

# Farm2School: Food Safety Considerations

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# University of Minnesota Food Safety

Relevant and researched information to reduce potential foodborne health hazards in Minnesota.



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### Food Service Training: Register for Winter 2008

Click on the links below to view dates and register for Winter 2008.

- » [ServSafe®](#)
- » [Serve It Up Safely™ Renewal](#)

### These courses are also available to take ONLINE

- » [ONLINE Food Manager Cert. Course](#)
- » [ONLINE Serve It Up Safely™ Renewal Course](#)

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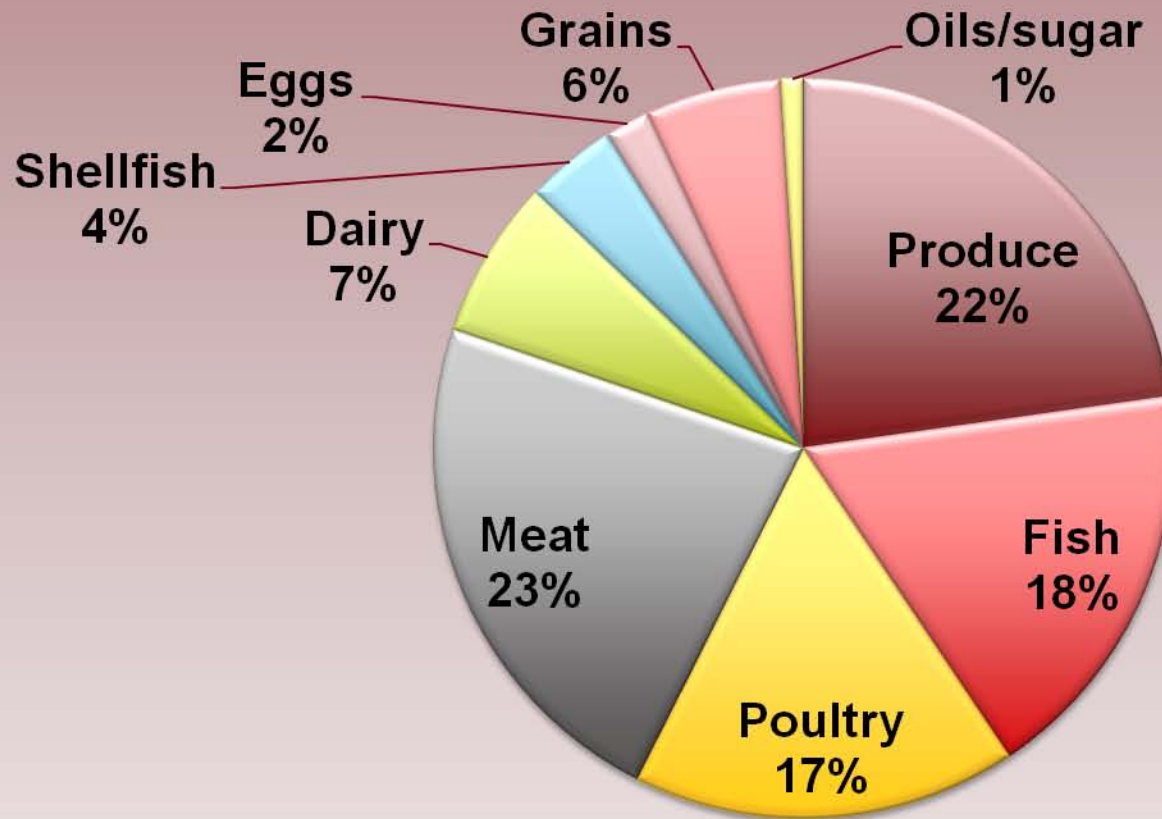
# TODAY'S TOPICS

- Safe food handling practices
  - Purchasing
  - Receiving
  - Storing
  - Preparing
  - Serving
- Local Produce, Eggs, Meat Regulations
- Resources

# YOUR FARM2SCHOOL PROGRAM

- Buy directly from farmer/grower
- Buy local foods through distributor
- Buy from a cooperative
- Accepts donated food
- Use produce from a school garden or school organization (i.e.. FFA)
- Other???

