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# **Food Safety Overview:**

**What Does a Food Safety Program Consist of and  
How Do I Implement One?**

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# Why Do We Need Food Safety Certification?

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**Food Quality is an option.**

Good quality is something we hope for and base buying practices upon.

**Food Safety is an entitlement!**

We have the right to expect that food is safe!

# Why Do We Need Food Safety Certification?

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## Consumer Confidence...

Food Safety is a constant concern of consumers, producers, wholesalers and those agencies responsible for consumer's health.

Recent outbreaks of food borne illness and the threat of bioterrorism has created awareness for additional food safety programs.

# What Can We Do To Minimize Risks?

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**Focus on risk reduction, not risk  
elimination.**

**“Current technologies cannot eliminate all  
potential food safety hazards associated  
with fresh produce that will be eaten raw.”**

*Guide to Minimize Microbial Food  
Safety Hazards for Fresh Fruits and Vegetables*

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**PREVENTION  
PREVENTION  
PREVENTION**

**is the KEY to Reducing  
Microbial Contamination**

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# **PREVENTION is the KEY**

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**Prevention of any contamination of  
fresh produce is  
favored over corrective action  
once contamination has occurred**

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# Food Safety Programs

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# 1st Thing....

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- Deep Breaths
- Attend a food safety course if possible
  - Bring key farm/office staff with you
- Designate a food safety point person for your operation
  - ONE person cannot do it all, but at least one person needs to know what to do, how, why, when, etc.

# Attitude

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- Understand that this is a lifestyle change, not a once a year clean up
- Accept the challenge
  - You don't have to like it, but most of the time you can't stop it. Look at it as a challenge...one that you will beat!
- First year is the most difficult

# Building Your Own Food Safety Program

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- Food Safety is an *integral* part of any produce operation
- Food Safety programs are *dynamic* in nature requiring ongoing review and change
- Success comes in making Food Safety the *responsibility of all employees*, not just management

# Learn the Lingo

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- **GAP – Good Agricultural Practices**
  - Primarily used in the field
- **GMP – Good Manufacturing Practices**
  - Primarily used in the packing facility
- **HACCP – Hazard Analysis Critical Control Points**
  - Primarily used in processing
- **SOP – Standard Operating Procedure**
  - What you are gonna do and how you are gonna do it

# What are GAPs?

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- ***Good Agricultural Practices***
  - FDA, October 1998
  - **Recommends we be aware of potential contaminations and manage operations as to minimize potential risks**
  - Microbial, chemical and physical hazards

# What are SOPs?

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- **Standard Operating Procedures**
  - A written action plan (objective, procedures)
  - Detailed, written directions
  - Specific instructions on how to monitor and document a GAPs food safety program.
    - **Documentation**
    - **Checklists**
    - **Personnel Training**
    - **Posting Materials in English & Spanish**

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- ***A GAP tells WHAT should be done.***
    - Harvest containers & packing lines need to be cleaned daily to prevent product cross-contamination or build-up of human pathogens.
  - ***An SOP tells HOW the GAP should be accomplished.***
    - Use a chlorine dip to sanitize harvest containers after cleaning.
    - Scrub down leafy greens pack-out table at the end of each production day.

**STANDARD OPERATING PROCEDURE (SOP)**  
for

**Vegetable Packing Line Equipment**

Date issued: \_\_\_\_\_

Facility: \_\_\_\_\_

SOP #: 4.5

Owner: \_\_\_\_\_

Description: Hopper elevator, brush washer, pre-grader, belt grader, sizer, sizer conveyor belts, box closing machine.

Objective: *To properly clean and sanitize all packing line food contact and non-contact surfaces.*

Frequency: Daily.

