

Getting Started in Food Safety: Day #1

Northern Fruit and Vegetable Producers

Colleen Haskins,

Food Safety Advisor,

Food Safety Inspections Delivery Branch

About Me...

Education: College and University

Work:

- Academia Sector
 - Micro-lab assistant,
 - Breast Cancer research technologist,
- Private Sector
 - Minimally processed food plant (fresh produce) (QA/QC Manager, HACCP and Food Safety co-ordinator, IPM Scout program manager, internal facility and farm inspector...)
- Public Sector
 - On-Farm Food Safety Program Lead (contract 3.5 yrs > permanent)
 - > Risk Management Specialist,
 - > Food Safety Advisor

Food Safety Advisor

Increase awareness about food safety risks, mitigation strategies and traceability requirements, both on-farm and further processing

Provide support to the Inspection staff of Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) for regulatory issues of food (e.g., Meat, Dairy, Fish, Food of Plant Origin)

Provide guidance and assistance to the industry through education, resources, training and personal interactions

Help the industry overcome perceived barriers

- To meet regulatory and market requirements
- To navigate the food safety and traceability landscape
- By developing resources and materials

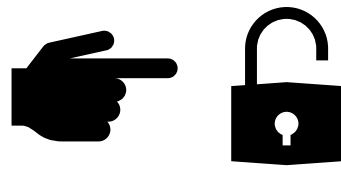
My Family:



Your Turn:  

Time for a “Poll”

Your Turn

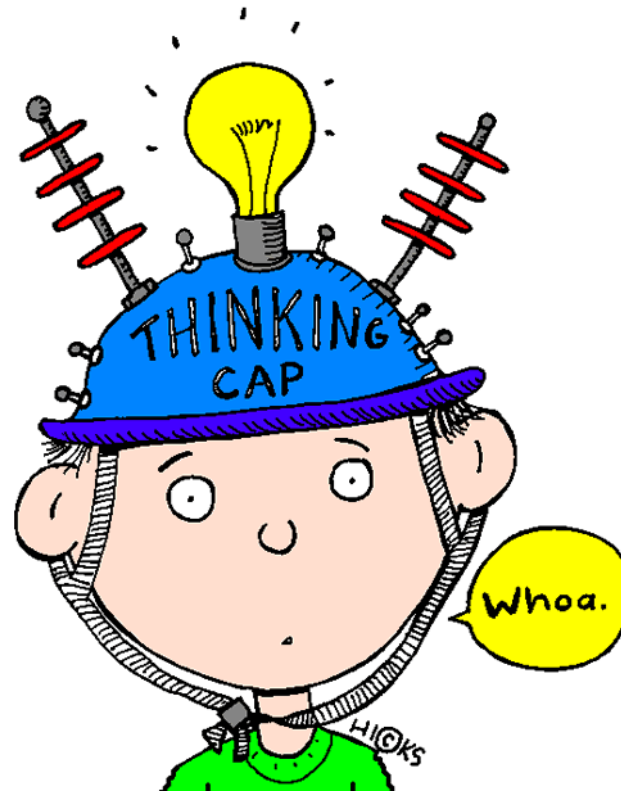


Tell me about you and your First Nation Community

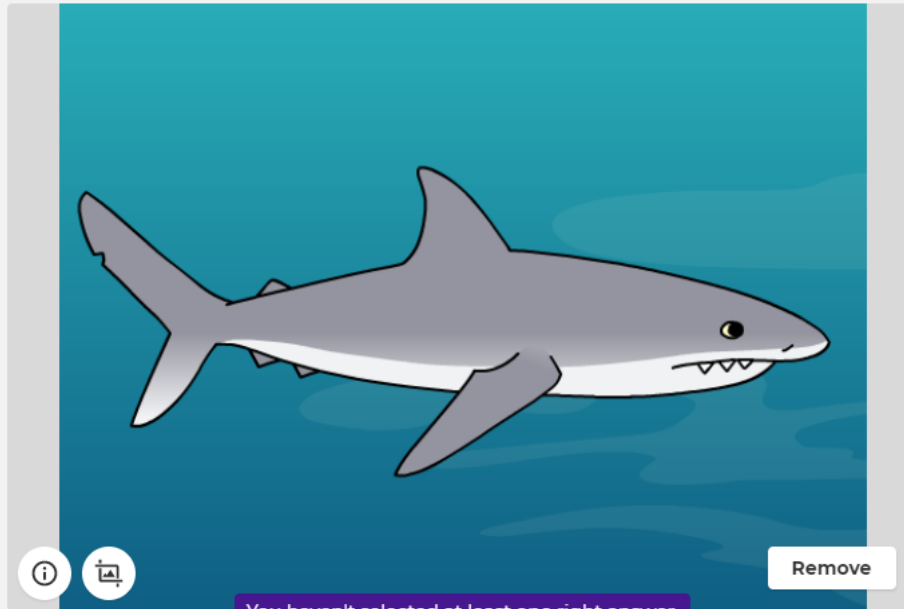
- Where are you located?
- What is the size/population of your community?
- What do you currently grow?
- What do you plan on growing in the future?
- What plans for future agri-food initiatives do you have?



What does “food safety hazard or risk” mean to you?



What is a group of Sharks called?



You haven't selected at least one right answer.

▲ Sharknado

A

◆ Multitude

B

● Shiver

C

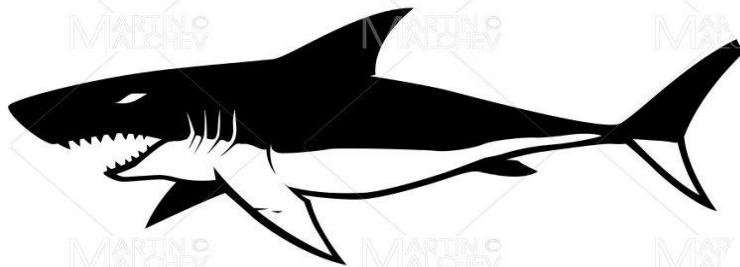
■ Extremely Dangerous

D

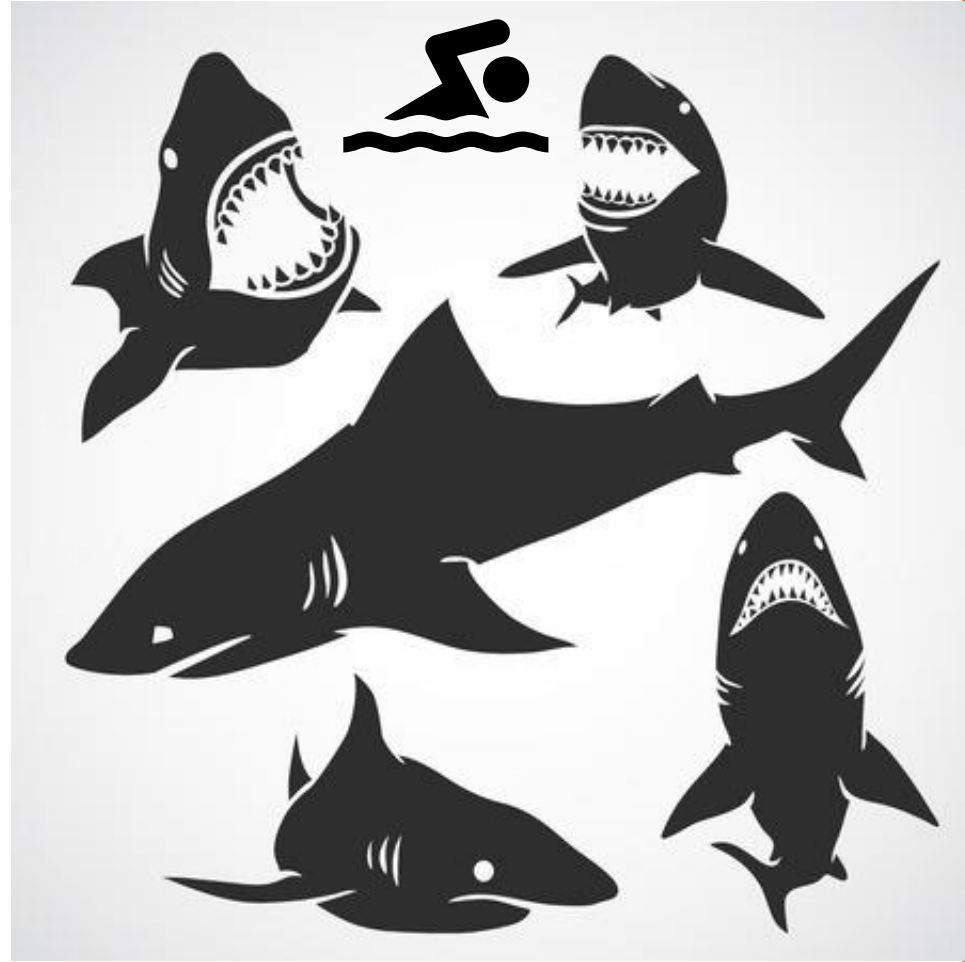
Hazard vs. Risk

Hazard

Something that can potentially cause harm



Risk



What We Will Discuss Today

- Recognize the importance of food safety
- Identify the top 5 food safety areas of risk and related Good Agricultural Practices (GAPs)
- Group Exercise: Understanding GAPs
- Outline how OMAFRA can help

Why The Focus on Food Safety?