# 2007 FOODBORNE OUTBREAKS BY FOOD PRODUCT IN U.S.

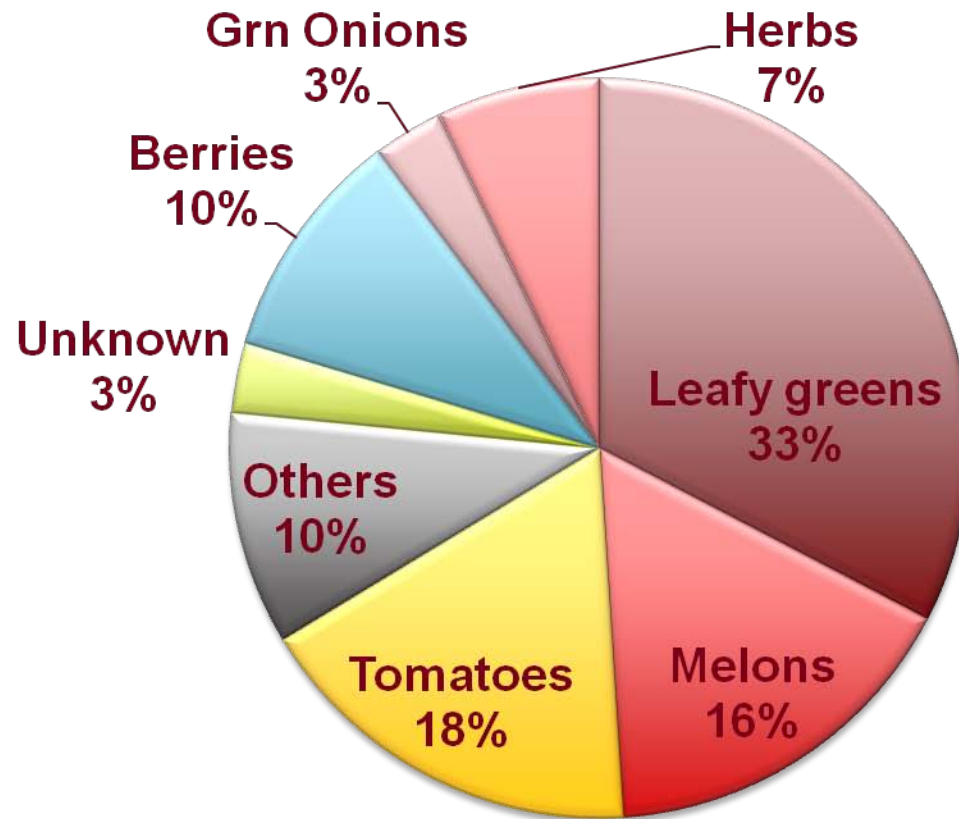


Source: Surveillance for Foodborne Disease Outbreaks—United States, 2007, MMWR 58(31):973-979; Produce Safety University, 2011

# WHICH CAUSES THE MOST PRODUCE RELATED FOODBORNE OUTBREAKS?

1. Tomatoes
2. Melons
3. Sprouts
4. Peppers
5. Leafy greens

# PRODUCE OUTBREAKS BY ITEM, 1996 - 2009



# WHAT CAUSES MINNESOTA FOODBORNE ILLNESS OUTBREAKS (2008, 62 TOTAL)

<u>Pathogen</u>	<u>No. (%)</u>	
Norovirus	40	<b>(65%)</b>
<i>Salmonella</i>	9	(15%)
Suspected toxin	6	(10%)
Suspected Norovirus	4	(6%)
<i>Campylobacter</i>	2	(3%)
<i>Clostridium perfringens</i>	1	(2%)



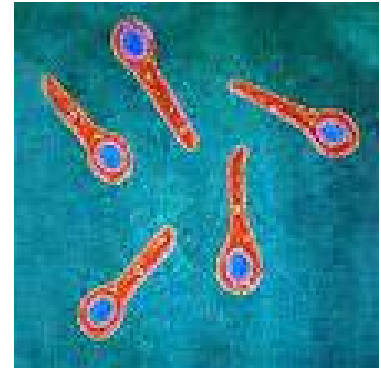
**Noro + suspected noro = 71% of 2008 outbreaks**

Slide from Karen Everstine, Foodborne Diseases Unit, Minnesota Department of Health. Used with permission. February 18, 2009

**\*Data are preliminary**



# MICROBIAL HAZARDS



- Can't see, taste or smell
- Only a few cells may cause illness
- Multiple fast in TDZ
- Produce—no kill step

