



Broccoli Produce Safety

Part I: Produce Safety Overview

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Part II: Post Harvest Processing, Educational Materials

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Goals for Today

- Overview of Produce Safety
 - Good Agricultural Practices (GAPs)
 - The Food Safety Modernization Act (FSMA)
 - Produce Safety Rule (PSR)
- A Produce Safety Focus on Broccoli
- Broccoli Project Plans
- Your Questions and Input



Why Does Produce Safety Matter?

Offer your ideas in the chat box.



The Food Safety Modernization Act (FSMA)

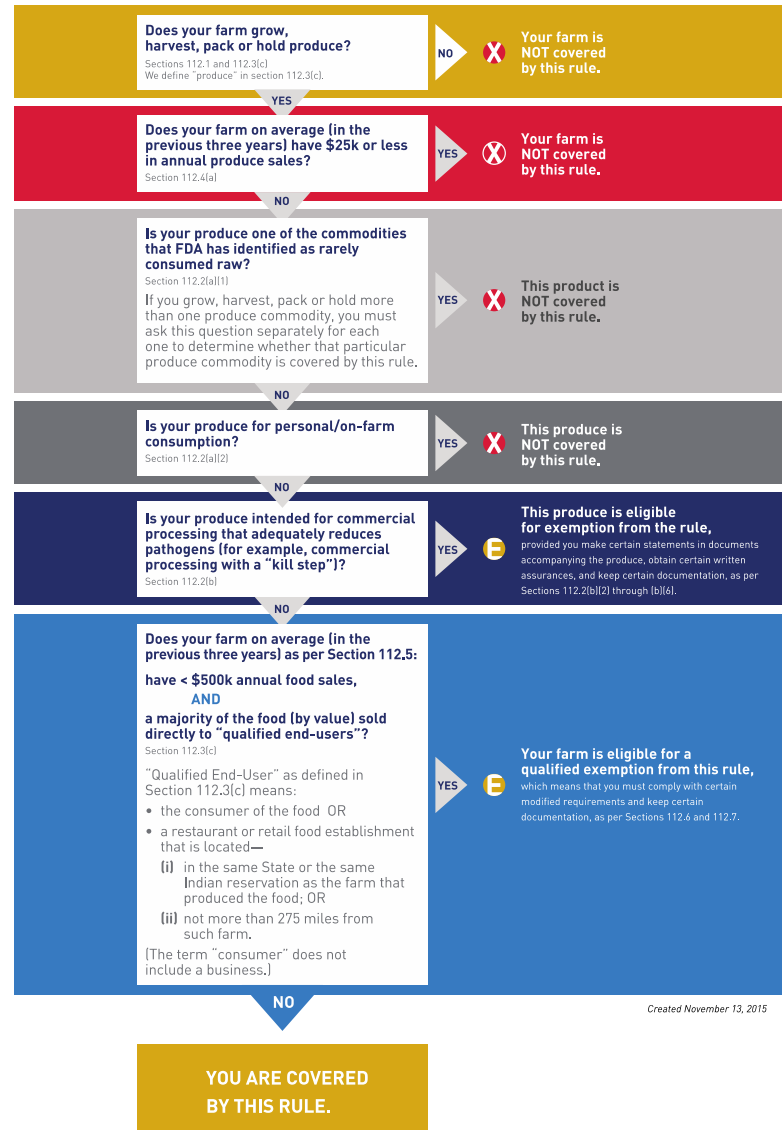
FDA FOOD SAFETY
MODERNIZATION ACT

- | | |
|--|---------------------|
| • Preventive Controls for Human Food | Sept 15, 2015 |
| • Preventive Controls for Animal Food | Sept 17, 2015 |
| • Produce Safety Rule | Nov 27, 2015 |
| • Foreign Supplier Verification Programs | Nov 27, 2015 |
| • Accred. of Third-Party Auditors/Cert. Bodies | Nov 27, 2015 |
| • Sanitary Trans. of Human and Animal Food | April 6, 2016 |
| • Prev. of Intentional Cont./Adulteration | May 27, 2016 |

STANDARDS FOR PRODUCE SAFETY

Coverage and Exemptions/Exclusions for 21 PART 112

The Preventive Controls for Human Food rule clarified the definition of a farm to cover two types of farm operations, primary production farms and secondary activities farms. The same definition is used in the Produce Safety rule (section 112.3(c)). Below are basic criteria that determine whether an operation that meets the definition of "farm" is subject to the produce rule.








Q&A

Do you know if you're covered
by FSMA PSR?



Q&A

Would a webinar focused on coverage be helpful?

