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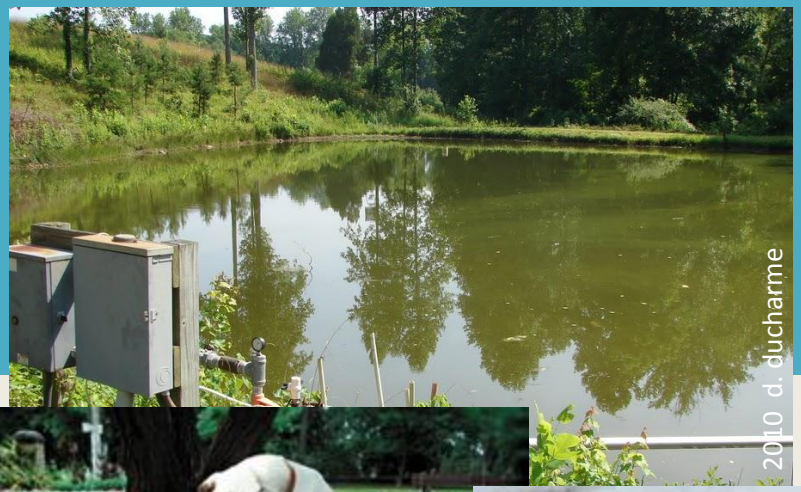
NC MarketReady Fresh Produce Safety
field to family
2010-2011
www.ncmarketready.org

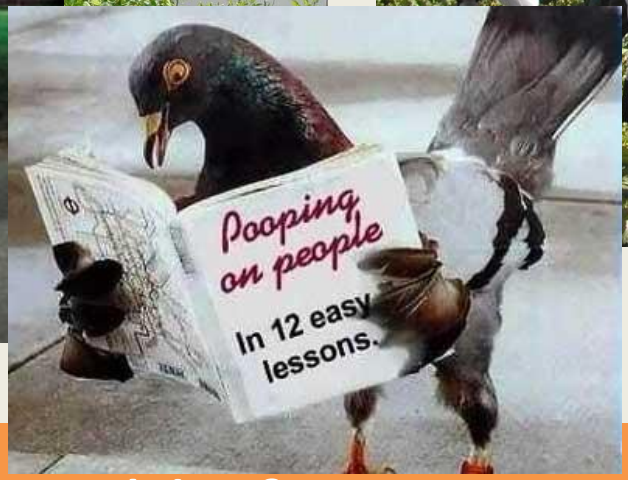
NC MARKETREADY
Fresh Produce Safety – Field to Family
A Program of NC Cooperative Extension

Tier 2 – Risk Identification & Management

NORTH CAROLINA
FRESH PRODUCE SAFETY
TASK FORCE
www.ncfreshproducesafety.org



don't eat poop



Entering the world of water, waste, wildlife, and workers……

Welcome to Risk Identification and Management

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Growers CAN….

Learn and identify the risks

Apply reasonable measures to avoid harm

Develop a food safety program

Document within a Food Safety Plan

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Give producers a proactive, educational and incentive-based program for their individual needs.

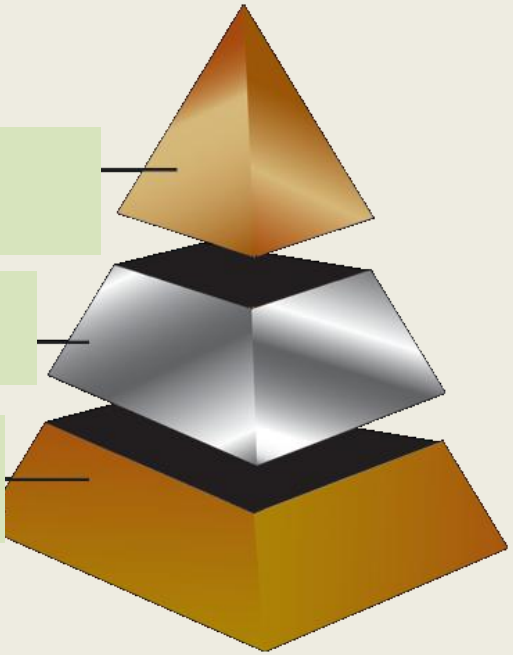
Modules within this curriculum serve as the basis for a progression of training tiers

3 in total

Tier 3

Tier 2 – Risk Identification & Mgmt

Tier 1- Basic Level



Tier 1- Basic Level

Principle 5 from "Guide to Minimize Microbial Food Safety Hazards for Fresh Fruits and Vegetables"

"Practices using animal manure or municipal biosolid wastes should be managed closely to minimize the potential for microbial contamination of fresh produce."

Raw Manure

- Apply early, keeping nutrient concerns in mind.
- Don't apply manure or manure-containing litter while eaten part is present.
- USDA National Organic Program regulations specify how early manure must be incorporated:
  - 120 days before harvest for crops if the consumed part comes into contact with soil particles
  - 90 days before harvest if the consumed part does not come into contact with soil particles.

Composted Manure

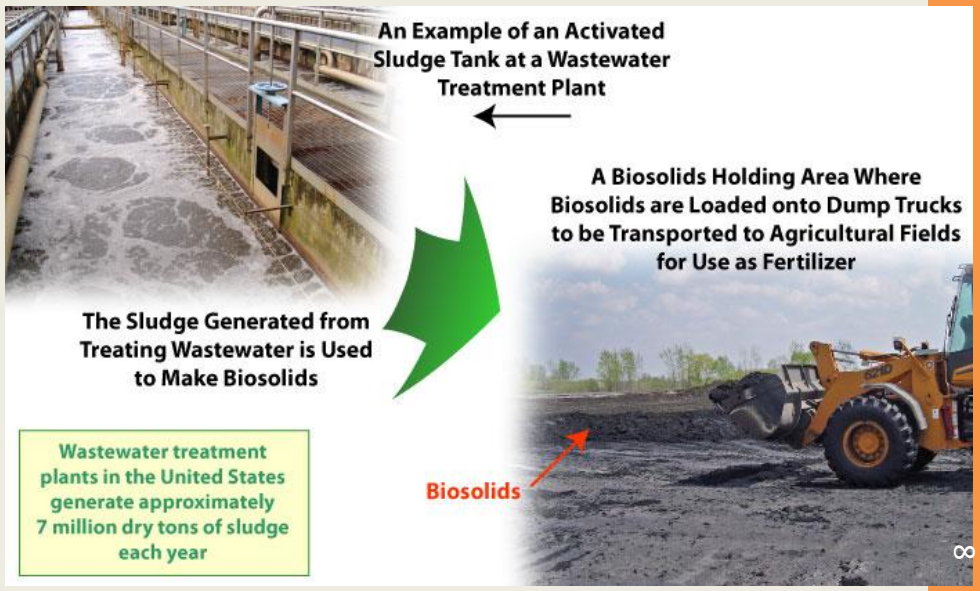
Composting guidelines often based on federal biosolids law (40CFR503):

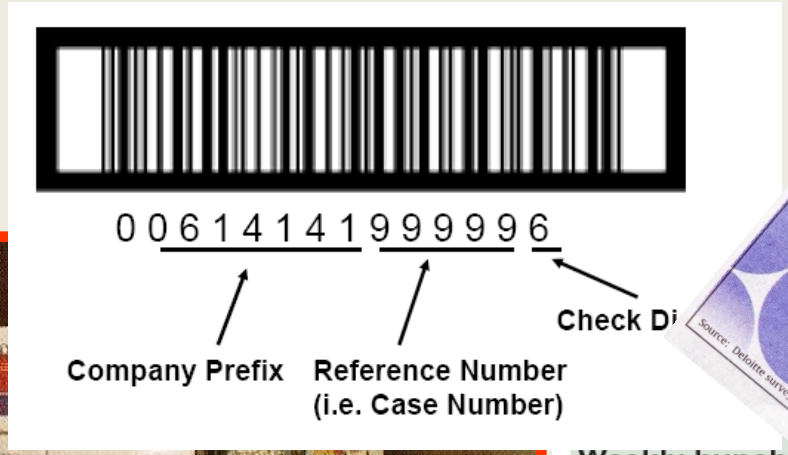
- At or above 131°F for at least three (within-vessel or static aerated pile) or 15 (windrow) days
- Turned at least five times (windrow only)