# MICROBIAL GROWTH AT DIFFERENT PRODUCT TEMPERATURES

Time	Refrigeration 36°F	Room Temp 70°F	Body Temp 98°F
0	1 cell	1 cell	1 cell
4 hours	1 cell	16 cells	4,096 cells
6 hours	1 cell	64 cells	262,144 cells
24 hours	2 cells	16,777,216 cells	4,722,336,483,000,000,000,000 cells

Source: Ohio State University Bulletin 901, USDA Produce Safety University 2011

# HIGHER RISK POPULATIONS SHOULD NOT EAT:



- Raw (unpasteurized) milk or milk products
- Raw or partially cooked eggs and foods containing raw eggs
- Raw and undercooked meat, poultry, oysters

- Unpasteurized juices
- Raw sprouts



# CAN I BUY THESE LOCAL PRODUCTS?

- Produce
- Milk and Milk Products
- Fish
- Wild mushrooms
- Meat and Poultry
- Eggs

**Resource:** Minnesota Food Safety Partnership, Local foods videoconference  
[www.health.state.mn.us/divs/eh/food/pwdu/fsp/index.html](http://www.health.state.mn.us/divs/eh/food/pwdu/fsp/index.html)

# Serving Locally Grown Produce in Food Facilities

Minnesota Department of Agriculture; Minnesota Department of Health; University of Minnesota Extension

## Introduction

Can food facilities like restaurants, grocery stores, and school lunch programs legally buy or accept donated produce from a farmers' market or directly from a grower and serve it to their clients, students, or customers?

The answer is "Yes." In fact, this trend has been on the rise since 2003. This fact sheet provides answers to some frequently asked questions about how food facilities can use locally grown produce safely and legally.

## Definitions

**Food facilities:** restaurants, caterers, school food service, institutions, day cares, community centers, churches, hospitals, health care facilities, food shelves/banks, grocery stores, food markets, cooperatives, bakeries, convenience stores, temporary food stands, warehouses and wholesale food processors and manufacturers.

**Growers:** farmers, school gardens, community gardens, or gardens at food facilities.

**Sell/Sale:** includes keeping, offering, or exposing for sale, use, transporting, transferring, negotiating, soliciting, or exchange of food (MN Statutes, Chapter 28A.03 Subd. 6).

## Can food facilities buy or accept donated produce directly from growers?

Yes, produce growers are an "approved source" if the food is grown on a farm or garden that is occupied or cultivated by the grower, and has not been prepared or stored in a private home.

Growers are responsible to ensure that all produce (food) that they sell or donate complies with applicable regulations. Responsibility includes proper handling and that the food is safe, wholesome, and unadulterated. For assistance on obtaining information about Good Agricultural Practices (GAP), water potability, organic and related items, please contact the Minnesota Department of Agriculture (MDA) at 651-201-6027.

## Is a grower required to have a food handler license to sell or donate their produce?

It depends on the situation:

- ◆ People who sell or donate produce from a farm or garden that they rent or own are exempt from licensing.

This includes growers selling their own whole produce or produce with "limited processing" (as described below). (Minnesota Statutes 28A.15 and MN Constitution Article 13, Section 7.)

- ◆ People who sell or donate produce that is "processed" (as described below) are normally required to be licensed.
- ◆ People who wish to sell produce that they have not grown themselves must be licensed to sell to any customer.
- ◆ In other circumstances, a Wholesale Produce Dealer license may also be required (e.g., if a person buys produce from a farmer for resale).

All producers, processors, handlers, and vendors of food, whether or not they are required to be licensed, must comply with other food safety rules and requirements. Contact the Minnesota Department of Agriculture at 651-201-6062 for additional information on licensing, and specific product or processing requirements.

## What is considered "processing" of produce?

MDA refers both to "processing" and "limited processing" of produce:

**Processing** includes slicing, heating, canning, freezing, drying, mixing, coating, bottling, enrichment, or similar actions. Any addition of off-farm ingredients (e.g., salt) prior to use or sale is also considered processing.

**Limited processing** includes sorting or trimming (e.g., topping carrots or husking corn) as part of the harvesting process, or washing (e.g., to start the cooling process or to remove extraneous soil and debris).

In accordance with the Americans with Disabilities Act, an alternative form of communication is available upon request. TDD: 1-800-627-3529. An equal opportunity employer and provider.