Business Size	 Compliance Dates for Sprouts	 Compliance Dates For Most Produce	 Water Related Compliance Dates ¹	Compliance Date for Qualified Exemption Labeling Requirement ²	Compliance Date for Retention of Records Supporting a Qualified Exemption
All other businesses (>\$500K)	1/26/17	1/26/18	1/26/22	1/1/2020	1/26/16
Small businesses (>\$250K-500K) ³	1/26/18	1/28/19	1/26/23		
Very small businesses (>\$25K-250K) ⁴	1/28/19	1/27/20	1/26/24		

¹ According to the [Proposed Rule](#) issued 9/13/17, Compliance dates for Subpart E, Agricultural Water, allow an additional four years.

² A farm eligible for a qualified exemption must notify consumers as to the complete business address of the farm where the food is grown, harvested, packed, and held. ³ A farm is a small business if, on a rolling basis, the average annual monetary value of produce sold during the previous 3-year period is no more than \$500,000.

⁴ A farm is a very small business if, on a rolling basis, the average annual monetary value of produce sold during the previous 3-year period is no more than \$250,000.

Before the compliance date, every covered farm that does not qualify for an exemption must have a supervisor (such as a farm owner/operator) complete a standardized food safety training program. You can find out more about food safety training from the Produce Safety Alliance. <https://producesafetyalliance.cornell.edu/training>

Revised 10/09/17



Good Agricultural Practices and the Produce Safety Alliance Curriculum

- GAPs are any procedure or activity that reduces microbial risks to fruits and vegetables on the farm or in the packinghouse
- GAPs training has been happening since 1999
- PSA Curriculum covers both FSMA Produce Safety Rule requirements and GAPs
- According to FSMA PSR §112.22(c) at least one supervisor from the farm must complete food safety training at least equivalent to the standardized curriculum according to §112.22(c)
 - PSA curriculum training satisfies this FSMA requirement



Produce Safety Focus Areas

- Key areas to consider for safety and compliance with FSMA Produce Safety Rule.
 - Worker training programs
 - Water monitoring, testing, and treatment
 - Manure and compost management
 - Wildlife and animal monitoring
 - Sanitation programs





Workers Are A Food Safety Concern Because They...

- **Can carry human pathogens**
 - *Shigella*, Hepatitis A, Norovirus, and others
- **Can spread human pathogens**
 - Harvest and pack with their hands
 - Fecal-oral route
- **Require training to reduce risks**
 - Proper handwashing
 - How to handle illnesses and injuries





Training and Worker Behavior

Training must include:

- Principles of food hygiene and food safety
- Recognizing symptoms of foodborne illness
- Other training relevant to the worker's job

Resources must be provided to follow practices

- Toilet paper, soap, water, paper towels

Workers must maintain personal cleanliness

- Remove or cover hand jewelry that cannot be cleaned
- Not eat, chew gum, or use tobacco in an area used for a covered activity
- Never harvest covered produce contaminated with feces;
- Never harvest or distribute dropped covered produce;



Evaluating Agricultural Water Risks During Production

Production water source and quality

- Public water supply, ground water, surface water
- Testing frequency and sampling location
- **Testing Requirements are Proposed to be Delayed**

Application method

- Water that does not contact the harvestable portion
- Water that contacts the harvestable portion of the crop

Timing of application

- At planting or close to harvest

FDA Water Compliance Date Extension: What Growers Should Do in the Meantime

- Continue water testing
 - To meet buyer and audit requirements
- Develop water management strategies to identify and reduce risks such as conducting water source survey
- If growers have never tested their water, they should start testing or at least consider the benefits
 - Test for quantified generic *E. coli*
 - **126 or less** CFU/per 100 mL GM and
410 or less CFU/100 mL per 100 mL STV
 - Before using the water; during frequent use periods
- Inspect your water distribution system
 - § 112.42 requires this





Key FSMA PSR Concepts for Soil Amendments

- Biological Soil Amendments of Animal Origin (BSAAO) or Not (Vegetative Origin)
- Treated or Untreated
 - Treatment to reduce risks such as a validated composting process or other treatment such as pasteurization
- Application to Harvest Interval for Raw Manure is Reserved
 - FDA is looking for more input from industry



Assessing Your Risks

- **What type of soil amendments do you use?**
 - Raw manure, composted manure, chemical, etc.
- **What crops receive soil amendments?**
 - Fresh produce or agronomic crops
- **When do you apply them?**
 - Days to harvest, time of year
- **How do you apply them?**
 - Incorporated, injected, surface applied
- **How much and how often do you apply them?**
 - Excessive application can lead to environmental impacts





Monitoring Wildlife Activity

- **During the growing season:**
 - Monitor for feces and evidence of intrusion
 - Evaluate the risk of fecal contamination on produce (e.g., tree vs. root crop)
 - Consider past observations and wildlife attractants
- **Immediately prior to harvest**
 - Monitor for fecal contamination, signs of animal activity (e.g., trampling, rooting, feeding, tracks)
 - Assess risks and decide if the crop or a portion of the crop can be safely harvested





Agricultural Water Quality for Harvest and Postharvest Activities

- Water used for the following must have no detectable generic *E. coli* per 100 mL sample
 - Direct contact with covered produce during or after harvest
 - Direct contact with food contact surfaces;
To make ice; For handwashing
 - Untreated surface water may not be used
- Maintain water quality throughout use
 - Add sanitizer to prevent cross contamination
 - Establish a water change schedule and visually monitor build up of organic material







Cleaning vs. Sanitizing

What is the difference and why does it matter?