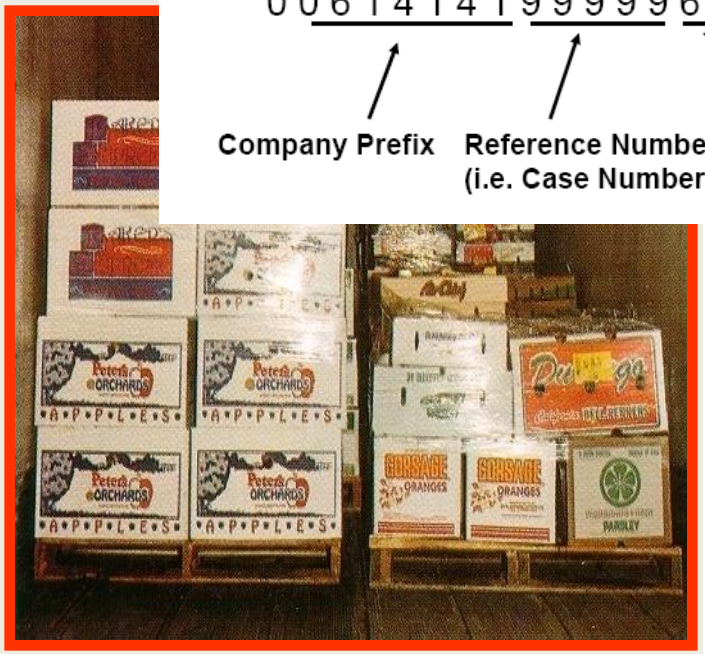
Biosolids

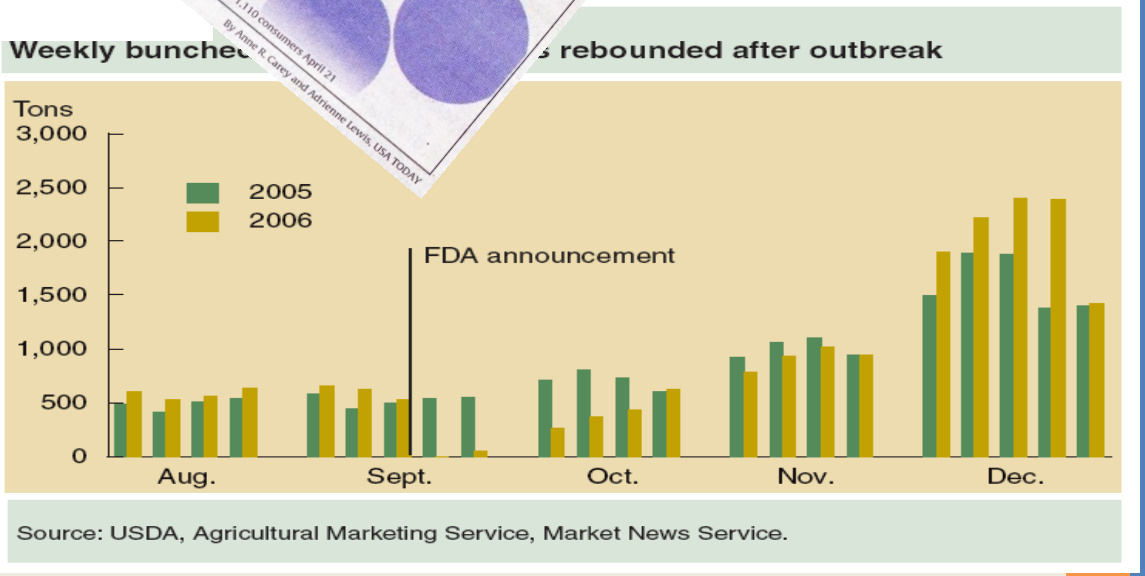
- Use of "sewage sludge generated during the treatment of domestic sewage in a treatment works" is regulated by both federal law (40CFR503) and NC law (15A NCAC 02T) as "residuals"
- Class A Can be sold directly to public
- Class B -Applied by producer, under permit that states how long before harvest it must be applied

Handouts of Module 5









Module 7:

The 3 T's: Transportation, Traceback and Traceforward

Module 8:

Managing Liability and Risk

Module 9-B

Dealing with Controversies and Crises: Working with the News Media

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Exercise 1

Water pH test

and

Temperature

Exercise 2

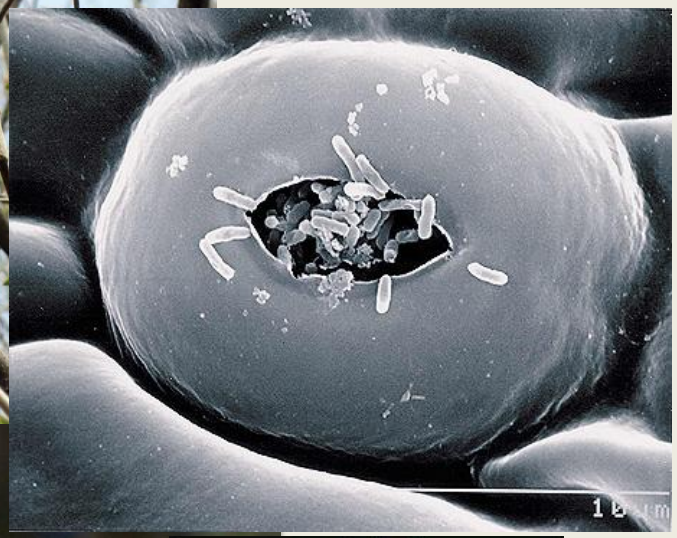
Chlorine

Free vs. Total

Exercise 3

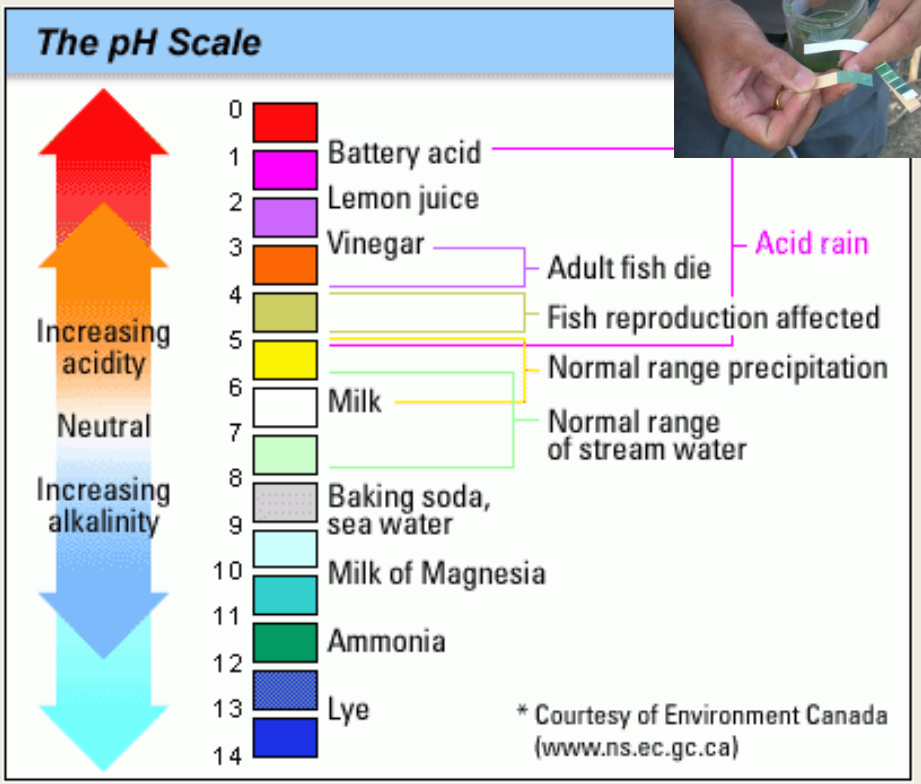
Microbial Testing Kits

Bacteria can enter



- buds, flowers, and small pods
- leaves of plants (stomata)
- enter fruit
  - stem
  - stem scar
  - calyx
- punctures, wounds, cuts, and splits

Exercise 1: Tools



pH Management

- postharvest quality
- Functionality of cleaning & sanitizing products
- Corrosive management

Temperature Management

- postharvest quality
- uptake of pathogens
  - warm fruit placed into cold water =pressure differential favoring uptake
- slow down reproduction of pathogens
  - Optimal growth of *E. coli* and *Salmonella* occurs at 37°C (98.6°F)

pH Range of Fruits and Vegetables	Apples	2.9 - 3.3
	Watermelons	5.2 - 5.6
	Beans (string and lima)	4.6 - 6.5
	Broccoli	6.5
	Lettuce	6.0
	Tomatoes (whole)	4.2 - 4.3

Exercise 2: Tools

- ***(Free Chlorine) + (Combined Chlorine) = Total Chlorine***
- "Picture **free chlorine** as a 100% ready-for action superhero ….It has both hands free and ready to fight."
- "Picture **combined chlorine** as that very same superhero after it wrestled and defeated a biological contaminant. The two 'locked horns' and now cannot separate …The superhero can still attack other biologicals, but think of it now as having only one of its hands … and thus it cannot fight as effectively." www.watertestingblog.com
- EPA has set the Maximum Contaminant Level (MCL) for TOTAL chlorine in potable water at 4.0 ppm.