June 2010  
Locally Grown.indd

# WHERE TO FIND LOCAL FOOD

- University of Minnesota local food
  - Connect to over 750 producers
  - <http://localfoods.umn.edu/>
- Minnesota Grown
  - <http://www3.mda.state.mn.us/mngrown/>
- Farm to School, UMN Extension
  - <http://mn-farmentoschool.umn.edu/default.htm>

# BEFORE YOU BUY: WHAT IS YOUR?

- Budget
  - Check USDA Market News to estimate a fair price  
<http://www.ams.usda.gov/AMSV1.0/marketnews>
- Menu—pre-cost recipes
  - Oklahoma Farm to school website
    - Produce calculator
- What's available/when--visit market
- Menu—Flexible-Menus subject to change
- Staffing—#,time, culinary skills, supportive
- Equipment, Storage
- Liability insurance requirement

# PURCHASING LOCAL

- How do you choose a local supplier?
- Have you visited the supplier?
- Do they have a food safety program to safely grow, harvest, sort, pack and distribute product?





# CHECKLIST REVIEW & FARM VISIT ACTIVITY

- Small groups 4-5
- Read scenario
- Review pictures
- Review checklist
- Discuss questions

# PURCHASING SPECIFICATIONS

- Variety
- Source: local
- Quality—higher grade, less defects
- Maturity
- Size per unit
- Quantity
- #of days from harvest to delivery
- Substitution notifications
- How to order?
- Delivery , when, how, containers
- Temperature requirements
- Rejecting or returning product

# WHAT'S MISSING FROM THIS BID?

Apples, McIntosh, 40 lb. case, 125 count,  
quantity to be purchased during bid period:  
200 cases



MCINTOSH

Image from:

[http://www.minnesotaapple.org/minnesota\\_apples\\_varieties.shtml](http://www.minnesotaapple.org/minnesota_apples_varieties.shtml)

# SCHOOL GARDENS

- History of land use
- Test soil
- Food safety plan and procedures
- Traceability, maintain harvest records
  - Product name
  - Harvest date
  - Name of harvesters

# USING SCHOOL GARDEN PRODUCE IN SCHOOL MEALS

- Work w/ school garden coordinator
- Discuss produce needs
- Discuss food safety
- Liability coverage
- Receiving
  - Reject if unacceptable
  - Don't commingle
  - Serve small quantities to specific grades

# SCHOOL GARDEN SCENARIO

Jack teaches agricultural technology. His students have been using school property to raise animals to sell for slaughter as a fundraiser for the last five years. Next, year, they would like to build a greenhouse to use for a garden. They are planning to provide lettuce and grape tomatoes to the school food service staff to add to the salad bar. They want to extend the growing season by adding a greenhouse and then use it to shelter animals as the weather gets cold.

**Would you have any concerns about serving this lettuce on your salad bar?**

# COMMUNITY DONATIONS

- What is your policy?
- Develop guidelines
- Does your liability insurance cover donated food?
- Visit garden

# FDA TRAINING COMMITTEE FOUND...

“80% of all foodborne illnesses can be traced to a procedural problem due to the action of employees who either did not know or understand the value of using designated procedures to keep food from becoming contaminated.”

*Source: Employee Education. Rhode Island Food Safety Education, Cooperative Extension.*



# RECEIVING: INSPECT THE DELIVERY

- Protocol/training to receive, inspect reject products
- Vendor ID/sign in
- Does it meet specifications?
  - Quantity
  - Quality
- Physical hazards
- Temperature—take and record on receiving log
  - What is a TCS food?
  - What produce is TCS?

# RECEIVING CRITERIA ACTIVITY

- Small groups 4-5
- Review product information sheet
- Look for
  - Receiving guidelines
  - Desirable characteristics
  - Product Defects
  - Storage and handling guidelines



**Microorganisms found on the bottom of this lettuce box**








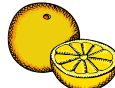











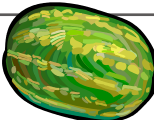
**Microorganisms from fingers that have touched the lettuce box**

**IOWA STATE UNIVERSITY**  
University Extension

This research project was funded by the USDA Cooperative States Research, Education, and Extension Service, Project No. 2005-51110-03282. The mention of trade or company names does not mean endorsement. The contents are solely the responsibility of the authors and do not necessarily represent the views of USDA.