What role do food producers have in the food system?

Canadians consume 100 million meals a day!



What country consumes the most tacos per capita?



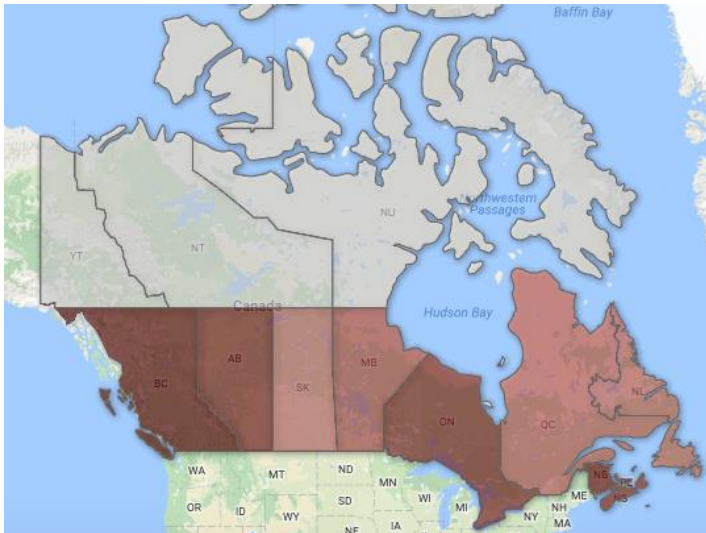
You haven't selected at least one right answer.

- Norway **A**
- Mexico **B**
- USA **C**
- Canada **D**

Industry Statistics

Canada: 2016 Food Safety Report Card

- There are an estimated 4 million (1 in 8) Canadians affected by a food-borne illness each year (reported in the provinces)
- On average, 240 people die from contaminated food and water every year



Source: Health Canada, 2017-05-17

Image: <https://www.canadiangeographic.ca/article/mapping-canadas-food-borne-illnesses>

Why We Can't Ignore Food Safety

- Foodborne illness (acute and chronic symptoms)
- Loss of business and Ontario's reputation for safe local food
- Loss of consumer confidence
- Litigation
- Increased regulation
- Trade restrictions



What Influences the Food You Purchase and/or Consume?



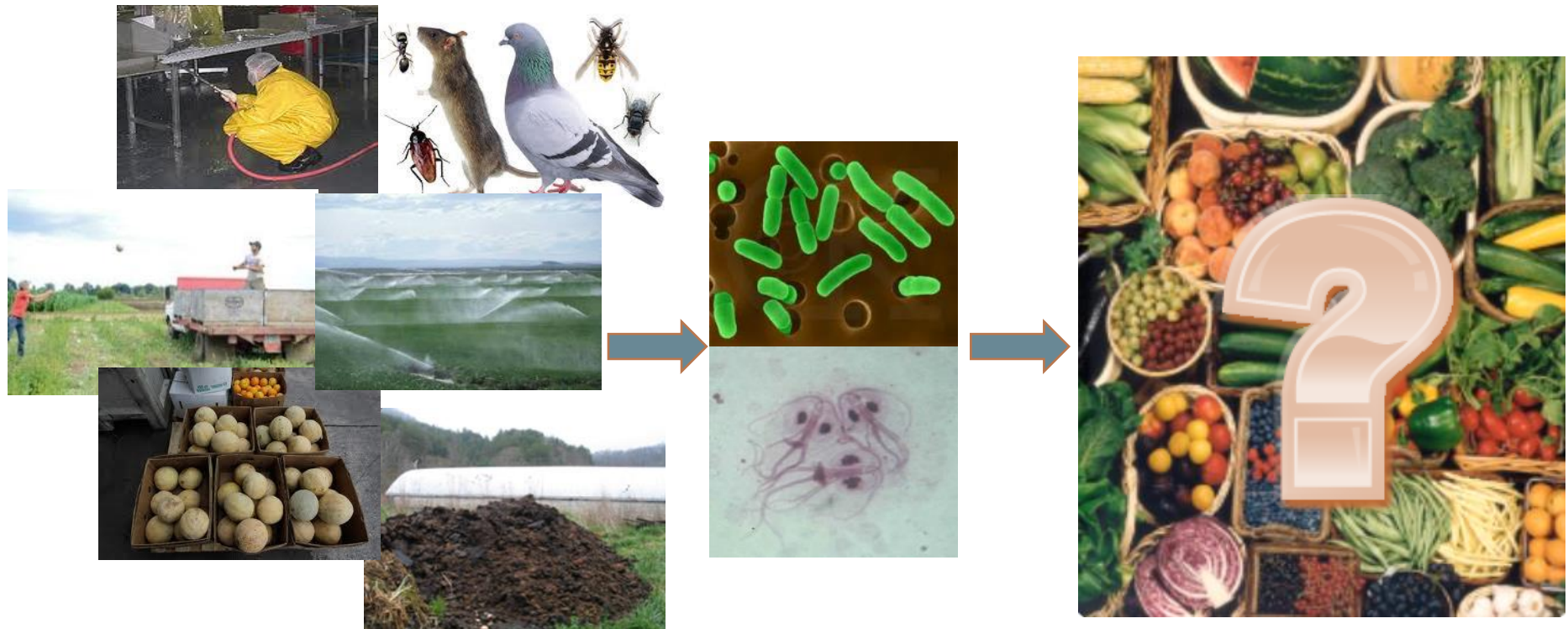
What Are Buyers/Consumers Looking for?

- ✓ Fresh, safe, nutritious and high-quality food products
- ✓ Confidence in the safety of the products you produce
- ✓ Assurance that measures are in place to reduce food safety hazards, that cause food contamination
- ✓ Food producers, processors, food retailers and distributors are implementing safe food practices (and comparable ones)



Food Contamination

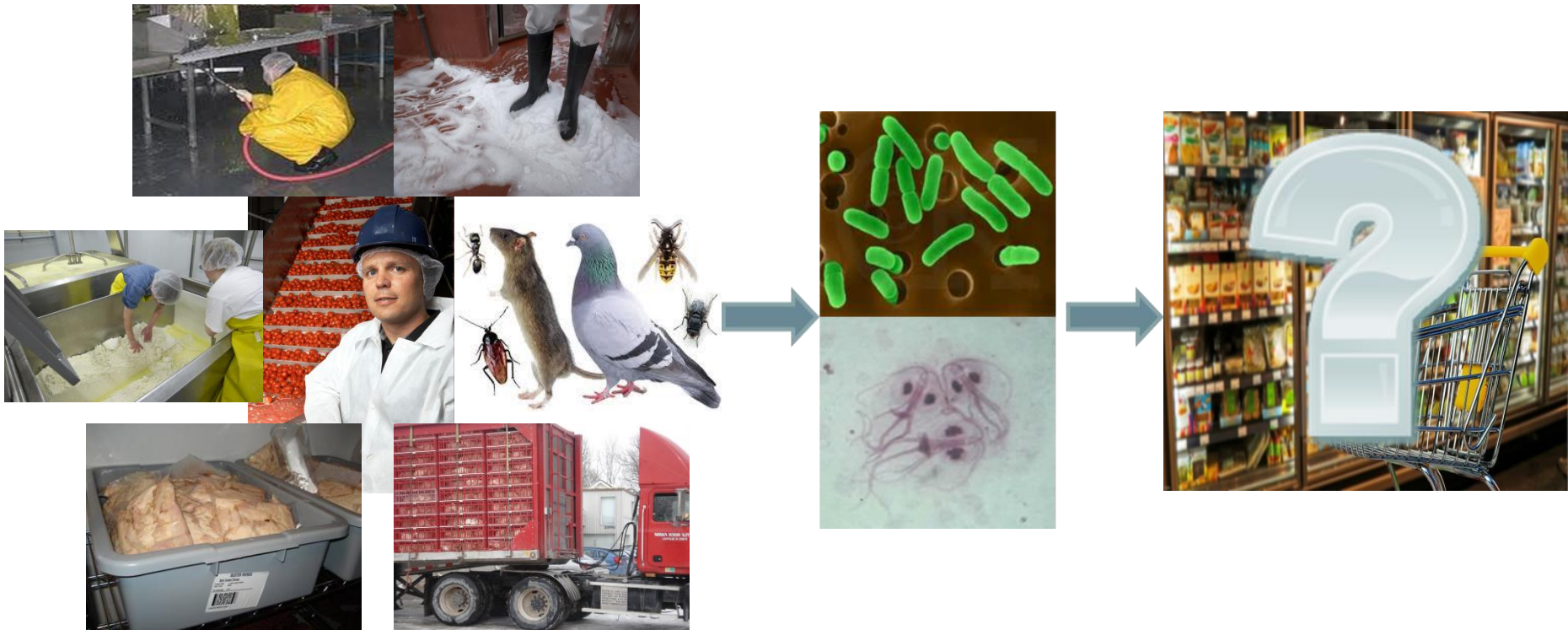
Contamination of food can occur at any stage in production...



Everything that contacts food or food related items has the potential to contaminate it

Food Contamination

...and likewise, at any stage in processing and point of sale



Why Is It Important Now?