Responsible Individual(s): \_\_\_\_\_ Phone ext. \_\_\_\_\_

**Worker Safety Precautions:**

1. Ensure that the equipment is LOCKED OUT to a zero mechanical state prior to beginning work or cleaning. Unplug any electrical service cords.
2. Use safety equipment when cleaning with chemicals: wet suit (rain slicker), rubber boots and chemical-resistant gloves.
3. Always wear goggles or full-face shield whenever handling cleaning and/or sanitizing products.
4. Wear goggles when using compressed air.
5. Follow the chemical label instructions. Do not mix chemicals without appropriate authorization from supervisor.
6. Do not spray electrical panels, boxes or motors directly with water hose. Hand clean if necessary, then cover with plastic. Place plastic bags over electric motors, electrical boxes, connections, etc. Remove bags after the work is completed.

**Required Materials/Chemicals:**

Category	Type	Name	Formulation
Cleaner	Alkaline chlorinated	Fast Clean™	1 gal/10 gal water
Sanitizer	Chlorine based	12.5% sodium hypochlorite	1 gal/10 gal water

### **Cleaning Procedure:**

1. Remove all product from the packing line equipment.
2. Put waterproof coverings over electrical motor, electrical boxes, etc. Remove side panels and covers to expose all equipment.
3. Dry clean with air hose, removing as much debris as possible; deposit into appropriate container.
4. Rinse equipment from the top downward to prevent debris or soil from splashing onto equipment already cleaned.
5. Set up portable high-pressure sprayer to inject FAST CLEAN™ detergent as wet foam. Foam entire line, working from the top of an item downward. Pay particular attention to ledges, brushes, nozzles, frame supports, underneath roller conveyors and polyethylene belts where debris accumulates. *Do not let foam dry on equipment surfaces!*
6. Run all belts, conveyors, brushes slowly while foaming to clean upper and lower sides.
7. Follow with a post-rinse to remove all foam, beginning at the top and working down each piece of equipment.
8. Inspect all surfaces for proper cleaning; re-clean where necessary.
9. Sanitize with sodium hypochlorite at 200 ppm (0.25 oz 12.5% chlorinated solution per gallon of water). Begin sanitizing from the bottom of each piece of equipment and work upwards to ensure complete coverage. *Do not rinse off sanitizer!*
10. Remove coverings that were applied in Step 1.

**NOTE:** Brushes or any other utensils used to clean the inspection conveyors must be identified for this use and stored separately from the brushes, or other cleaning utensils used to clean non-produce contact surfaces, and other produce-contact surfaces.

**NOTE:** Removable panels and other parts must be placed on a clean surface during disassembly. All contact with floors or other possibly contaminated surfaces must be avoided.

### **Monitoring:**

Daily, using *vegetable packing line sanitation checklist*. (CL 4.3.2)

Reviewed by: \_\_\_\_\_ Date: \_\_\_\_\_

# If You Learn 1 Thing...

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Your unique operation needs to have  
**GAPs that are *tailored* to your  
commodity(s), your management  
practices, your employees, etc. in order  
to effectively reduce microbial risks  
and prevent contamination on your  
farm everyday.**

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# The Field

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# Where Can Contamination Occur?

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- In fields or orchards
- During harvesting and transport
- During processing or packing
- In distribution and marketing
- In restaurants and food service facilities
- In the home

**FARM to FORK**

# Evaluate the Whole Operation

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**Pre-plant**



**Production**



**Harvest**



**Post Harvest**

- Irrigation and Wash Water Sources
- Manure Source, Use and Handling
- Employee Training and Hygiene
- Farm and Equipment Sanitation

# Pre Harvest Inspections

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- Some audit firms are requesting
  - **Pre-Harvest Block Inspections**
  - **Daily Pre-Harvest Inspections**

# Pre Harvest Inspections

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- **Pre-Harvest Block Inspections**
  - Purpose is to clear the field for harvest
  - About 10 questions covering flooding, security, buffers, etc.
  - Done BEFORE initial harvest of a field begins
  - Could be 1 time or multiple times

# Pre Harvest Inspections

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- **Daily Pre-Harvest Inspections**
  - Daily inspection to cover basic areas
    - Harvesting equipment
    - Tool hygiene
    - Personnel hygiene, etc.