# Produce Storage

Ripen @ Room Temperature	Refrigerate upon Receiving
Apricots 	Apples 
Bananas 	Cherries 
Cantaloupe 	Grapefruit 
Kiwi 	Grapes 
Nectarines 	Oranges 
Peaches 	Pineapple 
Pears 	Strawberries 
Plums 	Tangerines 
Tomatoes 	Watermelon 

# STORING FRESH PRODUCE

- Sort by ripeness for produce
- Separate fruit and vegetables
  - Fruits release ethylene, speeds ripening of vegetables
- Maintain proper temperature and humidity requirements to retain
- provide air flow
- Store all produce above/away from raw meat and poultry



# STORAGE OF TOMATOES



- Cover and store cut tomatoes above unwashed, uncut fresh produce
- Refrigerate cut tomatoes at 41°F or less
- Store whole fresh tomatoes so they do not contaminate other RTE foods with its soil
- Store above/away from raw meat & poultry

Food and Drug Administration. Retail food protection storage and handling of tomatoes. October 2007.

# WHAT'S THE CONCERN WITH TOMATOES?



*Salmonella* can:

- Survive in the environment for months
- Carried by birds, reptiles, infected humans, soil, water
- After attached to the tomato skin, it creates a protective coating (biofilm) in about 10 hours
- Does not die off during transport, ripening or storage

Food and Drug Administration. Retail food protection storage and handling of tomatoes. October 2007.

[www.cfsan.fda.gov/~ear/primtomat.html](http://www.cfsan.fda.gov/~ear/primtomat.html)

# TRACEBACK/TRACEFORWARD

- How/why do you ensure traceability of local foods in your school?
- Purchasing records
- Receiving and Storing—avoid commingling
- Document use and service of product on production record
- Conduct a mock recall to test system



# PREPARATION: CLEAN HEALTHY EMPLOYEES



- Wash hands with warm water and soap **before** and **after** handling fresh fruits and vegetables.
- Check hands and arms for cuts, burns. Bandage cuts and sores. Wear gloves.



- Don't work if you have vomiting or diarrhea.

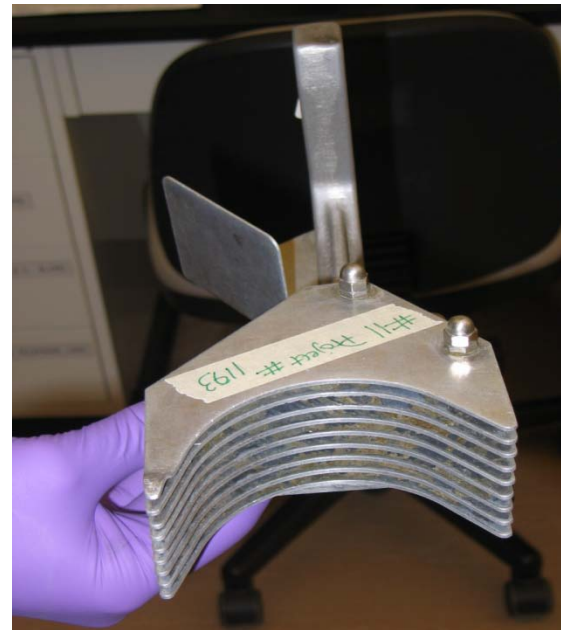


**Diarrhea**

# PREPARATION SURFACES AND EQUIPMENT

## Use clean/sanitized:

- cutting boards
- knives
- peelers, cutters, slicers
- food processors
- salad spinners
- utensils
- counter tops
- preparation sinks, colanders



# **BACTERIAL CONTAMINATION OF FOOD PREPARATION SURFACES BY CLEANING CLOTHS**

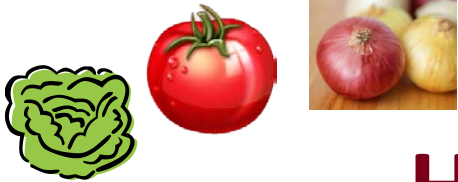
Source: Letters in Applied Microbiology 16:173-177, 1993

