

PSR Worker Training Notes

Presentation 01: Introduction to Produce Safety

The Produce Safety Rule applies to the growing, harvesting, packing and holding of covered produce. Your actions can directly impact food safety on the farm.

There are many parts to every job on the farm and you can prevent and reduce risk on the farm by knowing what tools are intended to be used, knowing what activities are to be conducted and which ones are not intended to be, and knowing where these activities are intended to take place on the farm.

Learning about food safety and the requirements of your job can be done through training, whether it's conducted in a classroom, by watching a video or done out in the field by your supervisor. The training you receive should be practiced everyday on the farm.

Everyone on the farm including workers, supervisors and owners all want to produce safe food. All of these jobs on the farm include food safety in their day to day activities.

Fruits and vegetables are the first step in providing food to thousands of people. Before produce gets to the end user there are many stops along the way; farm field, packing house, grocery store, and customer's family. All of these stops are potential areas where food safety can be compromised.

A hazard is something that can cause harm or sickness to the consumer and can be found in our food. The hazards commonly associated with fresh produce are biological (i.e. bacteria and viruses), chemical (i.e. grease and pesticides), and physical (i.e. wire, glass, stones).

If bad germs are added to produce at the farm, it might cause people to become sick or worse, death. There are several ways to help reduce the risk of spreading germs on the farm; keeping areas clean, providing proper hygiene/toilet facilities and break areas for workers, having a pest control program in place, avoiding standing water in the packing/storing area, and keeping working areas and materials organized.

Some of these bad germs include Salmonella, E.coli, Listeria, Hepatitis, and Norovirus. These germs can come from water that is contaminated, wildlife or domestic animals, waste or feces, and workers who are not following proper hygienic practices.

Fruits and vegetables can get these bad germs during the growing (i.e. irrigation with contaminated water or animal intrusion), harvesting (i.e. dropped produce and not using proper food safety practices), and post harvest activities (i.e. washing of produce and using unsanitary packing area/equipment).

Routes of contamination can include feces, clothing, hands, footwear, tools and equipment, and illness and injury of a worker.

It is our job to prevent these germs from getting on our fruits and vegetables by learning and using good food safety practices.

What's the difference between cleaning and sanitizing? Cleaning is the physical removal of dirt (soil) from surfaces which can include the use of clean water and a detergent. Sanitizing is the treatment of a cleaned surface to reduce or eliminate microorganisms. You cannot sanitize a dirty surface, cleaning always comes first.

If you see something that's not right on the farm, say something to your supervisor so it can be corrected.

Some parts of the Produce Safety Rule require things to be written as down in a log or record, so you may need to let your supervisor know what you observed.

Presentation 02: Livestock and Poultry

Animals can carry germs and bacteria that can make humans sick and even cause people to die. Germs and bacteria can be on animal's hides and feathers; in their blood; in their saliva; in their manure. If you have poultry or livestock at home or work on a farm that has poultry and livestock you need to be alert to the ways you may contact germs and bacteria from animals.

Bacteria and germs are very tiny and you cannot see them without a microscope. You may get germs and bacteria from animals on your hands, shoes, tools, equipment, clothes, and vehicles without being able to see them. Even if you see dirt and brush it off, germs and bacteria can still be there.

Bacteria and germs from livestock and poultry can contaminate other areas that will be in contact with produce even if you haven't been in contact with the animals. Irrigation water that had manure from cows washed into it by rain recently made many people sick. Bacteria and germs from livestock and poultry can be in ponds, lakes, streams, and rivers that are used for irrigation. Bacteria and germs from livestock and poultry can be washed into fields of produce by rain.

Touching, holding, feeding and treating wounds to care for animals at home or at work can make you to come in contact with germs and bacteria that can make people sick. Spreading, storing, shoveling manure; walking through pastures, fields where manure has been applied, and poultry or livestock housing can make you to come in contact with germs and bacteria; and/or making compost can also cause you to come in contact with germs and bacteria that can make people sick.