# Manure = Fecal Matter = Microbes

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- Human or animal: DO EVERYTHING you can to keep manure off produce.
- Preventing contamination is the goal.



# Manure/ Compost

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- **Handle compost according to regulation to kill potential pathogens.**



- **Time application properly.**



- **Know the source.**

# "Exclude" Animals

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- Keep wildlife out of production areas as much as possible.
- Be aware of areas of high animal 'traffic'
  - Licensed hunts, fencing, other barricades
- No dogs or other pets in the fields.

# Water Management

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- Know the source of the water, what's up stream, and intended use.
- Evaluate the irrigation method.



- Test water regularly and keep records of all water test results and any corrective actions.

# What *ARE* the Microbial Standards for Safe Irrigation Water?

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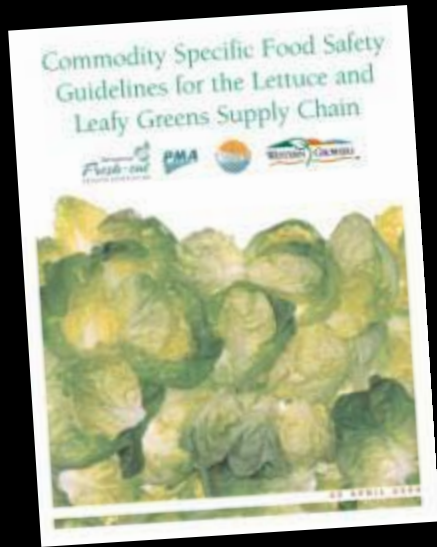
There are **NONE!**

“In the absence of definitive microbial standards for irrigation water, the authors of the California Leafy Greens Market Agreement Best Practices Document have chosen to use EPA’s recreational water standards.”

David Gombas, Ph.D., Senior Vice President  
Food Safety and Technology  
United Fresh Produce Association

# California's Microbial Guidelines for Lettuce & Leafy Greens

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*Commodity Specific Food Safety Guidelines for the Production and Harvest of Lettuce and Leafy Greens* was issued by the California leafy greens industry.

The current update of June 13, 2008 is online at <http://www.caleafygreens.ca.gov/members/documents/LGMAAcceptedGAPs06.13.08.pdf>



There are many opportunities for fresh produce to be contaminated by in the field by farm workers

# Worker Hygiene



Courtesy of Trevor Suslow

# Field Sanitation

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## *Sanitize Regularly*

- Harvest Tools*
- Harvest Containers & Bins*
- Field Equipment*
- Field Packing*

# Harvest Sanitation

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- Clean and sanitize storage facilities prior to harvest.



- Clean and sanitize harvest bins daily.



- Avoid standing in harvest bins or using picking bins for personal storage.

# Harvest Considerations

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- **Leave fruit that has bird droppings on it.**
- **Cool product quickly.**
- **Teach workers about proper hand washing.**
  - How to wash their hands
  - Before harvesting
  - After any breaks
  - After using the restroom

# A Story About A Plastic Bin: *Once Upon A Time...*

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# Field Traceability

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- Keep a record of your DAILY harvest
  - Pocket calendar, formal log, etc
- Keep record of:
  - Date
  - Field or block or lot
  - Harvest crew(s) if multiple
- Be able to link between harvest records and delivery records/invoices/receipts

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# The Packing Facility

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# Packing House Sanitation

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- **Packing Facility Sanitation**
  - Pre-season sanitation of ceiling, walls, beams, floors and floor drains
- **Clean and Sanitize Equipment**
  - Belts, rollers, stools, catwalks
- **Pest Control**
  - Exclude all pests: insects, birds, rodents, cats, etc.
- **Detectable Sanitizer (Chlorine) in Wash Waters**
- **Enforce Good Worker Practices and Hygiene**





# Room & Equipment Cleaning

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- Empty and sweep cold rooms
- Visually inspect surfaces
- Apply appropriate cleanser/sanitizer
  - Scrub from top, downward
- Do not allow cleanser to dry on surfaces
  - Rinse from top, downward

