



Fundamentals of Produce Safety: Part 1

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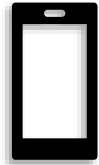
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Fundamentals of Produce Safety: Part 1

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Statewide Consumer Food Safety Specialist



Overview

- Need for improved food safety in the fresh produce market
- Overview of the Produce Safety Rule
 - Exemptions
 - Requirements Regardless of Exemption Status
- Specific topics within the rule and best practices
 - Soil amendments
 - Worker health and hygiene
 - Wildlife and domestic animals



Disclaimer

- This is not an official PSR training!
 - Produce Safety Alliance Grower's Training (<https://producesafetyalliance.cornell.edu/training/grower-training-courses/>)
- Provides overview:
 - Coverage and Exclusions
 - Some Topic Requirements
 - Steps for getting started



Need for Improved Food Safety

The Stats on Foodborne Illness

“Each year an estimated 48 million Americans are stricken ill as the result of one food-borne pathogen or another—listeria, *E. coli*, salmonella, and even a number of stowaway viruses are among the culprits.”

“A 2015 study by Robert Scharff, an associate professor at Ohio State University, estimates the annual cost of medical treatment, lost productivity, and illness-related mortality at \$55.5 billion.”



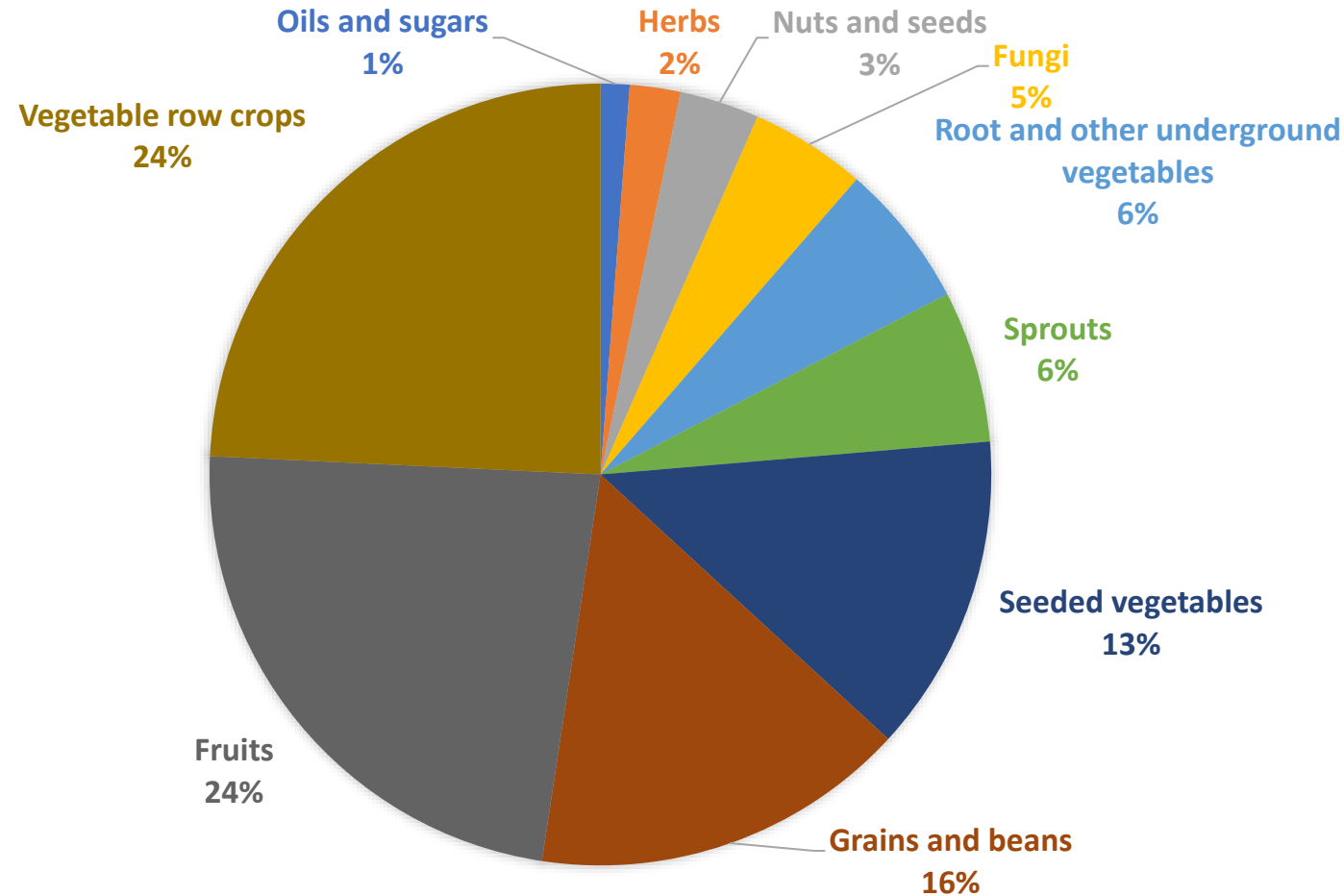
Kowitt, Beth. *America's food industry has a \$55.5 billion safety problem.* Forbes. MAY 6, 2016