<b>Equipment Surveyed</b>	<b>Number of Bacteria After Preparing Food</b>	<b>Number of Bacteria After Cleaning</b>	<b>Number of Bacteria After Sanitizing</b>
<b>Serving Surface</b>	<b>7</b>	<b>&gt;300</b>	<b>0</b>
<b>Refrigerator Shelf</b>	<b>13</b>	<b>86</b>	<b>0</b>
<b>Meat Slicer</b>	<b>120</b>	<b>&gt;300</b>	<b>41</b>
<b>Salad Sink</b>	<b>&gt;300</b>	<b>&gt;300</b>	<b>0</b>

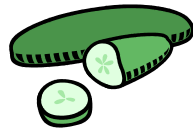
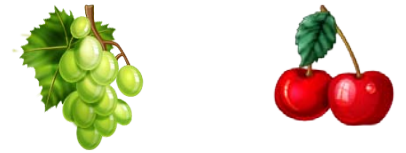
# PREPARATION: “CLEAN” PRODUCT

- What sink do you use to wash produce?
- Running water (temperature = slightly warmer than produce temperature)
- Scrub
- Rinse well
- Packaged fruits and vegetables labeled “ready-to-eat”, “washed” or “triple washed” do not need to be washed
- Drying with a paper towel may further reduce bacteria
- Air dry in clean, perforated pans





# HOW TO WASH?



Under running tap water  
(no brush)



Under running tap water  
with a produce brush



# Tomato-Handling Practices Study

<b>Washed before use</b>	<b>Type of Sink</b>	<b>Procedure</b>
86%	Multiuse 64%	Under running water 83%
	Produce only 31%	Soaked during washing 18%
	Hand, raw animal, utility 5%	Met FDA water temperature guidelines 7%

Source: Centers for Disease Control Food Safety Projects. Tomato-handling practices study. Retrieved on September 12, 2008 from [http://www.cdc.gov/nceh/ehs/EHSNet/foodsafety.htm#Food\\_Workers'\\_Food\\_Preparation](http://www.cdc.gov/nceh/ehs/EHSNet/foodsafety.htm#Food_Workers'_Food_Preparation))

# WHAT IS YOUR SOP FOR WASHING FRUITS AND VEGETABLES?



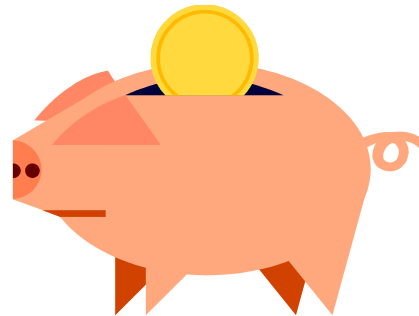
- Sample SOP:

<http://sop.nfsmi.org/HACCPBasedSOPs/WashingFruitsandVegetables.pdf>

# CLEANING PRODUCE: DON'TS

## Don't use:

- detergent
- bleach
- baking soda
- vinegar
- produce washes???





# TOMATO-HANDLING PRACTICES STUDY

## Cross-contamination issues:

1. 50% reported having a separate produce preparation area
2. 50% did not use a **produce only** cutting board
3. 26% of managers reported that gloves were not used during tomato preparation



# PREPARATION

- Designate cutting board for produce prep only—clean and sanitize
- No direct bare hand contact with ready-to-eat items—when does this start?
- Cut away any damaged or bruised areas—Mold??



# PREPARATION: CHILL



- Refrigerate all cut, peeled or cooked fresh fruits and vegetables within 4 hours of preparation.
- What kind of storage containers do you use?

# SERVING

- Personal hygiene
- Single-serve items
- Deliver close to serving times
- Monitor time and temp during holding/serving
- Throw fresh-cut leftovers
- Wash leftover unpackaged produce if re-serving, i.e. banana



# SALAD BAR SAFETY

- Sneeze guards/food shields
- Pre-packaged or pre-portioned foods
- Cleaned and sanitized utensils
- Label food
- Use ice properly
- Take and record temperatures
- Replenish with fresh food--don't mix new with the old

# IS YOUR SALAD BAR SUPERVISED?

- Assist students as needed
- Take corrective action if students:
  - Touch food
  - Cough, spit, or sneeze on food
  - Use a serving spoon for multiple products
  - Place foreign objects in food
  - Drop food or utensils
  - Reuse plates/trays

# HARVEST DAY PICNIC ACTIVITY

- One person is the cook
- Interview the Cook
  - What foods did you prepare?
  - What foods were purchase ready-to-serve?
  - When did you wash your hands during prep?
  - Did you clean and sanitize all equipment and cutting boards between each food prepared?
  - Did you prepare both raw foods and ready-to-eat foods in the same place with the same equipment?  
What?
  - Did you take temperatures? What? When?