There have been changes:

People continue to eat more “ready to eat” (RTE) products

- In particular fresh fruits and vegetables

Pathogens continue to change

- They survive better in the environment,
- More resistant, evolving

Vulnerable population to food contamination

- Aging population
- People with compromised immune systems

Better surveillance and tracking system

- Baseline studies, advanced technology, science knowledge



Relating It To The Primary Production Site

Foodborne illnesses and food recalls are more prominent now than they were in the past.

A significant number of food safety related incidents originate at the primary production site

Alliance for Food & Farming, Jan 2010



Product: Bean Sprouts
(2011)

Contaminant: *E.coli*

Reason: potential link to contaminated water that sprouts grow in

Result:

- Deaths = 46
- Sickened = 3700 +

Economics:

- Export banned
- Millions lost in weekly revenue
- Several jobs lost

Product: Cantaloupe
(2011)

Contaminant:
L.monocytogenes

Reason: insufficient cleaning and sanitizing program

- Dirty, Pooling water and difficult to clean equipment in facility

Result:

- Deaths = 36
- Sickened = 146
- Other = 1 miscarriage

Economics:

- Lawsuits, Business Bankruptcy

Product: Spinach
(2006)

Contaminant: *E.coli*

Reason:

- Contaminated irrigation water

Result:

- Deaths = 6
- Sickened = 276

Economics:

- \$350 million loss
- Reduced sales (both 1 yr post recall)

Who Expects Safe Food?

...Everyone!

Consumers:

- Increased awareness & knowledge about food safety
- More verbal about expectations for food production and sourcing food

Industry:

- Demands products to be produced using standardized practices

Retailers:

- Have set the trend, requiring proof of compliance to food safety standards
- Proof is limited to “approved” certification, through an auditing process and valid certificate

Food safety practices and programs



Definitions

Food Safety

- *The assurance that food will not cause harm to the consumer when it is prepared and/or eaten according to its intended use.*

-World Health Organization

Good Agricultural Practices (GAPs)/Good Manufacturing Practices (GMPs)/GPPs/(PCPs) – Best Practices

- Individual practices that reduce or eliminate food safety risks caused by food safety hazards
 - e.g. sanitation, worker practices, pest control

Food Safety Program

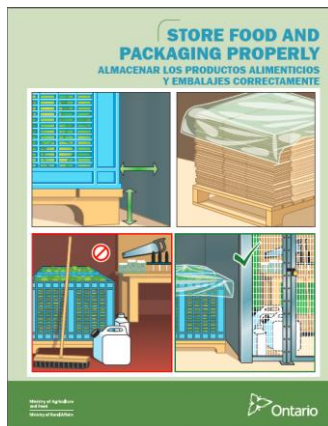
- A combination of GAPs that provide a systematic, preventive approach in controlling food safety risks

Introduction to Food Safety: GAP

Good Agricultural Practices (GAP)/

Good Manufacturing Practices (GMP)

- Good Agricultural/Manufacturing Practices (GAP/GMP)
 - Best practices designed to help reduce risks on your farm, operation or food production area.
- GAP/GMP include guidelines for the design and development of food safety policies, procedures and training practices.
- On-farm food safety programs, or processes based on GAP/GMP, provide a systematic and preventive approach in controlling food safety hazards.



Benefits

- ✓ Increased buyer/consumer confidence
- ✓ Enhanced competitiveness
- ✓ Expanded market access
- ✓ Increased brand loyalty/recognition
- ✓ Increased production/inventory efficiencies
- ✓ Improved product consistency and quality
- ✓ Supports commodity sustainability





What do you think are some challenges for implementing food safety ?



Implementation Challenges

Examples

- Ability to identify food safety risks at their operation
 - Difficult to step back and look at operation objectively
- Knowing where/how to start
- Deciphering the “code” (e.g. food safety program)
- Financial, time and available workforce
- Documentation and record keeping



Food Safety Hazards, Top Food Safety Areas of Risk & Good Agricultural Practices (GAPs)

Food Safety Hazards



Categories of Food Safety Hazards

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Exit

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The Three Categories of Hazards

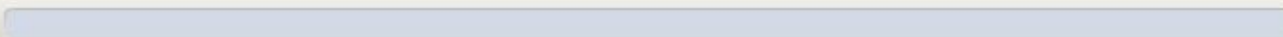
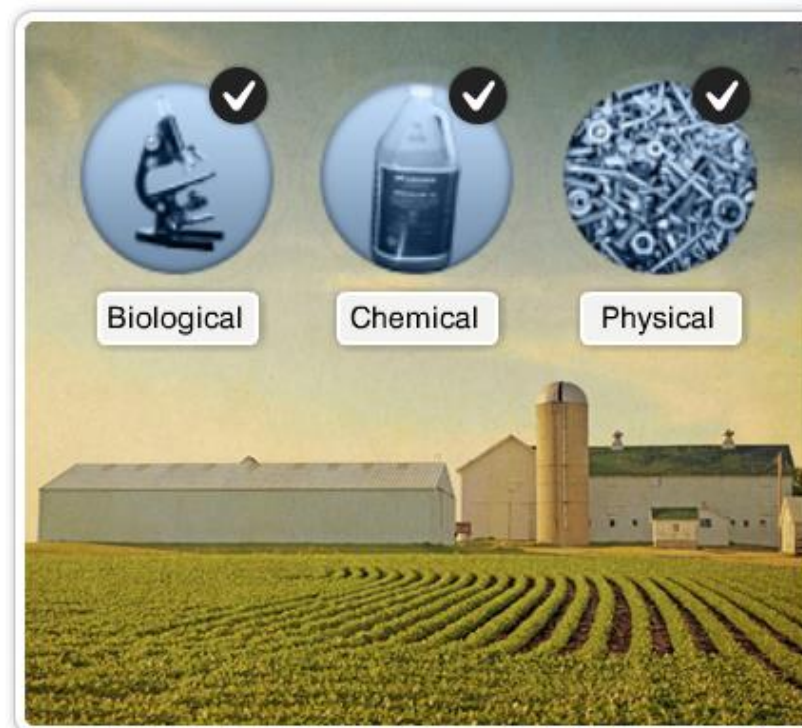
A high proportion of the population is more vulnerable to foodborne illness, especially the young, elderly, and immunocompromised individuals. These foodborne illnesses are often the result of food contamination. This contamination can be caused by many types of food safety hazards.

These hazards are grouped in three categories:

- Biological
- Chemical
- Physical

Click each of the images to start learning about these hazards.

Click **Next** to continue.



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Three Categories of Hazards

Biological hazards

- Bacteria, viruses, parasites
(most common for food related incidents)

Chemical hazards

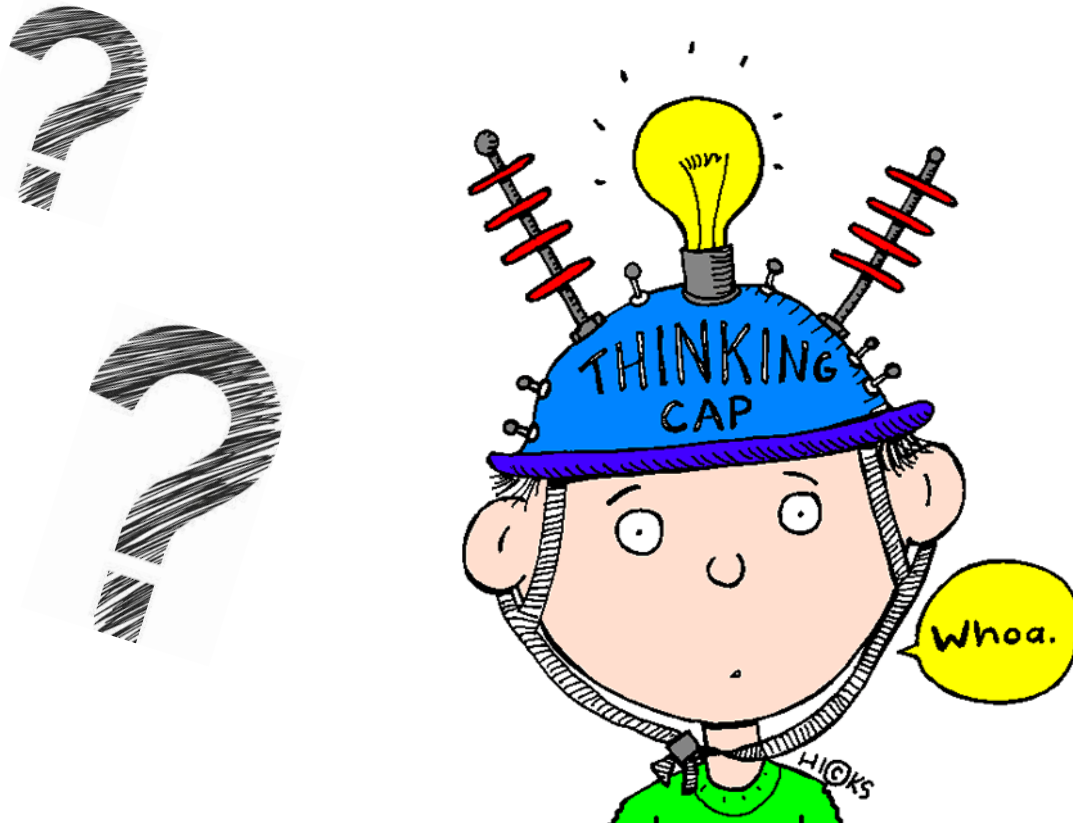
- Residues, allergens, toxins
(allergic reactions, poisonings)