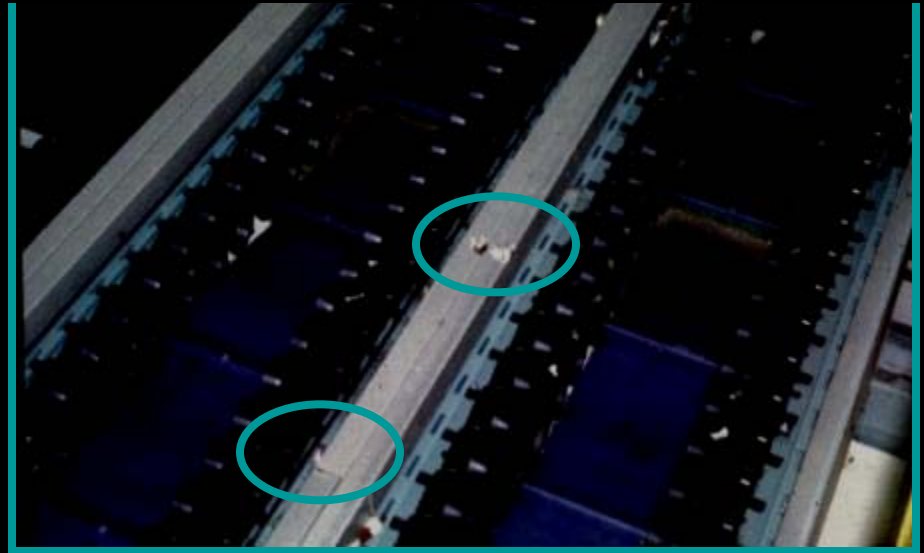
# Pest Control Is Important!



**12"-18" Inside Wall Perimeter**

**Correct Problems BEFORE  
The Day Begins**

## Documented Pre-Operational Inspection



# Wash Water Quality

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- Use potable water for all produce washing, cooling, dipping, icing, and processing.
- Test water annually.
- Avoid water temperatures in dump tanks that are more than 10 F cooler than produce.

# Chlorination of Water

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- **Maintain constant chlorine by monitoring**
  - Usually 150-200 ppm or 550-650 mV ORP
- **Monitor pH of water**
  - Optimum range 6.0-7.0
- **High water temp. results in quicker pathogen kill, but also results in rapid loss of chlorine**
- **Monitor and document chlorine and pH levels at a minimum of every 2 hours.**

# Postharvest Water Disinfection Strategies

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- **Some Options:**
  - Chlorine gas, Sodium hypochlorite, Calcium hypochlorite, Chlorine dioxide, Acidified sodium chlorite, Surfactants, Ozone, Ionizing radicals, Hydrogen peroxide, Peroxyacetic acid, Ultraviolet Illumination.
- **Monitoring effectiveness is paramount to success.**