The Stats on Foodborne Illness

- Many foodborne illness outbreaks from fresh produce
 - In the U.S. from 1996-2010, 23% of outbreaks caused by produce
 - 2006-2014: 16 of 68 multi-state foodborne illness outbreaks associated with vegetables
 - Bacteria cause most outbreaks, illnesses, and deaths
 - Goal is to prevent produce from becoming contaminated in the first place

Plant-Associated Outbreaks in United States and Puerto Rico, 2009-2015





Selected Fresh Produce-Linked Outbreaks and their Etiological Agents

- Romaine lettuce - *E. coli* O157:H7 (2018, 2019)
- Leafy greens - *E. coli* O157:H7 (2017)
- Cucumbers - *Salmonella* Poona (2015), *Salmonella* Newport (2014), *Salmonella* Saintpaul (2013)
- Cilantro - *Cyclospora* (2014)
- Mangoes - *Salmonella* Braenderup (2012)
- Cantaloupes - *Salmonella* Typhimurium and Newport (2012), *Salmonella* Panama (2011), *Listeria monocytogenes* (2011)

Consumption of fresh produce is still a major cause of *E. coli* O157:H7 infections!

<https://www.cdc.gov/foodsafety/outbreaks/multistate-outbreaks/outbreaks-list.html>

Foodborne Illness –Long Term

It's not just the stomach flu!

- Kidney injury (HUS from *E. coli*)
- Chronic arthritis
- Neurological dysfunction (brain and nerve damage)
- Life-long gastrointestinal illnesses
- Death



Pathogen Contamination = Loss

Loss of...

- Loss of health or life
- Consumer confidence
 - May affect product sales as a whole
- Money from initiating recall
- Loss of money from reduced sales
- Loss of food
- Loss of business





Overview of the Produce Safety Rule



Food Safety Modernization Act (FSMA)

- Signed into law 2011
- Composed of seven rules
 1. Produce Safety Rule
 2. Preventive Controls for Human Food
 3. Preventive Controls for Animal Food
 4. Foreign Supplier Verification Programs
 5. Accreditation of Third-Party Auditors/Certification Bodies
 6. Sanitary Transportation of Human and Animal Food
 7. Prevention of Intentional Contamination/Adulteration

Prevent food safety hazards across the entire food system.

More About the Rule

- First mandatory federal standard
- Regulations cover:
 - Growing
 - Packing
 - Harvesting
 - Holding
- Inspections by regulatory agencies
- Required documentation





FSMA Produce Safety Rule Compliance

Business Size	Compliance Dates for Most Requirements	Water Related Compliance Dates
All other businesses (>\$500K)	1/26/18	1/26/22
Small businesses (>\$250K-500K)	1/28/19	1/26/23
Very small businesses (>\$25K-250K)	1/27/20	1/26/24

- In the Final Rule issued March 2019, compliance dates for all agricultural water requirements (other than sprouts) allow for an additional 4 years
- For example, 'all other businesses' could wait until 2022 to begin sampling

§



Exemptions and Exclusions

- Produce rarely consumed raw (exhaustive list)
 - Doesn't include grains or...