Exercise 2: Tools - Figuring out ppm and gph

ppm –

To prepare a specific free chlorine solution (ppm) using sodium hypochlorite (NaOCl), use the following formula.

1) **Determine amount of sodium hypochlorite (NaOCl) concentrate to be added to the total volume of water** (units for NaOCl concentrate to add and total volume must be the same):

$$\text{Volume of NaOCl to add} = \frac{\text{Desired ppm of free chlorine} \times \text{total volume in tank}}{(\%\ \text{NaOCl in concentrate}) \times 10{,}000}$$

gph - Equation below can be used to determine the injection rate (gph) of a 5.25% available chorine liquid with ppm referring to the desired chlorine concentration.

$$\text{gph} = \frac{(\text{ppm})(\text{irrigation flow rate, gpm})}{\text{Concentration of chlorine injection (5.25, 10 . 15, etc)}}$$

5.25% = 971

10% = 1870

Microbial Validation testing

Water Testing – chlorine, pH, and microbial testing

Environmental Testing

Product testing

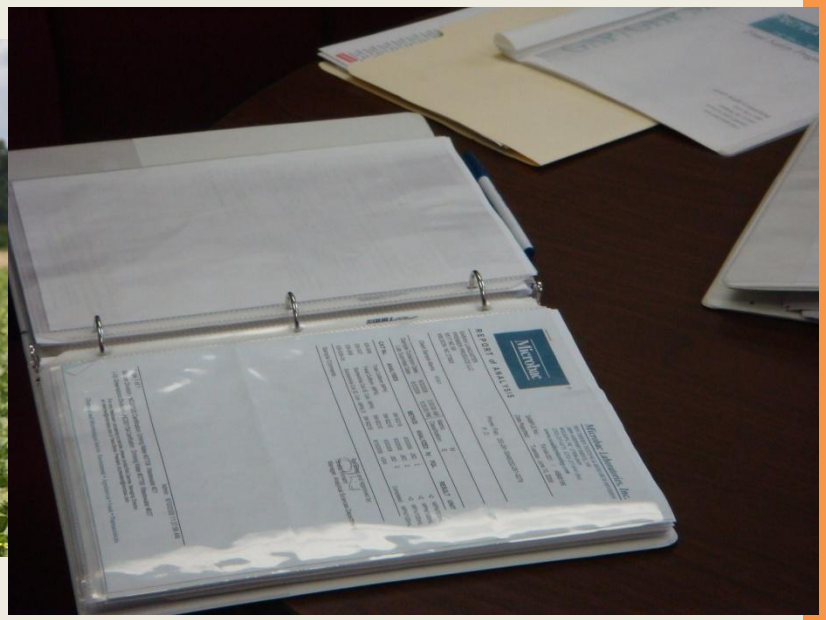
Exercise 3: Tools

Microbial testing kits & procedures


8:45a
pHydrion papers 1 TO 12
35.0
Menu
Set
Increase
Decrease
On
Off
Isotemp Incubator
3M Quick Swab

Elements of a Food Safety Program

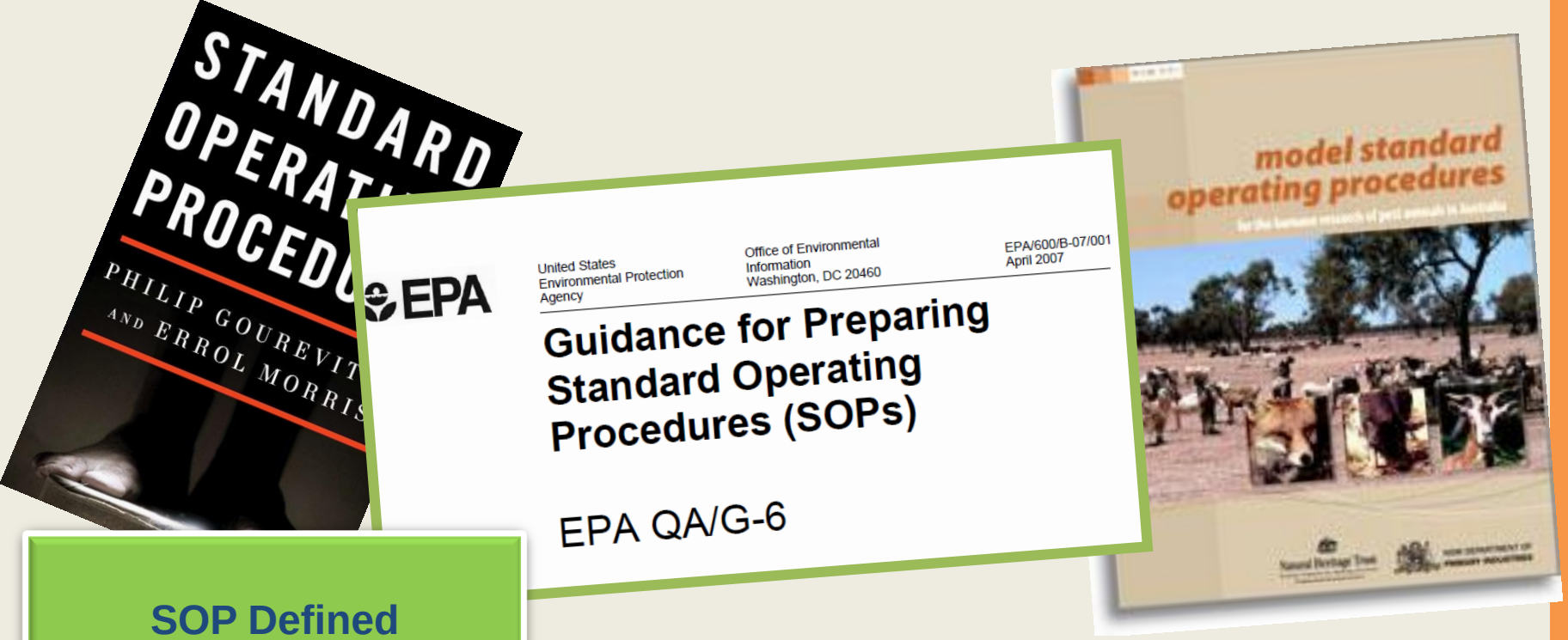
- Guidance for management, workers, and visitors
- Addresses specific microbial, chemical, and physical hazards
- Provisions for worker trainings, worker hygiene, and illnesses
- Designates a person/persons responsible for implementation
- Establishes polices and procedures (SOP & SSOP)
- Incorporates the appropriate GAPs and GMPs
- Demonstrates through documentation



REVIEW: Some helpful definitions

GAPs – Good Agricultural Practices used during production, harvesting, packing and shipping of fresh produce to prevent or minimize microbial contamination.

GMPs – Good Manufacturing Practices are typically applied to processing industry under the auspice of Hazard Analysis Critical Control Points (HACCP) systems.



SOP Defined

A Standard Operating Procedure, or an "SOP," is a document containing instructions on how to perform a task.

Documents the way activities are to be performed to facilitate consistent conformance to technical and quality system requirements and to support data quality

Elements of SOPs

- should be written in a concise, step-by-step, easy-to-read format
- Keep it simple and short
- Elements
  - SOP Number, Farm Name, Date Issued, Owner
  - Purpose
  - Concern
  - Contamination Introduction
  - Preventative/Corrective Measures
  - Documentation
  - Person Responsible & Date
  - Reviewed by & Date

Example of SOP

STANDARD OPERATING PROCEDURE (SOP)

SOP #:_____ **Farm Name:** _____
Date issued: _____ **Owner:** _____

Purpose:

Concern:

Contaminant Introduction:

Preventative/Corrective Measures:

- Policies and procedure
- Frequency of action
- What happens if policies and procedures are not followed? How do you correct this to prevent risk?

Documentation:

- checklists, logs, documents stating measures required and taken

Person Responsible: _____ **Phone number:** _____
Reviewed by: _____ **Date:** _____

Different Methods of Writing SOPs

- Consider:
  - how many decisions will user need to make ?
  - how many steps/sub-steps?
- Format
  - **Simple steps** format – routine, short, with few decisions
  - **Hierarchical steps** or **graphic format-** long procedures, < 10 steps, with few decisions
  - **Flowchart** - many decisions

Which one is this ?

1. All workers and visitors with ABC Farm are to follow the appropriate GAP policies and procedures to maintain food safety at all levels.
2. All employees will be trained in food safety and will be required to sign a training roster signifying that they have received, understand, and will comply with these requirements.

And this one?