# Think Through it ALL

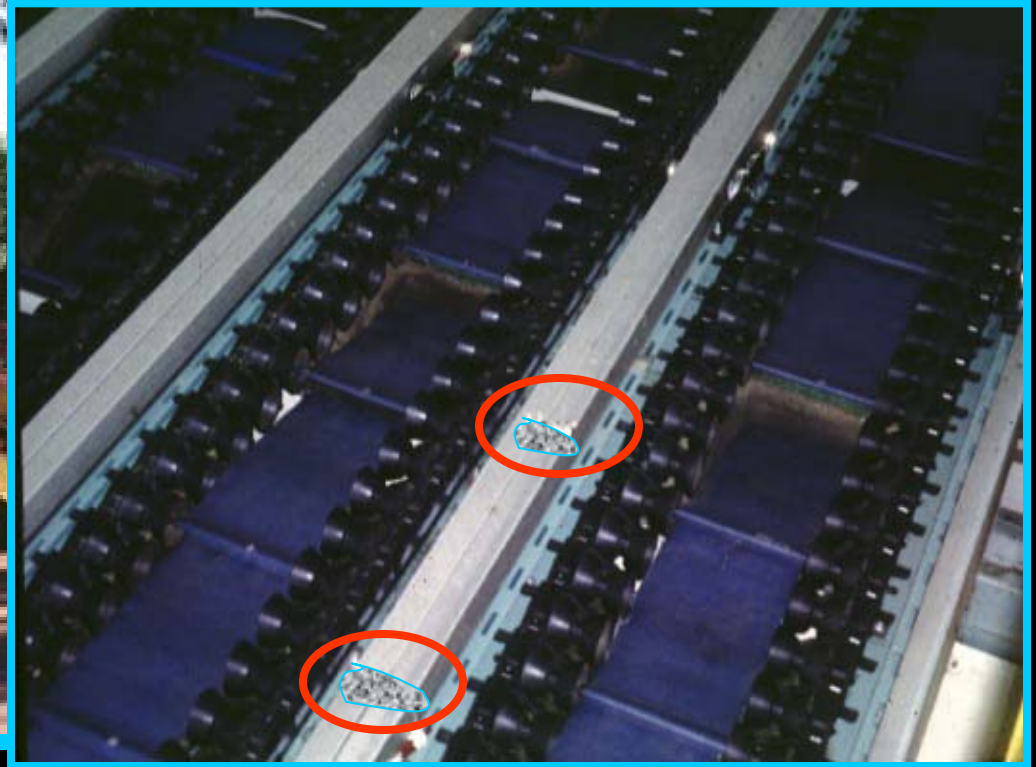
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What could be wrong in this picture?



# Control Sources of Rodent and Bird Contamination

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# Develop a System for Maintaining Packaging Hygiene

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# Farm Worker Hygiene

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- Teach workers about food safety and *their role* in preventing microbial contamination of fresh fruits and vegetables.
- Frequency should be at the start of the season and then at least quarterly.
- Provide clean restrooms with toilet paper, soap, water, and single-use towels.
- Enforce proper use of facilities.



# Is Worker Training Really A Priority?

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- Farm workers are sometimes the last/only people to handle the produce before the consumer.
- Workers are capable of learning about food safety issues.
- Effective training results in better employees and safer produce.



# Transportation

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- Truck Inspection
  - Cleanliness, Off-Odors, Debris
- Temperature Management
  - Manifest, Temperature Recorder
- Worker Hygiene
- Loading Patterns



# Traceback and Positive Lot Identification

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# Traceability and Recall Plan

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- Traceability must be on at least the pallet, box is better
- Pick/Pack Date or Date Code
- Grower Name or ID
- Weight or Number of Boxes on Pallet
- Repacker or Large Broker Firm Name
- Anything to help traceback to packing facility, specific grower, field, day of harvest

# Traceability and Recall Plan

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- **Ways to Label and Trace**
  - **Electronic Systems with Printers**
  - **Grocery Store Guns**
    - **Number System to Represent Farm, Field, Commodity, Pack Type, etc.**
  - **Markers/Crayons**
  - **Stickers**
  - **Pallet/Box Tags with Carbon Copies**

# Traceability and Recall Plan

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- **Create or Modify a Traceability and Recall Plan then,**
- **Practice**
- **Practice**
- **Practice**
- **[www.primuslabs.com](http://www.primuslabs.com)**

# Two Audits for the Price of 1

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**Audits of Records  
vs.  
Inspection of Facilities**



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**If you did not RECORD IT,  
you did not do it.**

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- Record keeping allows you to keep track of farming operations and worker training.
- Record keeping documents your activities should this information ever be required.

# Be Active and Be Ready

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- Make changes to management practices as needed.
- Keep good records of all production practices.
- Teach employees the importance of prevention strategies and provide proper facilities.
- Work with upstream neighbors and local watershed committees on management goals.
- Update your plan regularly.



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**We Are Only As Strong  
As Our Weakest Link!**

**ARE YOU THE WEAKEST LINK?**

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