Asparagus; beans, black; beans, great Northern; beans, kidney; beans, lima; beans, navy; beans, pinto; beets, garden (roots and tops); beets, sugar; cashews; cherries, sour; chickpeas; cocoa beans; coffee beans; collards; corn, sweet; cranberries; dates; dill (seeds and weed); eggplants; figs; ginger; hazelnuts; horseradish; lentils; okra; peanuts; pecans; peppermint; potatoes; pumpkins; squash, winter; sweet potatoes; and water chestnuts
- Produce for personal or on farm consumption
- Produce that is not a raw agricultural commodity



Exemptions

- Produce that receives commercial processing
 - Adequately reduces pathogens
 - Documentation requirement
 - Disclosure statement accompanying produce
 - Annual written assurances from customers
- Farms with average annual sales \leq \$25,000
 - Value of produce
 - Over previous 3 year period
 - Adjusted for inflation (current = \$28,075)



Qualified Exemption

1. Food sales averaging less than \$500,000 per year (adjusted for inflation; current = \$561,494) during previous 3 years

AND

2. Direct sales to qualified end users must exceed sales to all buyers combined during previous 3 years

Qualified End User – Definition:

- a) Consumer of the food
- b) Restaurant or retail establishment located in same state or Indian reservation as the farm or not more than 275 miles away



Modified Requirements for Exempted

- Prominently and conspicuously displaying:
 - Name
 - Complete business address
 - Must be on a label or at point of purchase
- Additional requirements
 - Perform annual review and verification of their qualified exemption eligibility
 - Keep documentation of exemption status
 - Receipts
 - Invoices
 - Review, sign and date records – performed by supervisor/qualified person
- Exemption may be revoked!
 - Active investigation of an outbreak of foodborne illness
 - FDA deems it necessary to protect the public health and prevent or mitigate an outbreak



Topics Covered Under PSR and Best Practices

Soil Amendments



Intro to Soil Amendments

- Chemical, biological or physical materials
 - Added to support and improve plant growth
- Biological amendments pose microbial risks
 - Manure
 - Biological components of animal origin (e.g. bone meal)





Treated Soil Amendments

Defined as:

- Having been processed to completion to reduce organisms of concern (microbiological criteria)
 - Scientifically valid controlled process
 - Thermal
 - Chemical
 - Biological
 - Combined and validated processes
 - Microbial standards for *Listeria monocytogenes*, *Salmonella*, *E. coli*

Untreated if:

- Has not been processed to completion
- Ag teas
 - Biological materials are unprocessed
 - Water is from untreated surface water
 - Water has detectable *E. coli* per 100 ml



Composting Options

Must be scientifically valid:

A. Aerated static composting

1. Minimum of 131°F for 3 days
2. Curing with management throughout all materials

B. Turned composting

1. Minimum of 131°F for 15 days
2. Minimum of 5 turnings
3. Curing

C. Other scientifically controlled process

Composting Records

On Farm:

- Composting length of time
- Temperature
- Turnings
- Other processing steps

Third party:

- Name and address of supplier
- Type and lot number
- Date and amount purchased
- Documentation of composting from supplier





Application Considerations

- Avoid using manure for fresh produce
 - Don't side dress
- Maximize time between application of amendments and crop harvest
 - Untreated:
 - FDA pursuing research
 - Raw manure can't be applied to harvestable portion of crop
 - Treated:
 - Zero day application interval
 - Scientifically validated treatment process

Application Records

- Type and source
- Rate and date of application
- Handling and sanitation practices





Handling and Storage

- Designate tools and equipment
- Clean and sanitize equipment
 - Develop protocols
- Reduce foot traffic and cross-contamination
- Minimize runoff and wind drift
 - Prevent runoff into water sources
- Keep raw and finished compost in separate areas
- Keep animals away from compost
- Consider risk to adjacent crops