Collecting Water Samples from Well

1. Collect water from an indoor tap
   a. Remove the aerator
   b. Disinfect the end of the faucet
2. Let water run for 5 minutes
   a. Do not touch end of faucet
   b. Decrease flow at 5 min. to clear, non-bubbled flow

Harvest and postharvest operations for mature-green tomatoes

Harvest at mature-green stage, into buckets

⇓

Dump into trailer-mounted gondola or bins

⇓

Transport gondola or bins to packinghouse, hold temporarily (covered or uncovered)

⇓

Flume tomatoes into dump tank (chlorinated water, 100-150 ppm active chlorine, pH 6.5-7.5, sometimes heated). Follow with clean wash water

⇓

Presize and sort to remove very small fruits and defective fruits
Divert fruits with color by hand or color separator

⇓

Fruits treated with wax emulsion (may contain fungicide) by sponge rollers

⇓

Fruits classified by size with belt sizer

⇓

Palletize, strap, store (cool to 55°F)

⇓

Transport

⇓

Degreen at distribution center

⇓

Depalletize, empty cartons onto Repack line or pack directly from volume-filled cartons to final place-pack carton for final distribution

⇓

May cool to 50-55°F

⇓

Palletize and move to degreen room

⇓

Treat with ethylene gas (100 ppm, 60-68°F, 3-4 days)

⇓

Remove from degreening room, depalletize, and repack fruit for uniformity of final pack

⇓

Palletize; may cool to 50-55°F

⇓

Transport to distribution center (45-55°F)

Hazard Control Point

Field worker hygiene

Equipment sanitation

Temperature control

Field sanitation

Container Sanitation

Water sanitation

Truck sanitation

SSOP Defined

Sanitation Standard Operating Procedures (SSOP) describe specific sanitary actions to be take at certain intervals, before or during operations, to prevent product contamination or adulteration.

Handout for SSOP

Checklist for SSOP Elements

1. Is the SSOP signed and dated by the responsible plant person?
2. Does the SSOP address sanitation of food-contact surfaces before production begins (pre-op)?
3. Does the SSOP address practices during production that might contaminate products (operational)?
4. Does the SSOP identify the employee(s) responsible for implementing and monitoring sanitation procedures?
5. Does the SSOP tell how often to do pre-op sanitation procedures?
6. Does the SSOP require at least daily monitoring of pre-op and operational sanitation procedures?
7. Are records kept of monitoring pre-op and operational sanitation procedures on each production day?
8. Do the monitoring records indicate that monitoring was done as often as specified by the SSOP?
9. Can each SSOP monitoring record be linked to a day's production (are the records properly dated)?
10. If a deviation is noted, do corrective action records show that following things were done?

    i. You restored sanitary conditions.

    ii. You took action to prevent the deviation from happening again.

    iii. You took action to make sure that no potentially contaminated product was sold

Handout of SSOP

Example of SSOP

General Equipment Cleaning

1. All equipment used for food processing and/or preparation will be cleaned and sanitized prior to starting processing or preparation.
   - Established cleaning procedures include:
     - Equipment is disassembled, as necessary.
     - Food debris is removed from equipment.
     - Equipment parts are rinsed with water to remove remaining food debris.

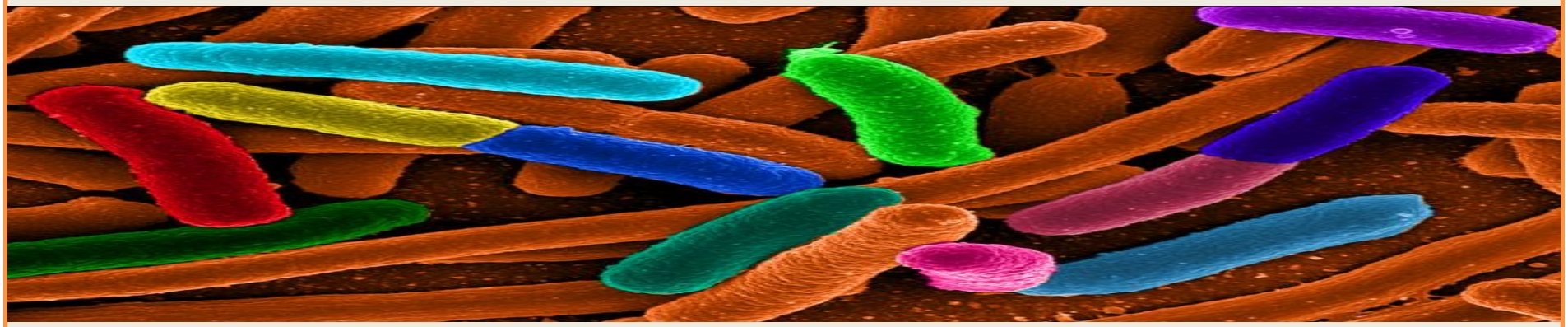
Food Safety Plan

- Brings all the elements of the food safety program together
  - Providing written document specific to your operation
  - Designates responsible person for program
  - SOPs
  - SSOP
  - Supporting documentation
    - Tests
    - Logs, etc

E. coli Outbreak

Tier 2 – Risk Identification & Management

2006 Spinach *E.coli* O157:H7 Outbreak Case Study



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Events of Outbreak

- On **September 13, 2006**, the Centers for Disease Control and Prevention (CDC) alerted the U.S. Food and Drug Administration (FDA) of a multi-state *Escherichia coli (E. coli) O157:H7* outbreak that appeared to be associated with consumption of bagged spinach.

September 14, 2006….

- Multiple States Investigating a Large Outbreak of *E. coli* 0157:H7 infections - eight states
- Preliminary finding indicate that pre-packaged spinach is the most likely source
- Range of onset is 8/25/2006 – 9/13/2006
- Public warning goes out

"…Additional investigation is necessary to determine the brand or brands of pre-packaged spinach involved. State and CDC investigators are working with FDA to quickly gather information to take action to protect the public. The FDA advises that consumers not eat bagged fresh spinach at this time." http://www2a.cdc.gov/HAN/ArchiveSys/ViewMsgV.asp?AlertNum=00249

September 29, 2006

- FDA announces spinach is traced back to Natural Selection Foods of San Juan Bautista, CA.
- FDA and State of CA include the possibility of regulatory requirements in the future.
- Natural Selection Foods markets under multiple brand names

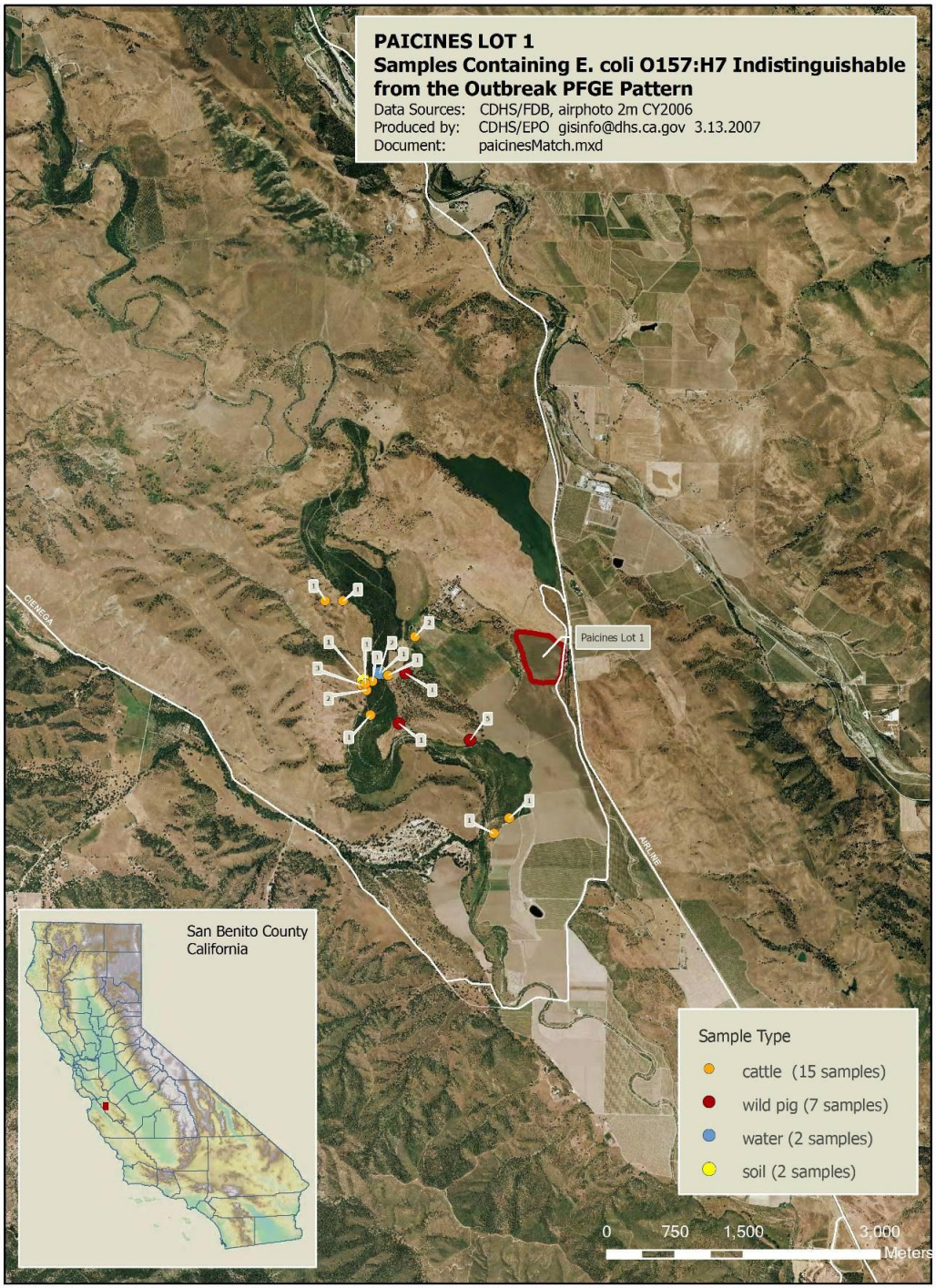
The first rule of public health is one most of us learn in kindergarten:
Don't eat poop.
But that's what the people were eating who were struck down with E. coli in the late summer outbreak tied to bagged spinach, California health officials now say.
Doug Powell – www.barfblog.com