Physical hazards

- Glass, metal, wood, plastic
(choking, injuries)

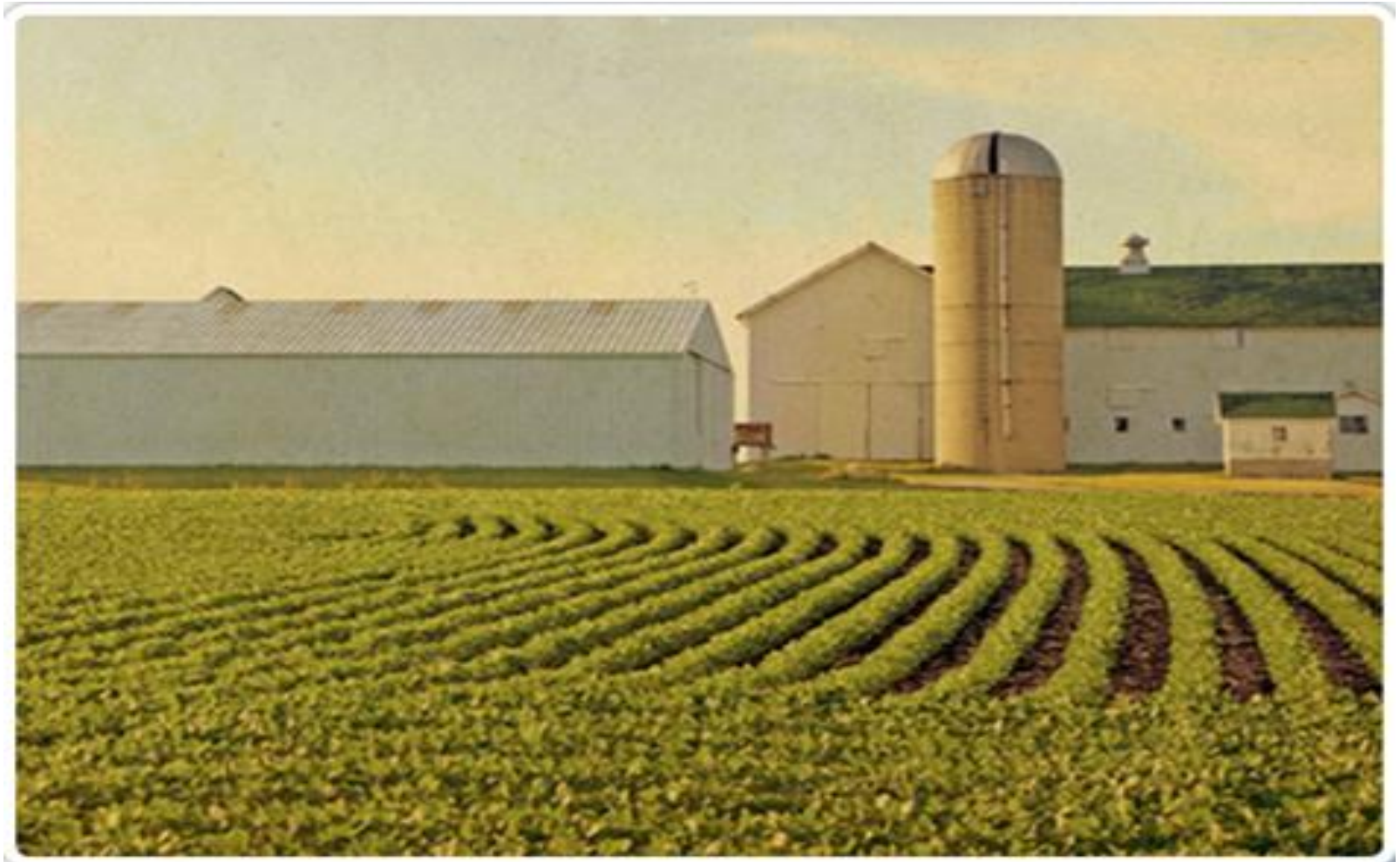
Good agricultural (production) practices can reduce
or eliminate these hazards

Can you give me an example of a food safety hazard or risk that might be present in a community garden or small production plot?



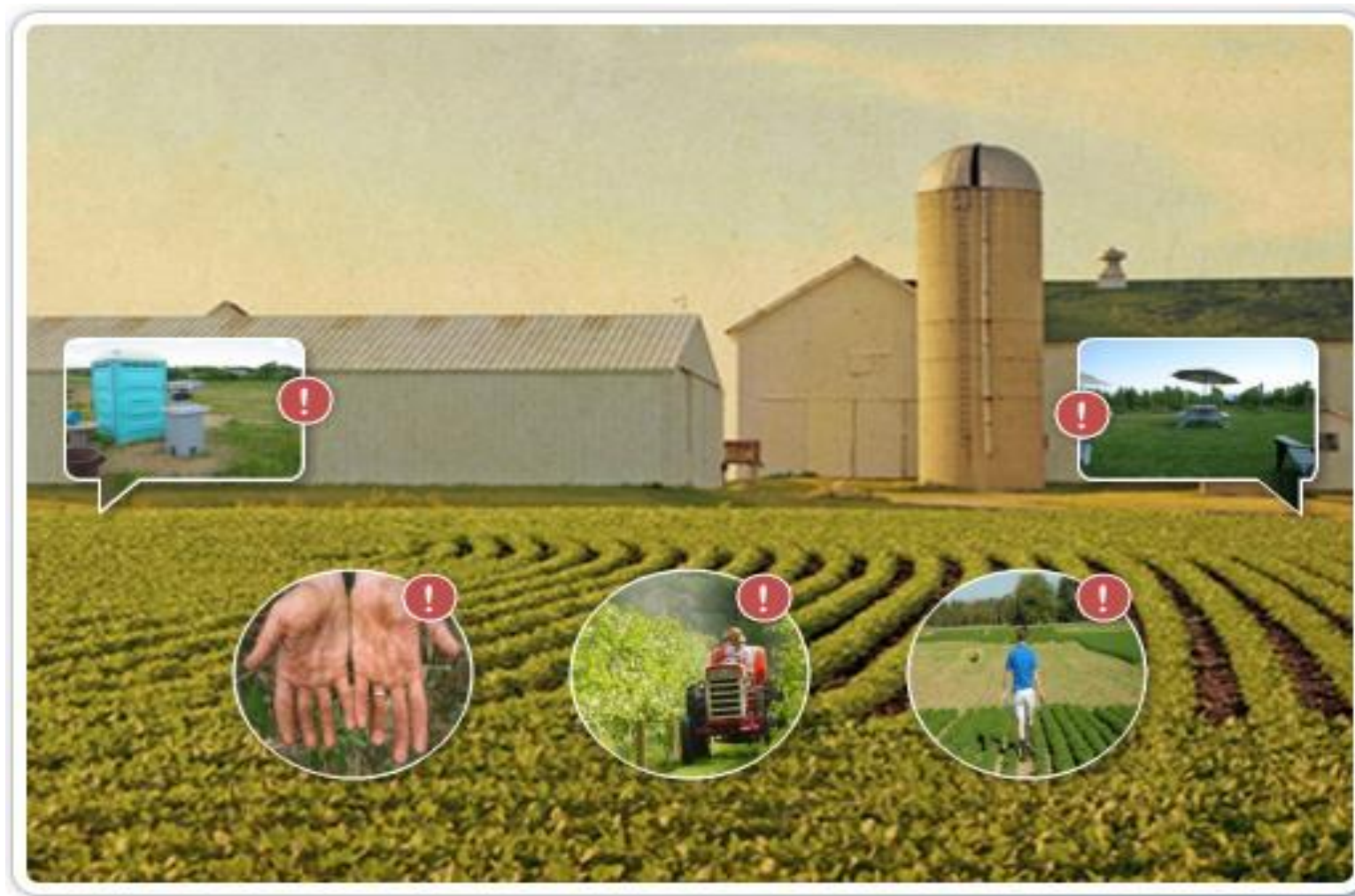
Food Safety Hazards and Risks

Look at the image, what do you see?



Food Safety Hazards and Risks

Now, take another look....what do you see?



Exercise: Food Safety Hazards



Understanding Cross-contamination

Menu | Resources | Glossary Transcript | CC | Help

Categories of Food Safety Hazards

45% COMPLETE Exit

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Soil containing recently applied manure sticks to tractor tires.