# DISCUSSION QUESTIONS

- What is your hypothesis about the source of the illness?
- What data supports this?
- What can the CFM do to prevent the problem in the future?



# HANDLING FRESH PRODUCE IN CLASSROOMS

- What are food safety considerations?
- Train teachers, staff on handwashing, time/temp control and cross-contamination

# Hand Sanitizers: Not a Replacement for Handwashing in Food Service Settings

Minnesota Department of Agriculture; Minnesota Department of Health; University of Minnesota Extension

## Introduction

Handwashing with soap and water is the single most effective way to prevent the spread of bacteria and viruses--the major causes of foodborne illness. Alcohol-based hand sanitizers are effective in killing bacteria and some viruses on clean hands. However, sanitizers may not be used instead of handwashing by food service employees.

### WHY can't hand sanitizers be used instead of handwashing in food service settings?

The hands of foodworkers are often wet; often contaminated with fatty material or with food high in proteins. The presence of water, food, fatty materials, feces, and blood on the hands can significantly reduce the effectiveness of an alcohol-based hand sanitizer. Viruses such as norovirus are also a concern in food service settings. Norovirus is the leading cause of foodborne outbreaks. **Hand sanitizers do not kill norovirus.**

Soap and water washing is the most effective way to remove the types of pathogens that foodworkers have on their hands. In order for hand sanitizers to work properly, hands must first be washed with soap, rinsed with running water, and completely dried.

The Minnesota Food Code requires handwashing with soap and water in food service establishments.

### WHEN can hand sanitizers be used in a food service setting?

The FDA Food Code and the Minnesota Food Code allow the use of hand sanitizers by foodworkers **after proper handwashing.**

### HOW to use hand sanitizers after soap and water handwashing.

1. Wash hands in a designated hand sink. Wet hands with warm water. Apply soap. Lather and scrub for 20 seconds. Rinse. Dry hands with paper towel. Turn off faucet with the towel. (The Minnesota Food Code also requires that fingernails be cleaned with a nailbrush.)

2. Select a hand sanitizer containing at least 60 percent alcohol.
3. Apply a dime-size amount of sanitizer on the palm of one hand.
4. Rub hands together vigorously for 30 seconds covering all surfaces of both hands. If hands are dry after only 10-15 seconds, not enough sanitizer was used and more must be applied.
5. Wait for the sanitizer to dry completely before touching food contact surfaces.

**NOTE:** Your employee hygiene policy should include handwashing procedures, plus guidelines for hand sanitizer use, and exclusion of foodworkers who have symptoms of diarrhea and/or vomiting.

### Can food establishments provide hand sanitizers for customers?

Food service establishments may provide hand sanitizers for use by the public, in addition to regular soap and water handwashing facilities.

[www.http://www.mda.state.mn.us/food.aspx](http://www.mda.state.mn.us/food.aspx)  
(651) 201-6027 • 1-800-967-AGRI

[www.health.state.mn/divs/eh/food/fs/index.html](http://www.health.state.mn/divs/eh/food/fs/index.html)  
(651) 201-5000 • 1-800-657-3908



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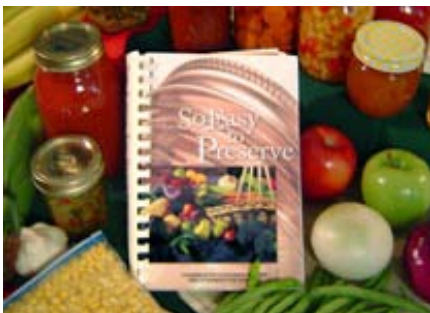
June 2010  
Sanitizers.indd