October 6, 2006

- 199 person infected with the outbreak in 26 states
  - 102 were hospitalized, 31 developed kidney failure; 3 deaths
- 141 were female, 22 were children under 5
- Peak time of illness was August 30 to September 1

Identification

- Nationwide, investigations identified thirteen bags of Dole brand Baby Spinach, manufactured by NSF, collected from ill consumer households that contained *E. coli O157:H7* which matched the outbreak strain.
- Product code traced back to spinach harvested from four ranches in Monterey and San Benito counties in California.



California Food Emergency Response Team (CalFERT) examined

spinach washing
processing
packaging process
collecting finished product
environmental samples
(cattle, wild pig, water and soil)

In Field Employee Procedures

- Employees wore hairnets, gloves, sleeve guards, and aprons while working in the field.
- The gloves used were re-usable.
- Employees were required to remove their equipment when they left the field for any reason.
- Prior to returning to the field, they were required to dip their gloves in a hand dip containing sanitizer.
- The last log entry for the hand dip indicated that it contained 190 ppm total chlorine.

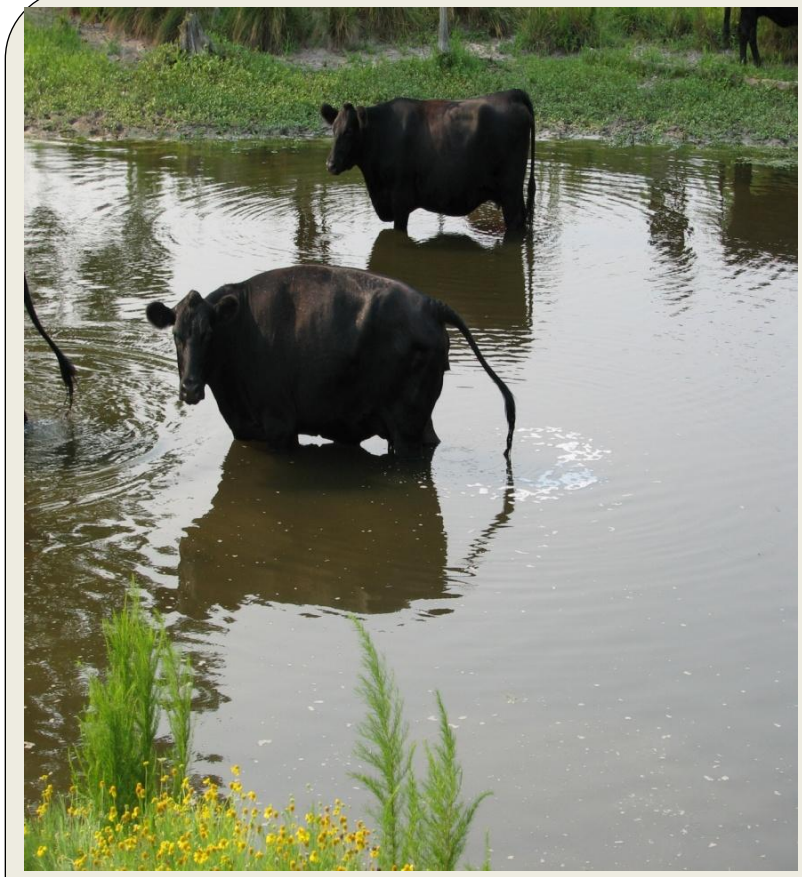
Employee Training Procedures

- Employees were reportedly given a two hour GAPs, sanitation, and SOP training on a yearly basis.
- Illness exclusion policy in effect
- Portable toilets available in field
- Attendance at this training was documented on a sign-in sheet.
- Monthly refresher sessions (10-20 min) were given.
  - These refresher sessions took place on Fridays when employees were picking up their checks.
  - Attendance at these sessions was also documented on a sign-in sheet.

Manure Management

- A 8-1-1 chicken manure pellet blend was spread on July 15, 2006, and was produced from feather meal and chicken manure that were both supplied by chicken ranches in the San Joaquin area.
- Chicken manure pellets were obtained from True Organic Products, Inc. (TOP) and were applied during preplant (July).
-

Observations - Cattle Crossing River on the Paicines Ranch



Cattle

- Cattle pastures enclosed by fences
- Have free access to waterways at various points upstream
- Grazing area located at higher elevations with production fields located below in the valley
- Seasonal and year-round creeks flow through the cattle pastures

Observations - Pig Rooting and Tracks, in Field Belonging to Neighbouring Grower

Wildlife Investigation

- evidence of wild pigs around irrigation wells
- physical presence of wild pigs in and around spinach fields
- wildlife tracks (primarily pig, but also some deer, raccoon, coyote, rodent, rabbit, and bird) and evidence of penetration of fences was observed
- Reported damage to crops caused by pigs during thinning and harvesting of crops
- wild pig fecal material and rooting observed in adjacent fields

Wildlife policy

- Field fencing evident
- Visual observations?
- Corrective measures?
- Testing ?

Sanitation of Equipment

- Spray equipment with chlorine at targeted 50 ppm free chlorine , pH @ 6.5
- Harvesters cleaned after each day of use – dry cleaned, pressure washed, brushed with “Suds N Stuff” detergent and rinsed
- Water used from well and added to nurse tank
- Chlorine added to nurse tank and monitored (?) with logs

Irrigation Water

- types of water were used for irrigation
  - Blue Valve water- surface water
  - Well water
- Irrigation via sprinklers
- No wells (3) at the scene were grouted
- Wells tested late July for total coliform (2 MPN/100 ml), and *E. coli* < 1 MPN/100 ml)
- San Benito River - groundwater levels higher in elevation that riverbed in March, decrease as season allowing river water to percolate into ground wells

Lessons Learned

- water, wildlife, workers, and waste are still the four most frequently identified risk factors associated outbreaks.
- need to identify risks on the farm
- accomplishable SOPs to implement risk reduction measures
- a failure in ANY portion on the food supply chain can cause potential contamination
- our understanding of the microbial ecology on farms is extremely limited

Food Safety Plan

- Brings all the elements of the food safety program together
  - Providing written document specific to your operation
  - Designates responsible person for program
  - SOPs
  - SSOP
  - Supporting documentation
    - Tests
    - Logs, etc

Help is on the way….Templates...

