method of cleaning
- Who is responsible for cleaning and sanitizing
- Procedures for loading vehicles
- Acceptable transportation practices
  - How to transport non-food materials and food products
  - Identify what materials are not to be transported with food
- How temperature control is to be maintained
- Vehicle maintenance schedule including who is responsible
- What information is to be recorded and where
- What is to be done in the event that a problem occurs
- Staff training

Take the time to continue developing your food safety plan. Create a section in your binder for Transportation. Use the above points to build the transportation component of your food safety plan.

Summary

Your food may become contaminated or may not reach the farmers' market in a suitable condition unless effective control measures are taken during transport. It is your responsibility to:

- Protect food from damage and potential contamination
- Provide an environment that effectively controls the growth of microorganisms. Proper temperature control is crucial. Potentially hazardous foods must be transported at safe holding temperatures of 4ºC or below
- Keep vehicles clean and free of contaminants. Vehicles and reusable containers should be inspected prior to each use
- Dispose of food properly in the event of contamination

Market Manager Responsibilities

As a manager of an Alberta Approved Farmers' Market, it is your responsibility to maintain an accurate vendor listing for each market day in the event of a food safety complaint or product recall. You need to monitor the following activities at the market to ensure that food is transported safely:

- Vendor vehicles are clean and free of contaminants
- No pets were transported in the vehicle with food products
- Food products are transported in clean, food grade containers
- Vendor products are transported under adequate temperature control
- Vendors maintained adequate separation between food and non-food items during transit

Food Safety Checklists

Use the Weekly Food Safety Checklist for Market Managers in Appendix M to help you monitor your market. Add any transportation issues that are missing for your market. Remember you and your vendors should be using the checklists every market day.

What's Next

Do thermometers need to be calibrated? Do you know what makes a good food contact surface? Can you use a crock pot at the market? Read on to find the answers to these questions and more in Chapter 12: Equipment.

Resources

If you need more information about transportation or have food safety questions about this chapter contact:

Safe Food Systems
Agri-Food Systems Branch, Food Safety Division
Alberta Agriculture, Food & Rural Development
Phone: (780) 427-4054 Dial 310-0000 first for toll free access.

Chapter Review

Please answer True or False to the following statements.

1. Insulated portable coolers are suitable for short-term storage of food. _____
2. Potentially hazardous foods must be transported at safe holding temperatures of 8ºC or less. _____
3. Reusable totes are suitable for transporting fruits and vegetables to market. _____
4. The farmers' market manager only needs to be concerned about how food products are handled at the market. _____
5. A food grade container refers to food packaging that is edible. _____
6. A food safety plan needs to identify who is responsible for inspecting a vehicle before it is loaded for market. _____

Answers to Chapter Review

1) True

2) False, transport temperatures for potentially hazardous foods are 4ºC or less

3) True, provided that the totes are cleaned and sanitized before reuse

4) False, a manager needs to be concerned about how the food is produced and transported to market

5) False, food grade containers are non-toxic, easy to clean and approved by CFIA

6) True