# YOU HAVE LOTS OF EXTRA TOMATOES? REGULATIONS ALLOW YOU TO:

1. Make salsa and can it
2. Make salsa and freeze it
3. Dehydrate them

# REGULATIONS FOR PRESERVING

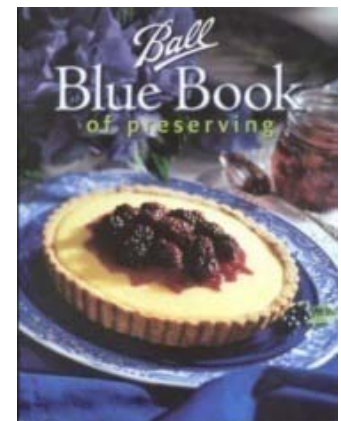
- Talk to regulator first
- Do you have the equipment, room for processing and storing
- Follow tested recipe; 1994 or newer
- Canning meats, fish and vegetables not allowed
- Acidified foods pH of 4.6 or below



## Home Food Preservation



*Resources for Safe Food Preservation*



# Existing Food Facilities Planning to Freeze, Dry or Otherwise Preserve Fresh Foods for Sale or Service

Minnesota Department of Agriculture; Minnesota Department of Health; University of Minnesota Extension

## Introduction

Does your menu include fresh food items that are dried, frozen, or vacuum packed in your facility or do you sell these items in your business? Are you planning to expand your menu or business to include fresh food items preserved by you?

If so, there are a number of food safety and regulatory requirements to consider.

Many of these requirements are the same whether the fresh foods come from your regular sources, or from new sources of locally produced food. If you would like to sell your dried or frozen produce or vacuum-packed meals as retail items as well as serving them, other regulations may apply.

This fact sheet provides a brief discussion of these food safety and regulatory issues, and links to websites for more information.

## Regulation and Licensure

Before changing your menu or expanding your business by using new foods or methods, you should always check with the state or local regulatory authority that licenses and inspects your facility. They can help you to determine whether there are training, licensing, or permit requirements that you must follow before expanding your business or menu.

Find state and local licensing contacts at: <http://www.health.state.mn.us/divs/ch/food/license/locals.pdf>

## Product, Facility, and Equipment

Based on the product(s) and the recipes you provide for those products, your licensing authority can also help you to determine whether you have the space for storage and production of those food items, and if you need additional commercial equipment for processing or storage.

## Approved Source

**MN Food Code: Minnesota Rules, Chapter 4626:**  
<https://www.revisor.mn.gov/rules/?id=4626>

The Minnesota Food Code requires that all food sold or served to the public must be obtained from an approved source. The Food Code also contains specific regulations for approved source purchasing of various foods by a licensed food business:

**Produce:** Can be purchased from an approved source or directly from an unlicensed grower, if the food is grown on the seller's own or rented land.

**Milk and milk products:** Must be processed at an approved milk processing plant (dairy), and must be pasteurized.

**Fish:** Must be commercially caught.

**Wild Mushrooms:** Must be from an approved source. See Wild Mushroom Fact Sheet at: <http://www.health.state.mn.us/foodsafety/index.html>

**Meat:** Must be processed at a USDA or Minnesota "Equal To" plant.

**Eggs:** Must be candled and graded as grade B or better, with shells intact.

## Freezing

University of Minnesota Extension (<http://www.extension.umn.edu/distribution/nutrition/dj0555.html>) offers directions for safe freezing of fresh fruits and vegetables, including this basic information:

- Fresh fruit and blanched vegetables can go into freezer-type, food-grade plastic bags or containers. Additional rules and regulations apply, if produce will be vacuum packed.
- Blanched or cooked vegetables should be cooled and frozen quickly.
- The freezer must operate at 0°F or lower at all times.
- Thaw frozen foods under refrigeration (best) or in the microwave, or use them frozen (e.g., as with cooked vegetables and fruit pies).

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Freeze dried.indd

# FREEZING

- Freezer type, food-grade plastic bags or containers.
- Rules and regulations apply, if produce will be vacuum packed.
- *Blanched* or cooked vegetables should be cooled and frozen quickly.
- 0°F or lower at all times.



# REHEAT FROZEN VEGETABLES

- Cook frozen vegetables before eating
  - *Potential for Listeria monocytogenes contamination after blanching and while packing*
  - *Especially if serving high-risk groups*

# STAYING CONNECTED

- University of MN Extension  
<http://www.extension.umn.edu/farm-to-school/toolkit/>
- USDA Farm to School Website
  - <http://www.fns.usda.gov/cnd/F2S>
  - Listserv





# SUMMARY

- Keep buying and serving local food
- Model safe handling practices
- Verify SOPs and HACCP Plan



*Thank you!*



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