Good Agricultural Practices

Fresh Produce Safety Plan

for Field Practices

www.ncmarketready.org, click on Fresh Produce Safety

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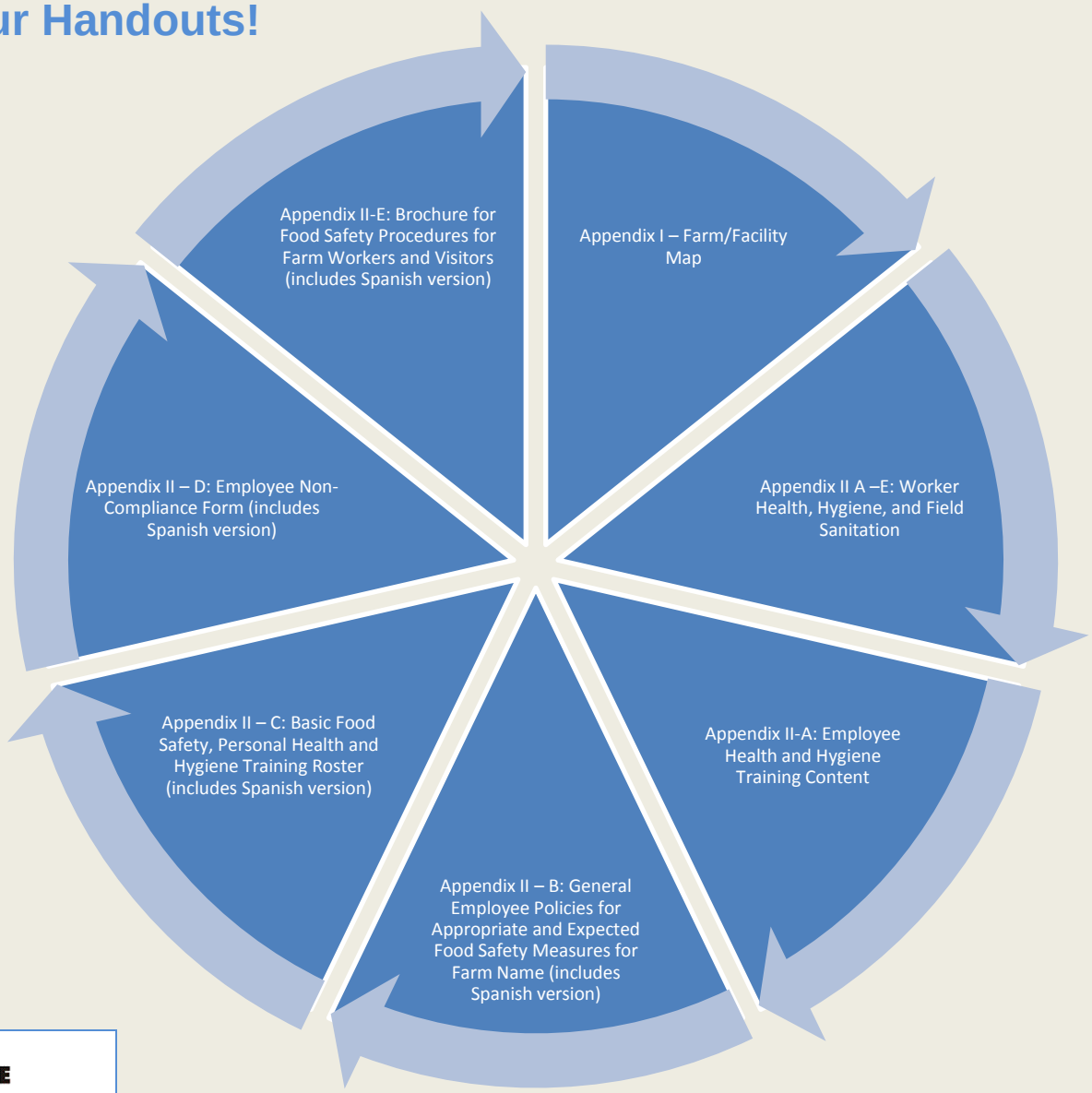
Outline of the Plan Template

- Introduction and General Guidelines (Standard Operating Procedure (SOP))
- Facility Map Overview (Actual Maps contained in Appendix I)
- SOP 1.0 Worker Health, Hygiene, and Field Sanitation
- Spanish Version of Farm worker and Visitor orientation
- SOP 2.0 Water Usage
- SOP 3.0 Sewage Treatment and Soils
- SOP 5.0 Pesticide Usage
- SOP 6.0 Animal/Wildlife
- SOP 7.0 Manure and Biosolids Usage
- SOP 8.0 - Field Harvest/Pack and Transportation
- SOP 11.0 Traceability

Appendix I-IX

Look at your Handouts!



SOP Elements Reviewed

- SOP Number, Farm Name, Date Issued, Owner
- Purpose
- Concern
- Contamination Introduction
- Preventative/Corrective Measures
- Documentation
- Person Responsible & Date
- Reviewed by & Date

SOP 1.0 for workers health & hygiene

- Purpose: To address proper worker hygiene and restroom facilities practices and to reduce the potential of contamination by worker, either by their actions, hygiene practices, health or habits.
- Concern: All workers have direct access to the entire food supply chain on the farm and thus have the potential to contaminate or cross-contaminate produce, which may result in increased probability of an adulterated produce and/or food-borne illnesses
- Contaminant Introduction: 1). Appropriate drinking-water quality standards help ensure that contaminants are not introduced and promote employee health. 2). Proper sanitation, health, and hygiene practices and policies teach employees and visitors to limit contamination of the work environment.

SOP 1.0 for workers health & hygiene

Preventative/Corrective Measures:

- Preventative:
  - All employee policies and procedures will address personal health and hygiene training, and appropriate and expected food safety measures.
  - Bilingual signs and materials will be posted where appropriate and incorporated into training materials.
  - All visitors will follow the policies and procedures set forth in this document and sign the visitors log upon entry to production areas.
- Corrective: Employee will be issued a non-compliance form is policies and procedures are not followed.

SOP 1.0 for workers health & hygiene

Documentation:

- Basic Food Safety Training Content(G-4 & G-6))
- Signed Employee Training Roster for Basic Food Safety Training(G-4)
- Visitor Log(G-4)
- Food Safety Farm Worker and Visitor brochure (G-4)
- General Employee Policies for Appropriate and Expected Food Safety Measures for farm name (G-6 & G-7 & G-12 & G-14)
- Visitor compliance sign (G-7)
- Posted bilingual hand-washing signs at hand-washing facilities

SOP 2.0 Water Usage

Purpose: To ensure water used in the field for irrigation, frost protection, or as a carrier for pesticides and fertilizers is of adequate quality for agricultural uses and is free of microbial and chemical risks.

Concern: Water is a vehicle by which pathogens that are associated with food-borne illnesses (such as pathogenic *E. coli* and *Salmonella*) can infect produce.

Contaminant Introduction: 1). Chemicals or amendments that could pose a risk. 2). Harmful pathogens that can cause food-borne illness from either point or non-point sources.

SOP 2.0 Water Usage

Preventative measures:

- Water used for irrigation, spraying, mixing pesticides, and frost protection that comes in direct contact with plants will meet foliar-application water standards. A test documenting that the water source is potable will be kept on record for at least two years.
- Field water samples will be collected from the water sources (and distribution systems) no more than 60 days before the beginning of each production season and continue on a scheduled basis according to the degree of risk associated with the water source:
  - Municipal water source – one annual test
  - Wells - one annual test
  - Surface waters/ponds -each month during production

SOP 2.0 -Water (cont'd)

- Microbial testing of water samples will be a quantitative analysis for generic *E.coli* using the Clean Water Act of 1972 Bacterial Water Quality Standards for Recreational Waters (Freshwater and Marine Waters) and the Leafy Greens Marketing Agreement Guidance
  - Non-foliar application of water: Water with ≤ 126 MPN geometric mean of 5 samples and < 576/ 100 mL for all single samples.
  - Foliar application of water: Water ≤ 126 MPN geometric mean of 5 samples and <235/ 100 mL for all single samples.

Hint: Factors to consider include erosion/runoff, topography, proximity, well casing

SOP 2.0 Water Usage

Corrective measures:

- If generic *E.coli* test samples show unacceptable amounts, the following steps will be taken:
  - Stop irrigation.
  - Stop harvesting.
  - Identify the source of contamination and determine remediation actions (flush systems, chlorinate).
  - Dispose of any adulterated product in accordance with the FDA's disposal policy (via landfill or incineration) (http://www.fsis.usda.gov/PDF/Disposal_Decontamination_Guidelines.PDF)
  - Resample water sources and individual distribution systems if necessary until acceptable criteria have been reinitiated.
  - Resume production activities once acceptable criteria are met.