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Top 5 Areas for Food Safety Hazards

Potential for many food safety risks on-farm

Identified a “Top 5” list for areas of increased risk

Leading causes of food related incidents:

- Worker practices/hygiene
 - Water
 - Cleaning and sanitizing
 - Pest control, building maintenance and visitors
 - Soil amendments
 - Agricultural inputs
- ❖ Note: with the exception of soil amendments these risks can be applied to processors

Top 5 GAP Focus Areas

Identified Food Safety Risks	GAP/GMP – Food Safety Best Practice
<p>1. Worker Practices/Hygiene</p> <ul style="list-style-type: none">• Unclean Hands, Clothing and footwear• Unaware of cross-contamination• Injury and illness	<ul style="list-style-type: none">• Training• Designated areas for worker activities, clothing storage• Alternate duties, contingency plan
<p>2. Water</p> <ul style="list-style-type: none">• Quality: source• Use: irrigation, wash water, ice, steam	<ul style="list-style-type: none">• Reliable water source, non-variable• Suitable quality for intended use• Preferred application and timing
<p>3. Cleaning and sanitizing</p> <ul style="list-style-type: none">• Unclean or multi-use tools, equipment, food contact surfaces and containers, vehicles	<ul style="list-style-type: none">• Regular cleaning and sanitizing• Approved chemicals and products• Separate or designated tools and equipment

A Closer Look



Top 5 GAP Focus Areas Continued

Identified Food Safety Risks	GAP/GMP – Food Safety Best Practice
<p>4. Pest Control, building maintenance and Visitors</p> <ul style="list-style-type: none">• Pest presence• Exterior and interior facility breakdown or needed repairs (e.g. broken lights/bulbs, rusty equipment, or peeling paint)• Visitor access to product and other production areas	<ul style="list-style-type: none">• Pest control devices and monitoring• *Use of registered and approved agri-chemical products for crop• Building inspections and maintenance• Visitor sign-in and restricted access
<p>5. Soil amendments</p> <ul style="list-style-type: none">• Use of raw manure, composted manure and other additives	<ul style="list-style-type: none">• >120 days application to harvest• Proper composting method• Application and incorporation• Cleaned equipment

A Closer Look



Cross-contamination



Food Safety Foundations Review

13% COMPLETE

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What Is Cross-Contamination?

As you might remember from the Food Safety Foundations course, cross-contamination is:

When hazards are moved or transferred from one person, object, food or place to another.

Click the Play button to see an example of cross-contamination.



A worker touches a contaminated waste receptacle.



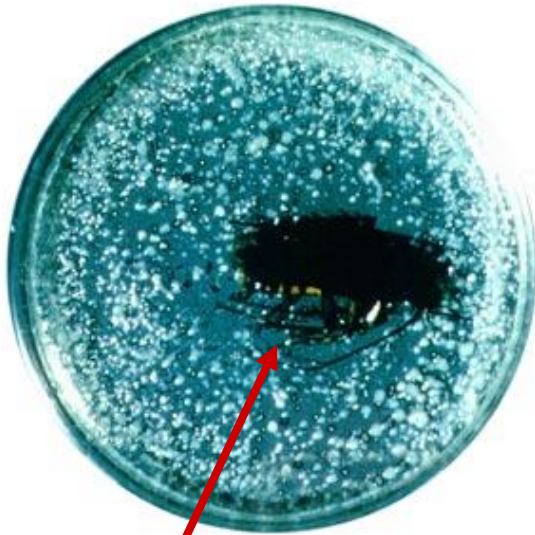
Putting it into Perspective

Which petri-dish has more overall bacteria?



Putting it into Perspective

Which is dirtier or has more “contamination”?



Cockroach

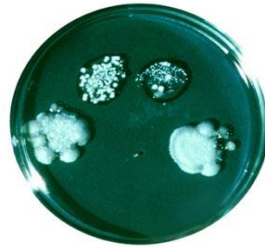


Dirty Apron

Effects of PROPER Hand Washing



1.
Unwashed
Fingers:
maximum
contamination!



2.
Fingers after a
water rinse:
moderate to high
contamination

This is usually
“good enough”



3.
After a 20 second
wash with
soap and water:
clean hands – only
resident bacteria
remain

This is necessary when
employees are ill



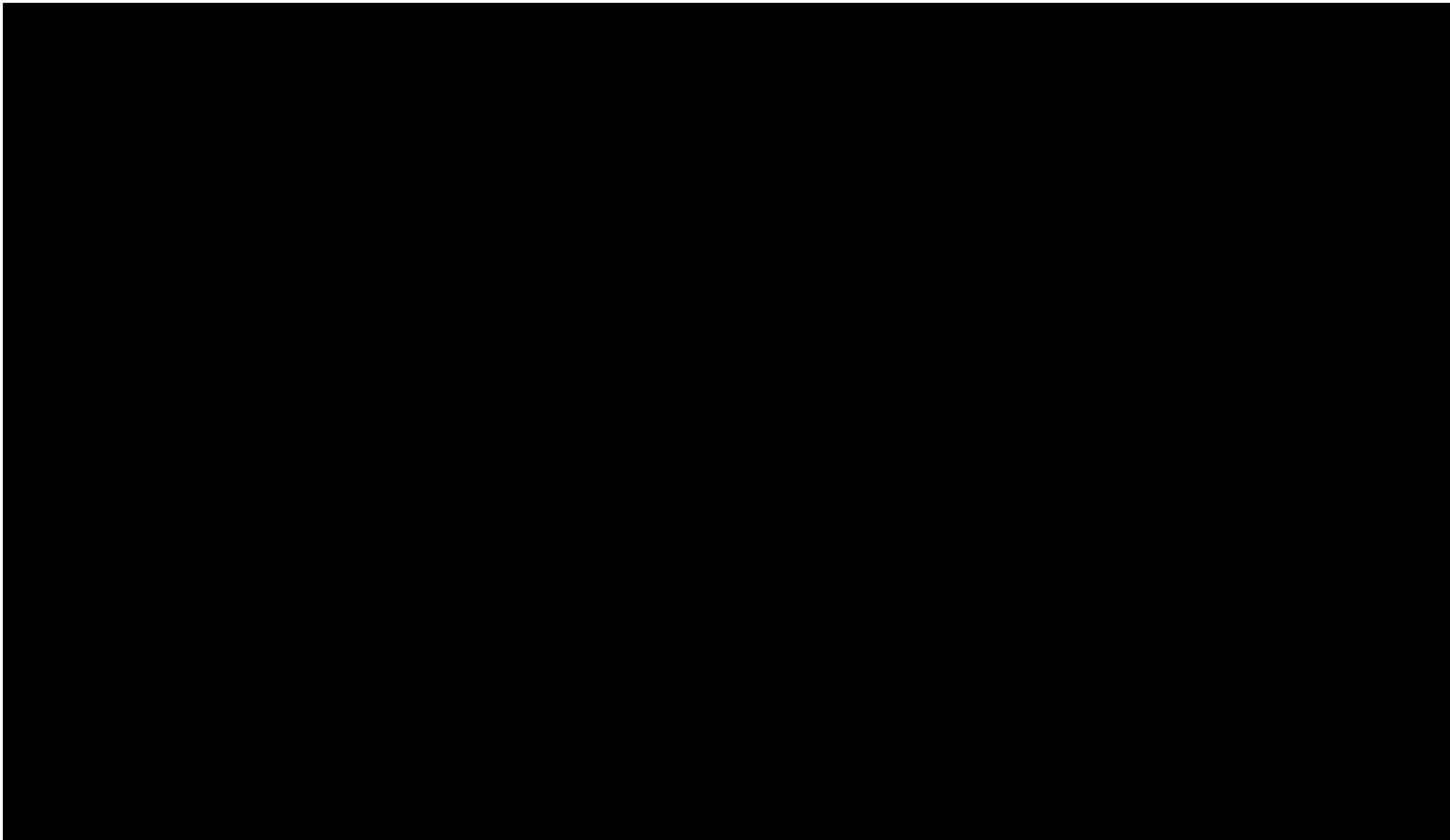
4.
After washing then
using a
sanitizer: resident
bacteria also removed

Hand Washing Demonstration

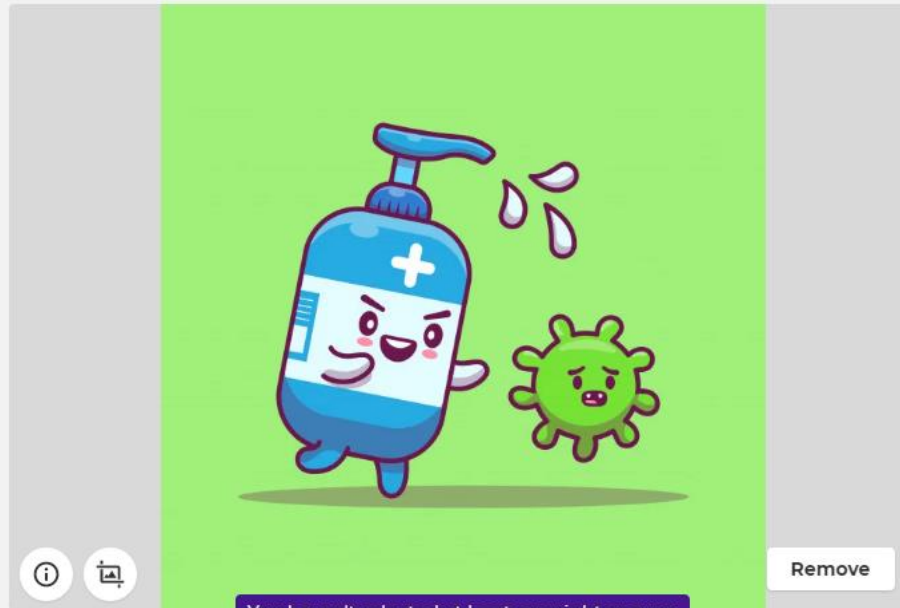
Seeing is believing...