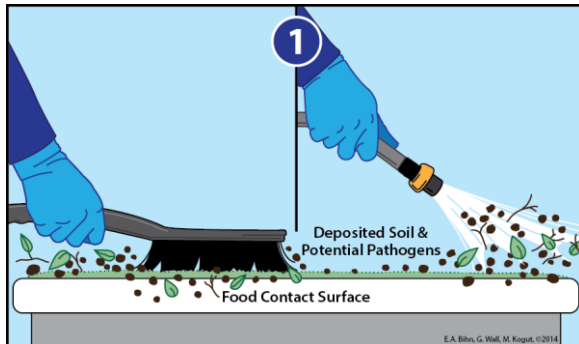
- **Cleaning:** Physical removal of dirt (soil) from surfaces which can include the use of clean water and detergent
- **Sanitizing:** Treatment of a cleaned surface to reduce or eliminate microorganisms

**Important point: You cannot sanitize a dirty surface.
Cleaning always comes first!**

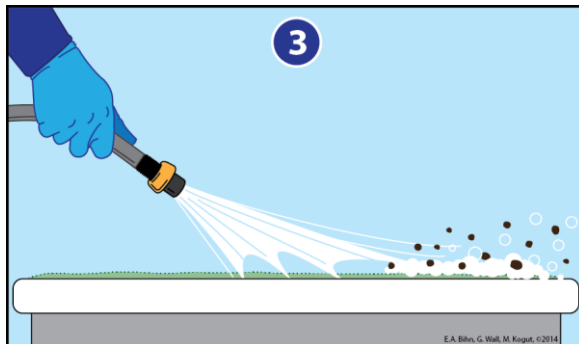


Cleaning & Sanitizing Food Contact Surfaces

Step 1: Remove any obvious dirt and debris from the food contact surface.



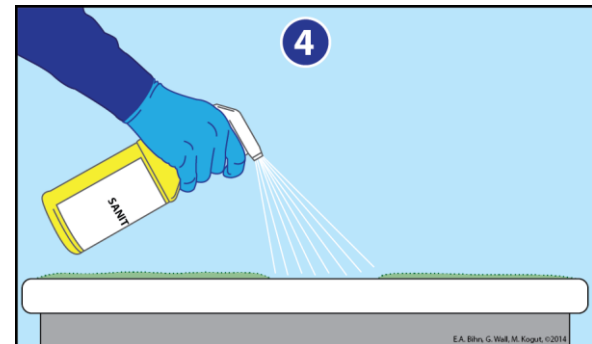
Step 3: Rinse the surface with clean water, making sure to remove all the detergent and soil.



Step 2: Apply an appropriate detergent and scrub the surface.



Step 4: Apply a sanitizer approved for use on food contact surfaces (**follow label**). Rinsing may be necessary. Let the surface air dry.





Icing/Cooling

- Top Icing & Ice Slurries
- Why might this be something to think about?
- Postharvest water.
- ***Water Testing***
- ***Dedicated Handling Tools***
- ***Cleaning and Sanitizing Ice Systems – SOP's***





Coolers

- Confirming function of coolers – Thermostats checked with calibrated thermometers.
- Standing or Pooling Water is a concern.
 - Condensation
 - Ice Melt
 - Drains
- Regular Cleaning and Sanitizing



Drains! Intentional and routed away from produce.



Water happens. Plan for it. Designated travel pathways. Floor and trench drains to collect ice melt. Smooth and cleanable surfaces. SOP's.



Traceability

- **Following quality**
 - Identifying boxes that have quality issues
- **Keeping track of amount sold**
 - Knowing what sold well and how much money you should be making
- **Minimizing foodborne illness impacts**
 - Recalling a contaminated load/lot/bin
 - Knowing how much was sold and in the marketplace
 - Knowing who may have purchased/consumed it
- **One step “forward” and one step “back.”**



Farm



Buyer



Consumer



Q&A – On Produce Safety Rule

What questions do you have?



Developing Educational Materials

- Topics:
 - Hazards, Risks and Mitigations in Packing Houses
 - Surfaces and Materials
 - Drains
 - New Construction
 - Renovations
 - Sanitizer and Detergent Options
 - Cleaning Guidance
 - Training Workers in Cleaning and Sanitation
 - Broccoli Hydrocooling
 - Broccoli Icing
 - What your ideas for other useful resources.



Feedback from the group

Help us refine our plans by
responding to the polls.

You can also email Chris:
chris.callahan@uvm.edu



Q&A

Use the chat box to respond:

Other topics that would be helpful for us to cover?

What questions do you have?



Produce Safety

ALLIANCE



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