SOP 2.0 Water Usage

Documentation:

- Irrigation Water Quality tests documents (1-3)
- Field Supervisors Daily Checklist (Appendix)
- Land Use History and Prevention Measures
- Notice of Unusual Events/Problems and Corrective Measures (Appendix)

Now its your turn……

Write your own SSOP

(Break into Groups)

SSOP for on-farm (in field) management

- equipment
- harvesting bins
- knives
- landscape fabric

Purpose: to destroy biological, physical and chemical in water as well as on the surface;
to avoid the spread and contamination to other units

Example of SOP

STANDARD OPERATING PROCEDURE (SOP)

SOP #:_____ **Farm Name:** _____
Date issued: _____ **Owner:** _____

Purpose:

Concern:

Contaminant Introduction:

Preventative/Corrective Measures:

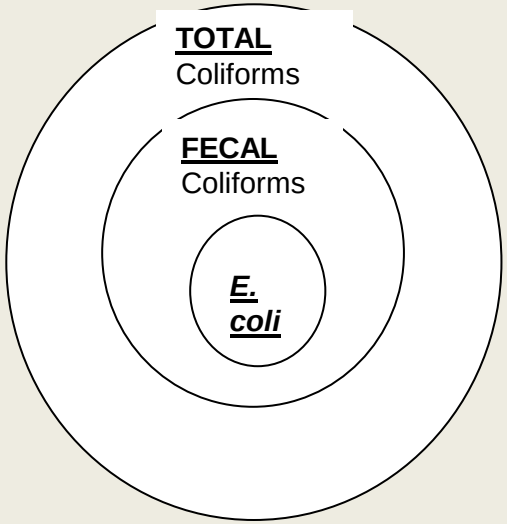
- Policies and procedure
- Frequency of action
- What happens if policies and procedures are not followed? How do you correct this to prevent risk?

Documentation:

- checklists, logs, documents stating measures required and taken

Person Responsible: _____ **Phone number:** _____
Reviewed by: _____ **Date:** _____

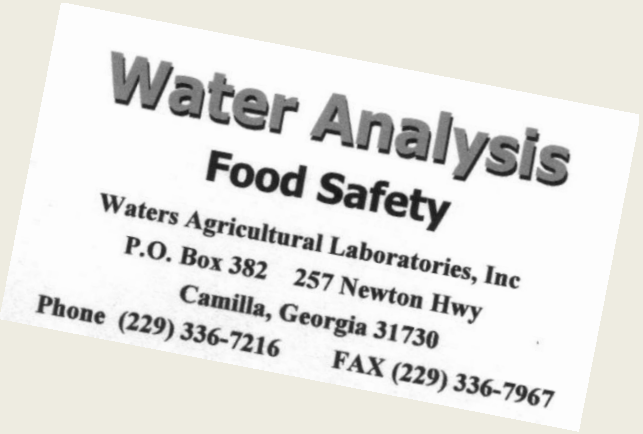
Microbial testing for water

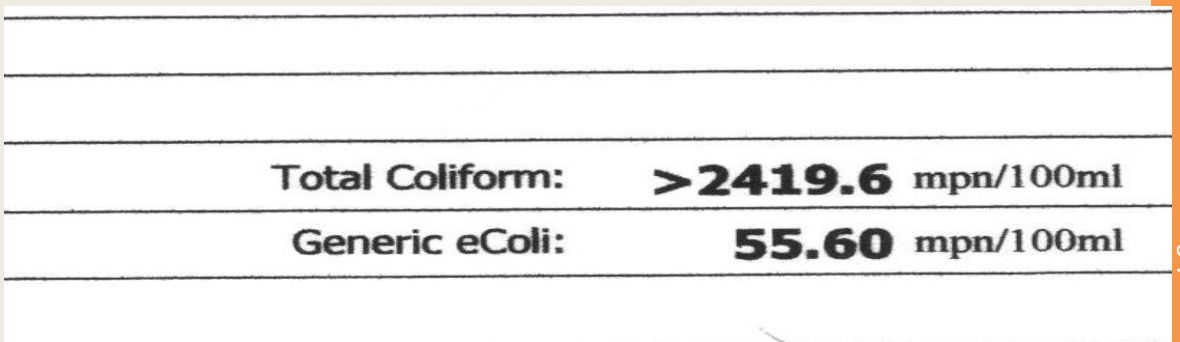


3 different microbiological tests

- Total coliform bacteria
- Fecal coliform bacteria
- **Generic *E. coli* (recommended)**

- Tests can yield results
  - Presence-absence
  - **Quantitatively (recommended)**
- Quantitative distinctions
  - Colony forming unit (CFU)
  - Most probable number (MPN)





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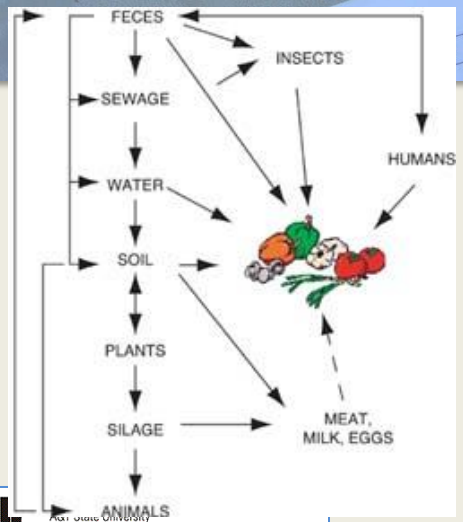


Adequate Sanitation Principles

Different methods exist for water disinfection

- chemical, thermal, ultrasonic waves or irradiation.
- chlorine and its derivatives are the cheapest and most widely used
- Important to keep between pH of 6-7.5 otherwise ineffective, too corrosive or carcinogenic
  - Vinegar to acidify
  - Sodium hydroxide to alkalinize

(Adapted from Harris, 1998).

Chlorine use

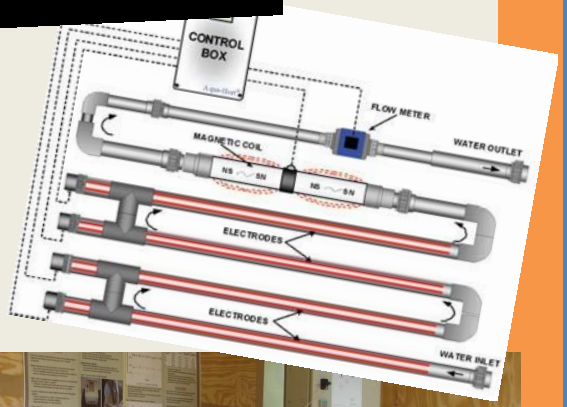
- Three forms primarily utilized:
  - pressurized **GAS** from metal cylinders (Cl_2)
  - calcium hypochlorite (SOLID- $CaCl_2O_2$)
  - as sodium hypochlorite (LIQUID –NaOCl) commonly known as "bleach"
- Highly reactive with leaves, soil, plant matters
- ***Concentrations of active chlorine in the range of 0.2 to 5 ppm are able to kill most bacteria and fungi present in water.***

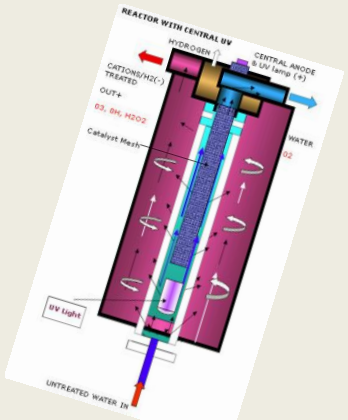
Alternatives

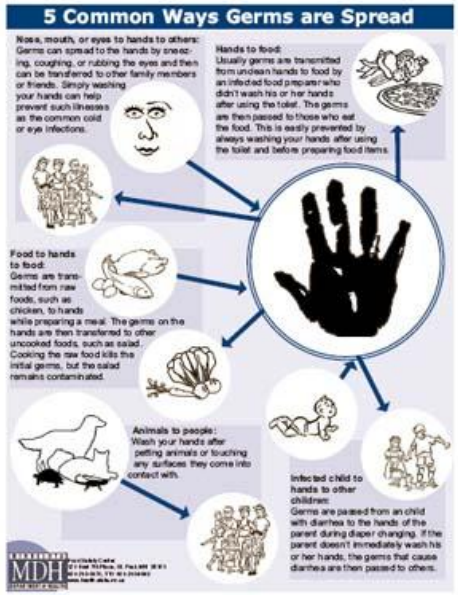
Oxidation-Reduction Potential (ORP) – 650-700 mV

- Chlorine dioxide – 3-5 ppm, pH 6-10, on-site generation, safety program, closed system
- Calcium hypochlorite -
- Peroxyacetic acid (PAA) -
- Hydrogen peroxide -< 0.5 %
- Ozone – gas 0.5 – 2 ppm
- UV light- wavelengths of 250-275 nm
- Copper Ionization

Copper Ionization Is Safe, Effective and Affordable







Leafy Green Marketing Agreement (2009) states:

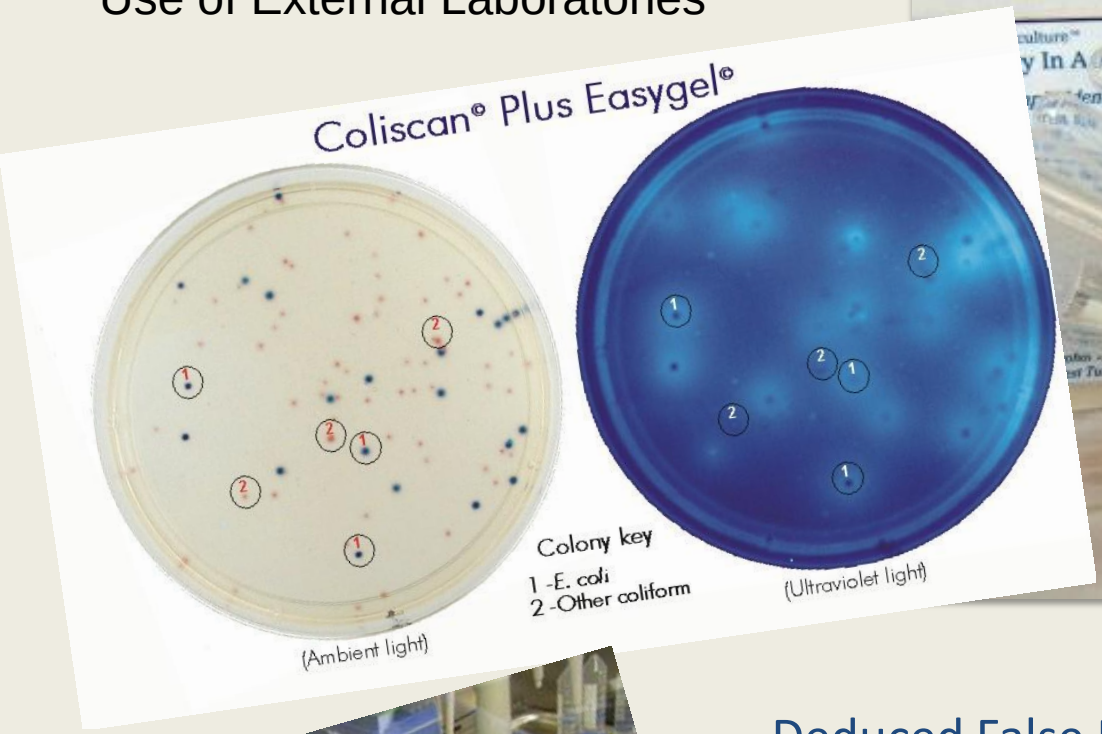
Sufficient microbial quality for its intended use

- US EPA Drinking water standards
- World Health Organization drinking water standards

Sufficient concentrations of approved water disinfectant are present to reduce potential of cross-contamination

Monitor disinfectant level in the water at a frequency sufficient to assure appropriate microbial quality for intended use

Use of External Laboratories



- Deduced False Positives
- Accredited Methods and calibrated equipment
- Technical aspects and appropriate controls
- Experienced professionals
- Institutional Accredited Labs
- Reportable Food Registry
- Third-party assurance

Writing a SOP for Microbial monitoring programs

- Identify product & location tested
- Microbiological specifications
- Testing parameters
- Lab used
- Correction actions

Sampling Zones

Zone 1

product contact surfaces: conveyors, tables, racks, vats, tanks, pumps, slicers, packaging machines, etc.

Zone 2

Non-product contact surfaces in close proximity to product: equipment exterior, refrigeration units, floors, etc.

Zone 3

Telephones, forklifts, walls, drains

Zone 4

Locker rooms, cafeteria, hallways

FDA U.S. Food and Drug Administration

Reportable Food Registry(RFR) for Industry

Effective September 2009

electronic portal to report when there is reasonable probability that an article of food will cause serious adverse health consequences.

Applies to registered food facilities that manufacture, process, pack, or hold food for human or animal consumption

Applies to all FDA-regulated categories of food and feed, except dietary supplements and infant formula.

http://www.fda.gov/food/foodsafety/foodsafetyprograms/rfr/default.htm#about

Registered Food Facilities

- **Public Health Security and Bioterrorism Preparedness and Response Act of 2002**, otherwise known as the **Bioterrorism Act**
- Both domestic and foreign farms do not need to register if they fall within the following criteria established by FDA:
  - Facilities that pack or hold food, provided that all food used in such activities is grown, raised or consumed on that farm or another farm under the same ownership.
  - Facilities that manufacture/process food, provided that all food used in such activities is consumed on that farm or another farm under the same ownership.
- By this definition, packing houses that pack foods other than those owned by them need to register. The Bioterrorism Act makes failure to register a prohibited act.

http://www.fda.gov/Food/GuidanceComplianceRegulatoryInformation/RegistrationofFoodFacilities/default.htm

Legislation and FDA Proposed Rule

- **House Bill 2749 – Food Safety enhancement Act of 2009**
  - passed in House -July 2009.
- **Senate Bill 510 – FDA Food Safety Modernization Act**
  - HELP Committee & **Amendments**
- **FDA Proposed Rule**
  - purpose for such standards is a goal we all share: to reduce the risk of illness associated with fresh produce.
- NCFPSTF Talking Points
  - Scale Appropriate
  - Risk & Science-based
  - Tiered Compliance
  - Proactive
  - Focus on education and incentive not punitive

CERTIFICATE OF ATTENDANCE

NC MARKETREADY

Fresh Produce Safety – Field to Family

A Program of NC Cooperative Extension

This certificate recognizes that

_____

has attended the educational activity titled

NC MarketReady Fresh Produce Safety – Field to Family Tier 1 Training

A 7-Hour Course on Fresh Produce Safety Training in Fresh Produce Safety Basics, Pathogen Introduction, GAPs for Field Practices, GHPs for Packing Facilities, Proper Health & Hygiene, Water Quality, Site Selection and Manure Management

_____

Name _____

Title _____

County _____

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NORTH CAROLINA FRESH PRODUCE SAFETY TASK FORCE
www.ncfreshproducesafety.org

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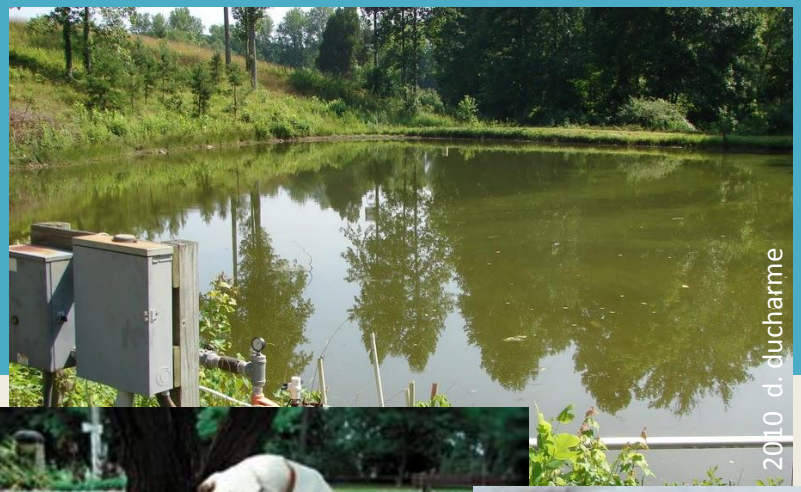

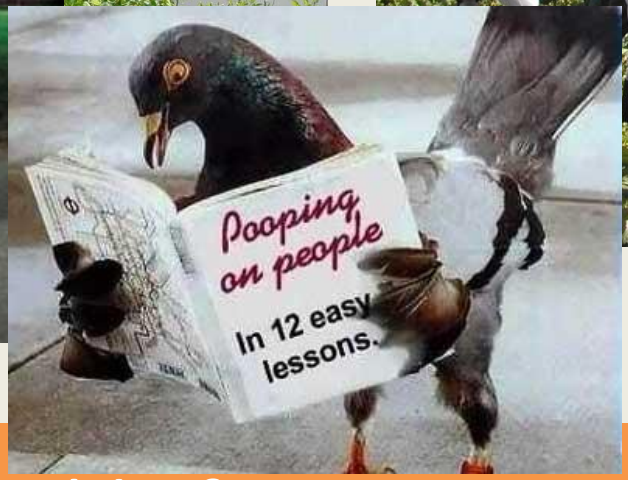

don't eat poop

Exiting the world of water, waste, wildlife, and workers……

and Risk Identification and Management

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Reference

- California Food Emergency Response Team. (2007). *Investigation of an Escherichia coli O157:H7 Outbreak Associated with Dole Pre-Packaged Spinach. California Department of Health Services and U.S. Food and Drug Administration.* *http://www.cdph.ca.gov/pubsforms/Documents/fdb%20eru%20Spnch%20EC%20Dole032007woph.PDF*
- On-farm Food Safety: Guide to Cleaning and Sanitizing http://www.extension.iastate.edu/Publications/PM1974C.pdf