What would your hands look like if you could see the contamination?



For the sanitizer to be effective what percent of alcohol must be present in it?



You haven't selected at least one right answer.

▲ 30%

A

◆ 40%

B

● 50%

C

■ 60%

D

Hand Cleaning Without Access to Water

Using Hand Wipes and Sanitizer

- Remove any visible dirt or debris from hands using a sanitizing or wet wipe
- Apply an appropriate amount of hand sanitizer into the palm of one hand
- Rub hands together well to create complete coverage of sanitizer over the surface of both hands (e.g., top and bottom)
- Allow hands to air dry



Impact of Improper Hand Washing

Case Study

Product: Strawberries (frozen)

Details:

900 students, teachers/staff from different schools ate packaged, frozen strawberries

Contaminant: *Hepatitis A virus*

Result:

- Deaths = none reported
- Sickened = 28 children (contracted Hepatitis A virus)

Impact of Inadequate Hand Washing

Case Study

Trace back:

- Investigation traced contaminated product to a single packing facility
- Traced back to a worker on a farm supplying the facility
- Worker tested positive for *Hepatitis A virus* having the same genes found on the contaminated strawberries

How:

- Product contaminated from workers' hands during de-stemming



Possible Contributing Factors for Contaminated Strawberries

Case Study Review

Cause of contaminated product:

- Inadequate hand washing

Why were the workers' hands a source of contamination?

- Were toilet AND hand wash facilities available?
- Were facilities accessible? If so, were they properly stocked?
- Was the facility clean or was there more risk in using the facility?
- Was the worker aware of the risks of not utilizing the facilities available?



Worker Hygiene

27% COMPLETE

Exit

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Wash Your Hands Often

You and your workers need to wash hands:

- Before starting work, after every break, and between activities.
- After using the toilet.
- After smoking, eating, or drinking.
- After blowing your nose, coughing, sneezing, or using a tissue.
- After handling equipment, chemicals, waste, or raw food.
- When hands are visibly dirty.



Click the **PDF** icon to open a Best Practices poster you can use at your farm as a reminder for when to wash your hands.



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Good Agricultural Practice: Hand Washing and Toilet Facilities





Contaminated Water Source

Case Study

Product: Baby spinach in California (2006)

Contaminant: *E. coli* O157:H7

Impact:

Deaths: **5**

Illnesses: **205**

Hospitalized: **102**

States - **26**



205 people were sickened by *E. coli* and five died after eating fresh spinach last September. The victims included 2-year-old Kyle Allgood of Chubbuck, Idaho.

26 states with illnesses
Deaths

State	Illnesses	Deaths
California	102	0
Washington	103	0
Idaho	0	5
Montana	0	1
North Dakota	0	1
South Dakota	0	1
Nebraska	0	1
Minnesota	0	1
Wisconsin	0	1
Illinois	0	1
Indiana	0	1
Michigan	0	1
Ohio	0	1
West Virginia	0	1
Virginia	0	1
North Carolina	0	1
South Carolina	0	1
Georgia	0	1
Alabama	0	1
Florida	0	1
Other states	0	0

How Could This Have Been Prevented?

Case Study

This disaster may have been avoided if:

- Water sources were assessed and tested
- Water quality met suitable standards
- Alternative water sources or irrigation methods were used
- The producer refrained from irrigating the crop close to harvest



Improper Cleaning and Sanitizing

Product: Fresh Cantaloupe, 2011

Contaminant: strains of *Listeria monocytogenes*

Details:

Millions of fresh cantaloupe distributed across the United States
Within 1 month of consumption, illnesses were reported

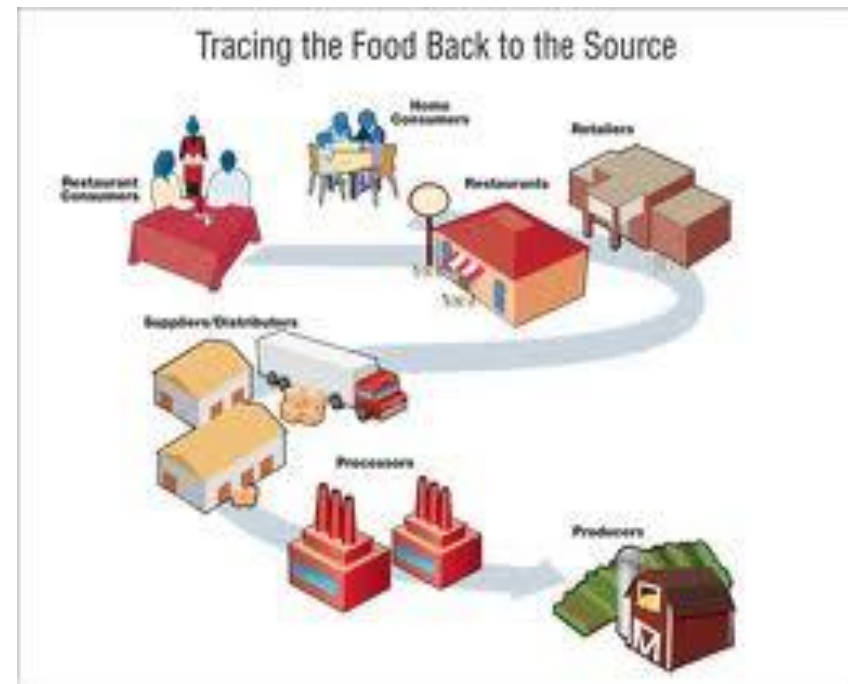


A Closer Look

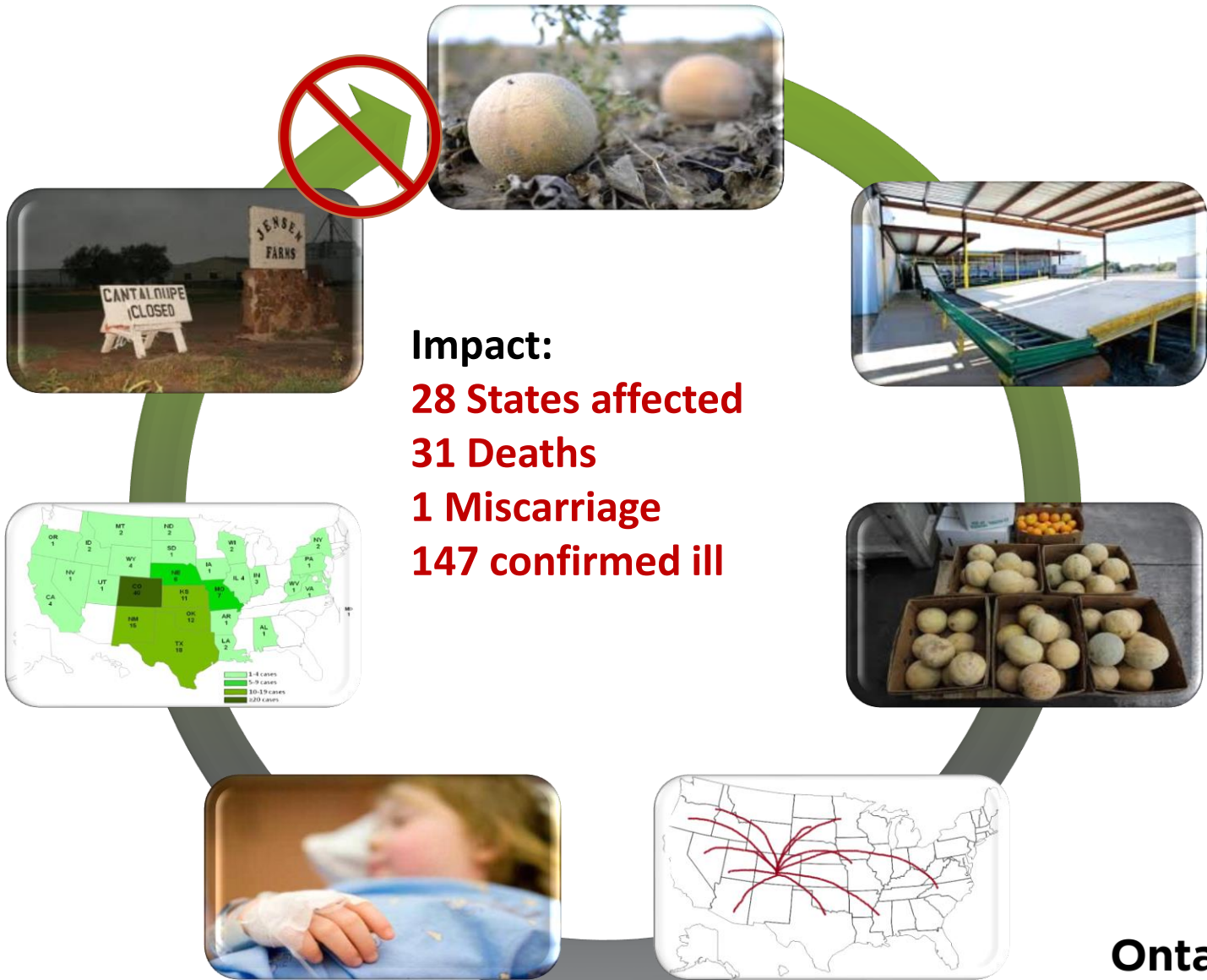
Case Study

Trace back:

- Reported illnesses linked to cantaloupe from distribution company
- 1 farm identified with contaminated product
- Further on-farm testing revealed strains of *Listeria* contamination throughout the packing facility and in the field



Life Cycle of This Tragedy



The Cause

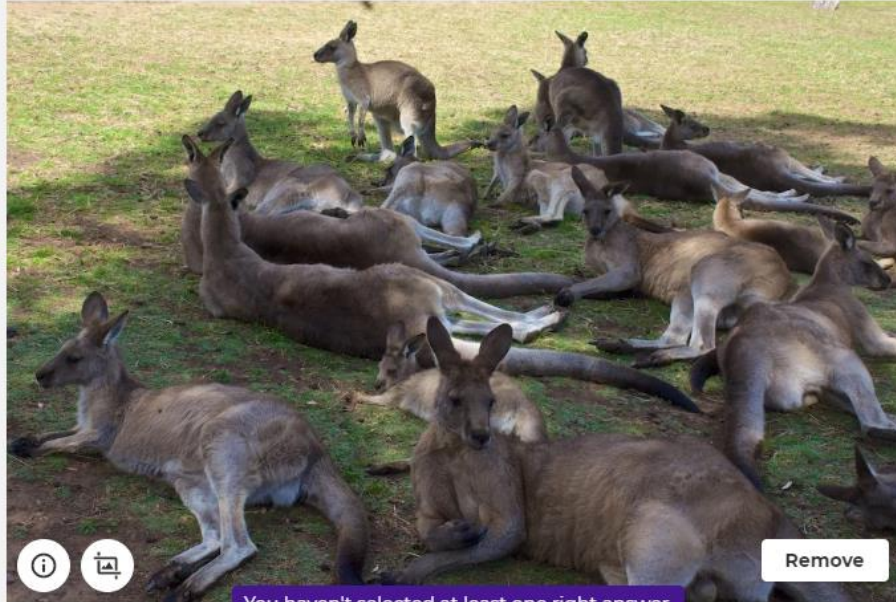
Key factors:

- Equipment previously used for another raw agricultural commodity
 - Old, difficult to clean
- Unsanitary production environment
 - Floors and surfaces not easily cleaned
 - Dirt, debris and pooling water
- Lack of regular, complete cleaning and sanitizing of the facility or equipment



Root Cause: “facility’s unsanitary conditions”

What is a group of kangaroos called?



You haven't selected at least one right answer.

▲ Brood

A

◆ Mob

B

● Pod

C

■ Herd

D

Multi-Commodity Farms

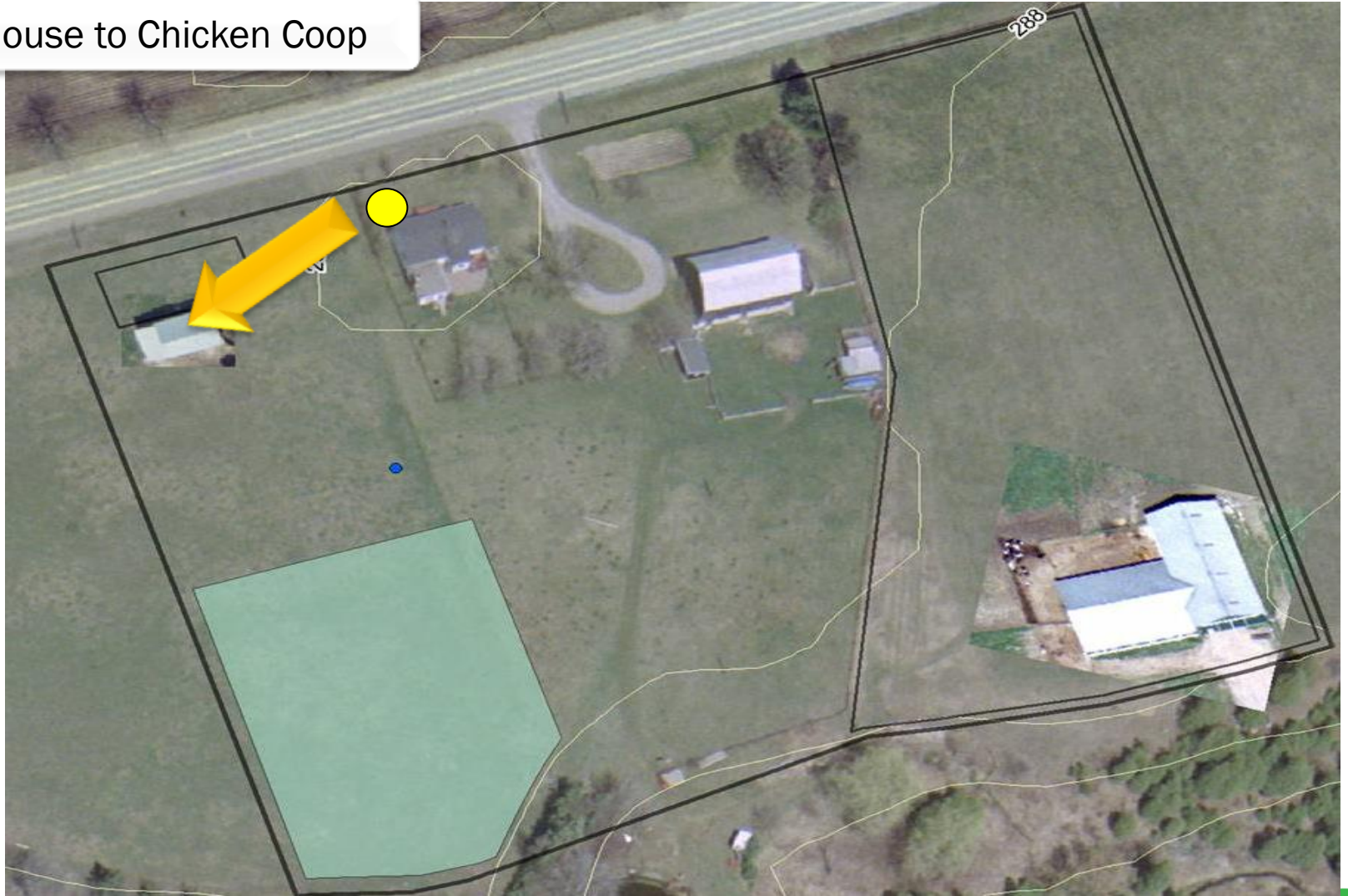
The operation:

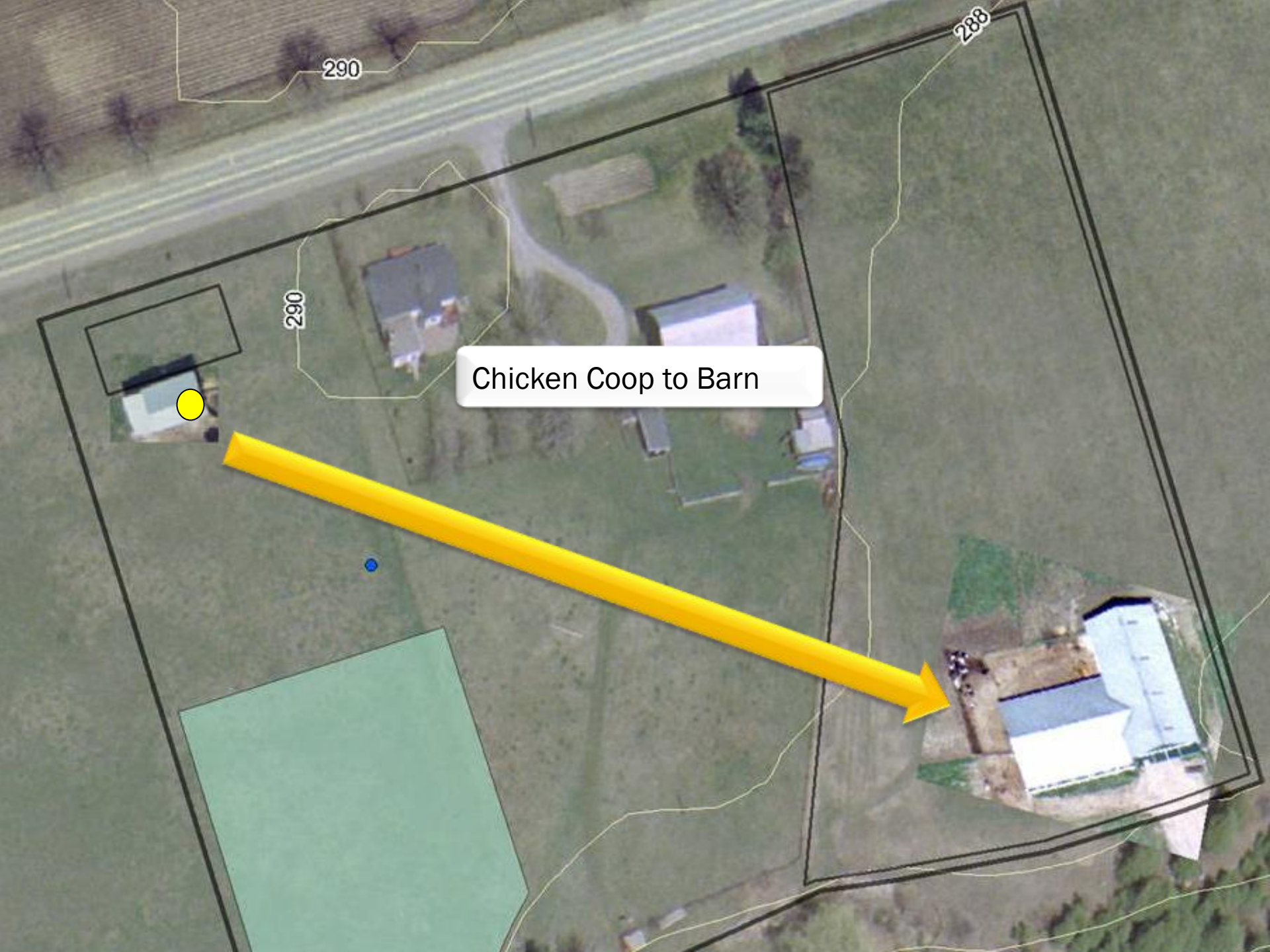
1. May involve different commodities (e.g. edible crops and livestock)
2. May have different activities occurring on farm (e.g. production, processing, agri- or culinary tourism)