Steps to Take Now

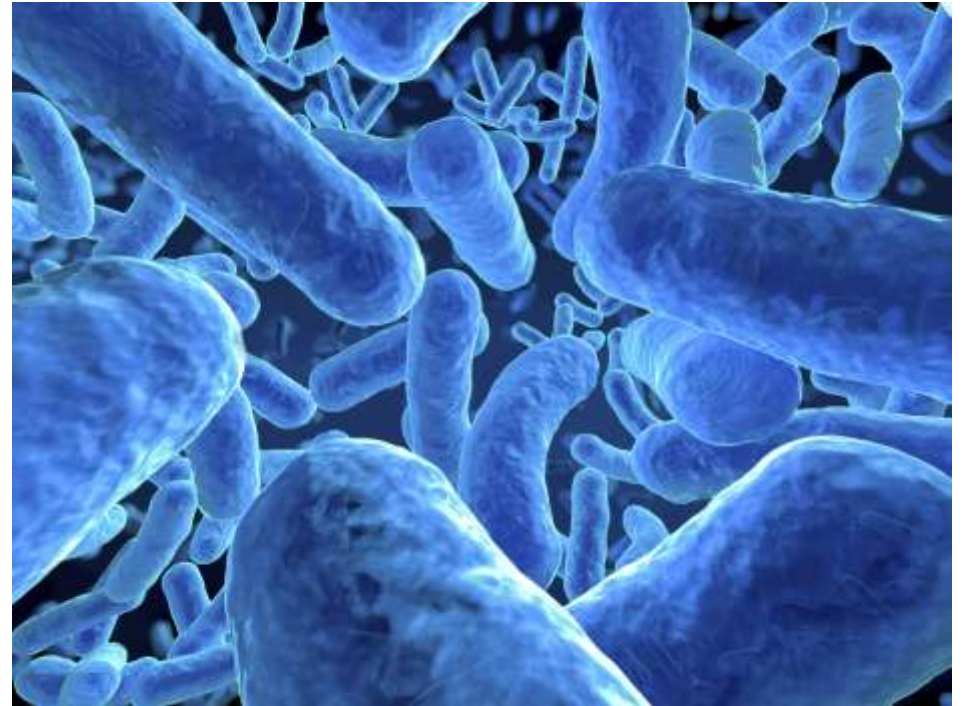
- Preferably use only treated amendments
 - Scientifically valid process
- Implement handling and storage procedures
- Keep records



Worker Health and Hygiene

Workers and Pathogens

- Humans can carry pathogens; transmit to produce
 - Norovirus
 - *Shigella*
 - *Salmonella* Typhi



Routes of contamination

- Ill workers handling produce, especially if they have diarrhea or are vomiting
- Movement from manure/compost/farm animal areas into the growing areas
- Eating, drinking or smoking in growing areas (hand to mouth to plant contact)
- Not washing hands adequately after eating, drinking, smoking or using the toilet



Routes of Contamination

- Contaminating tools/equipment
- Not changing gloves, boots, or clothing regularly
 - Gloves not required but must be kept clean or changed
 - Not a replacement for handwashing
- Feces can contaminate produce directly
 - Defecating in the field
 - Not washing hands
- Injuries can result in blood or other bodily fluids contaminating produce



PSR Requirements - Toilets and Handwashing

- One toilet and handwashing facility per every 20 workers within $\frac{1}{4}$ mile (OSHA)
- Must be:
 - Designated, located and maintained to be accessible for servicing
 - Be serviced and clean at proper frequency





PSR Requirements - Handwashing

- Wash hands thoroughly
 - Scrub with soap and use running water
 - Single service towels, hand dryers, or other adequate methods
- Must occur
 - Before starting work
 - Before putting on gloves
 - After using toilet
 - Returning from breaks or other absences
 - After touching animals or waste
 - Any time hands have become contaminated
- Hand sanitizers are not a replacement!

Worker Illness

- Worker's must take measures to prevent contamination of produce
- Exclude ill workers
- Personnel must notify supervisor if they are ill



PSR Training Requirements

All personnel must be trained in:

1. Principles of food hygiene and safety
2. Importance of health and hygiene
 - a) Includes visitors
 - b) Recognize symptoms that may result in contamination of produce
3. Job responsibilities
 - a) Per FDA standards





PSR Training Requirements & Documentation

- Documentation
 1. Name of trainee
 2. Date training occurred
 3. Topics covered
- Training must be supervised by a qualified person
- Upon hiring and at least once per year
- Must be easily understood by trainee
- Repeated as necessary if standards are not being met
- Designated person to ensure compliance with rule requirements
- Workers and supervisors must be qualified
 1. Education
 2. Training
 3. Experience



Steps to Take Now

- Obtain additional food safety training/ identify potential risks
- Train workers in food safety
 - Document training and keep records
- Develop procedures to reduce contamination risks
- Ensure adequate toileting and handwashing facilities
 - Keep stocked and monitor
- For more information...
 - <https://www.cultivatingsuccess.org/recordedwebinars>



Wildlife and Domestic Animals

Introduction

- Includes both wildlife, farm animals, and pets
- Animals can carry human pathogens
 - *E. coli*, *Salmonella*, *Listeria*
 - Defecate in growing areas
 - Track feces through area
- Difficult to control
 - Resident or transient





PSR Requirements

- Assess relevant areas for evidence of potential contamination during growing season
- If significant evidence of potential contamination is found, must determine if produce can be harvested
- Not harvest produce that is likely contaminated