All aspects/activities on the farm must be considered and how they may impact each other

House to Chicken Coop





290

288

290

Chicken Coop to Barn





290

288

290

Barn to Crops



As you leave the barn consider what you might be taking with you







Things to Remember:

- Farm gate produce should not be located close to livestock areas
- Containers:
 - Clean, appropriate containers for use and storage
 - Should not be stacked if open
 - If bottoms are not solid store off the ground
- Produce needs to be protected from the elements (sun, rain, flies, animals)





Super
Fertilizer

Time Check



Assessing Risk (s) & Understanding GAPS

Participation Exercises:

Food Safety = Risk Mitigation

? Are biological, chemical and physical hazards present in the food production area

? Is there a chance a hazard might contact the food or related food items (e.g. harvest containers, tools, storage area....etc.)

? Does the process control the identified risk

? Is the process being implemented properly

? Does the process need to be changed to improve the effectiveness



? Is there a risk that food or food related items could become contaminated

? *If there is a risk, what is the likelihood that will happen

? Is there an immediate food safety risk or could "X" lead to a food safety risk

✓ Implement best practices/preventative measures to reduce the risk

✓ Prevent the chance of food becoming contaminated and entering our food system

✓ Maintain the integrity of Ontario's food chain

Eye Spy – Is there a risk?



A. Worker Practices/Hygiene

B. Water

C. Cleaning & Sanitation

D. Pests, Building and Maintenance

E. Soil Amendments/Agricultural Inputs

Eye Spy – Is there a risk?



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Eye Spy – Is there a risk?



A. Worker Practices/Hygiene

B. Water

C. Cleaning & Sanitation

D. Pests, Building and Maintenance

E. Soil Amendments/Agricultural Inputs

Time Check

Exercise: Making the Connection

1.



2.



3.



4.



5.



6

.



Assessing the Risk: (1)



Assessing the Risk : (2)



Assessing the Risk : (3)



Assessing the Risk : (4)



Assessing the Risk : (5)



Assessing the Risk : (6)



Consider this

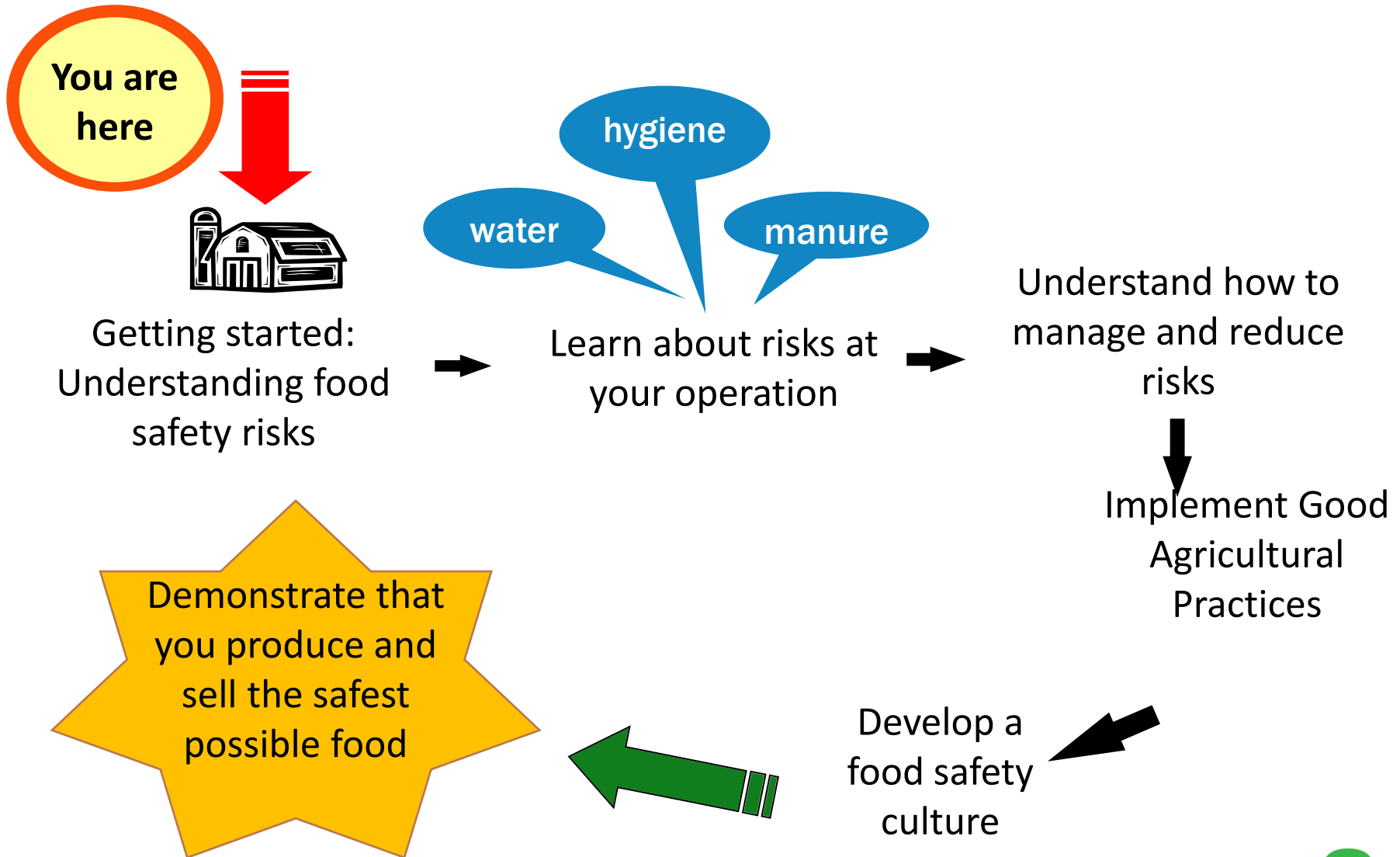
Field Harvest



Did you Know?...

Bun Bags are required when using horses for harvesting produce in the field.

Getting Started



Something to Consider

If you ask about Food Safety, answers you may hear...

“I’ve done things this way for years and no one has gotten sick.”

“I don’t have any food safety risks on the farm. The food is safe”.

“I know and understand the food safety risks on my farm. I implement practices to reduce or eliminate those risks to keep the food and the consumer safe.”

Who would YOU trust?

OMAFRA Resources



Food Safety and Traceability Courses: Online

Agriculture and Food Education in Ontario

A banner for 'Agriculture and Food Education in Ontario' featuring a gradient bar transitioning from blue to green to purple, and a collage of agricultural images including crops, a field, and a person working.

Free food safety and traceability eLearning courses

- Launched on the [Agriculture and Food Education in Ontario](http://agandfoodeducation.ca/) (<http://agandfoodeducation.ca/>) online learning system through University of Guelph
- Visit the [University of Guelph](http://www.uoguelph.ca) website
 - to register for a FREE account, and simply log in and begin your learning journey

For more information, contact:

- University of Guelph, Ridgetown Campus, rcagfood@uoguelph.ca or 519-674-1500 ext. 63295

WHEN HANDLING FOOD
AL MANIPULAR ALIMENTOS

HAND WASHING
LAVADO DE MANOS

CLEANING HANDS WHEN WATER IS NOT AVAILABLE
LIMPIEZA DE LAS MANOS CUANDO NO SE DISPONE DE AGUA

WASH HANDS OFTEN
LÁVESE LAS MANOS CON FRECUENCIA

USE TOILETS
USAR LOS BAÑOS



Ministry of Agriculture and Food
Ministry of Rural Affairs



Hand Washing Easel: an Employee Training Tool

Available in: English, French, Spanish and Chinese.



Aide-mémoire de table pour le lavage des mains : un outil éducatif pour le personnel

Il existe en anglais, en français, en espagnol et en chinois.



We can help!

Call, email or visit our website

- To get resources
- To get guidance



- Factsheets
- Articles and reports
- Procedure and Record Templates
- Video links
- Traceability

Agricultural Information Contact Centre
Toll Free: 1-877-424-1300

Thank You!

Questions?