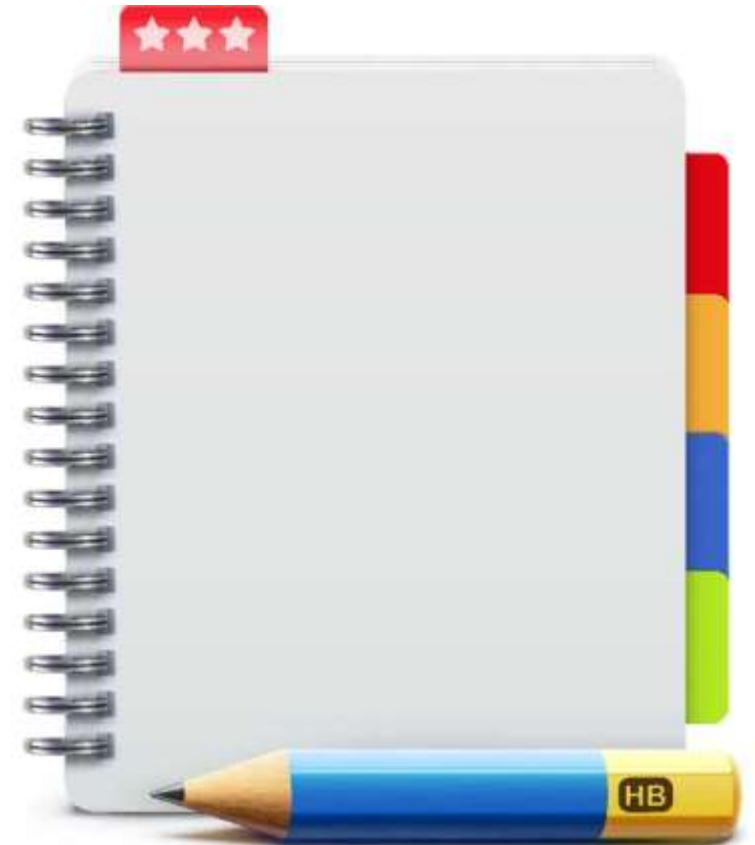
Monitoring and Controlling Wildlife

- Use deterrents
 - Decoys
 - Fencing
 - Visual
 - Noise
- Monitor for intrusion and feces
 - Tracks
 - Trampled produce
- If feces is found
 - Never harvest visibly contaminated produce
 - Determine if other produce is contaminated or can be harvested
 - Mark off no-harvest zones
- Co-management is expected
- Must follow other laws



Documenting

- Can identify increased problems
- Documented actions include:
 - Monitoring activities
 - If risks were found (when, where and what)
 - Signs of intrusion
 - Feces
 - Damaged produce
 - How risk was addressed



Farm Animals and Pets

- Exclude from field especially near harvest
 - Best to always exclude pets
 - Visitors shouldn't bring pets
- Keep farm animals separated from growing areas
 - Prevent runoff and wind drift onto fields
- Develop procedures for handling feces
 - Dedicated tools
 - Cleaning and sanitizing tools, footwear, gloves
 - Marking off contaminated produce
 - What to do with the feces





Workers Help You with Management

- Training:
 - Never harvest visibly contaminated produce
 - Keeping an eye out for problems
 - Who to report issues to
 - How to handle an issue
 - Proper handwashing
 - Animal contact
 - Feces
 - Keeping clothes, footwear and gloves free from contamination
 - Dedicating footwear and gloves
 - How to clean and sanitize
 - When to change



Steps to Take Now

- Exclude working animals close to harvest
- Exclude non-working domesticated animals
- Begin monitoring and documenting
- Put up deterrents if needed
- Never harvest contaminated produce
- Develop procedures and train workers

Summary

- Start taking steps
 - Reduces business risk and cost
 - Ensures customer quality and safety
 - May be required by some buyers
 - Can help grow your business
 - Helps with farm management
- Become familiar with Good Agricultural Practices (GAPs)
- Reach out for assistance
 - Goal is to educate and not penalize





Additional Resources

- Produce Safety Alliance - <https://producesafetyalliance.cornell.edu/>
- FDA - <https://www.fda.gov/food/food-safety-modernization-act-fsma/fsma-final-rule-produce-safety>
- WSU Extension - <http://foodsafety.wsu.edu/>
- Your state's Department of Agriculture

Questions





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Tuesday, June 2nd – Taking Eggs to Market: Safe Egg Handling & Delivery

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