Activities with animals at home, at a friend's house, at a market or at work can make shoes, clothes, hands, gloves, vehicles, equipment, tools and anything that has contact with the animal, manure, saliva and/or blood dirty. Workers and visitors to farms can move the germs and bacteria from their shoes, clothes, hands, gloves, vehicles, equipment and tools to produce. Once the germs and bacteria are on the produce they can make the person that eats it sick and sometime even cause their death.

Think about what you have handled, walked through, or touched before working with produce or entering areas where produce is being grown, harvested, packed or stored. Remind coworkers to think about what they have handled, walking through, or touched before working with produce or entering areas where produce is being grown, harvested, packed or stored.

Remember that walking in the area where your chickens are kept and handling your chickens can get germs and bacteria on your shoes, hands, clothes, and any tools you use. Visiting friends with livestock or poultry or Live Bird Markets can also get germs and bacteria on your shoes, hands, clothes and any tools you use. Make sure you do not wear the dirty shoes or clothes to work, bath before going to work and don't take any equipment you use at home for your chickens to work with you.

Workers must be very careful to clean and disinfect:

- shoes;
- clothes;
- tools and equipment; and
- themselves

before entering areas where produce is:

- grown;
- harvested;
- packed; and/or
- hold;

or areas where tools and equipment and/or packing materials used for produce are stored when:

- cleaning manure out of poultry and livestock living areas;
- using tools that contact manure;
- making compost; and/or
- using tools or equipment when working with manure or compost

Some people use chickens to eat insects to keep them from eating their gardens. Many times it looks like a beautiful setting but remember that chickens are spreading manure as they walk around the garden. The manure and the chickens can spread germs and bacteria to the produce grown in the garden.

Poultry litter has manure and sometimes chicken blood in it. Walking through a poultry house can contaminate your boots/shoes, clothes and hands. Be sure to wear different shoes, clean your shoes with a brush and detergent or use a foot bath before walking in fields where produce is grown, equipment and tools used for produce are stored, areas where produce is stored and areas where produce is packed. Wear protective disposal clothing while in the poultry house and discard it in that area or change your clothes before working in produce fields or packing areas. Never use the gloves you use in the poultry house when working with produce. Always wash your hands after handling poultry.

Catching chickens to take to the slaughter plant can spread manure and feathers around. Even if you do not work in the poultry house, if you walk through the area next to the poultry house you may step in manure or come into contact with feathers and dust from the poultry house that contain germs and bacteria. The truck picking up the chickens may have germs and bacteria in the tire treads and can spread them on the farm. The equipment used to move the crates to the truck can get germs and bacteria on the tires which can be moved to areas where produce is grown. Dust from the poultry house can have germs and bacteria that blow into open packing houses that may be nearby. Remember to avoid these areas of the farm when working in the produce fields or packing house.

Tractors and equipment especially the tires must be cleaned and disinfected before using in fields where produce is grown or stored in buildings where other equipment used for produce is stored. Workers that are spreading the manure must change their shoes and clothes or clean and disinfect their shoes and clothes and wash their hands before entering fields where produce is being grown or harvested or entering packing and storage areas for produce.

Workers that clean manure out of poultry and livestock living areas; use tools that contact manure; make compost; use tools or equipment to work with manure or compost must be very careful to clean and disinfect shoes, clothes, tools and equipment, and themselves before entering areas where produce is grown, harvested, packed and held or packing materials and tools and equipment used for produce are stored. Another way to prevent moving germs and bacteria to produce is to change shoes and clothes; store equipment and tools used for compost or manure in a separate place than the equipment and tools used for produce; and always wash hands with soap and water after working with manure and compost.

Pay attention to all equipment. The tires on the overhead irrigation used in fields where manure has been applied should be cleaned and sanitized before using in fields where produce is being grown and harvested or stored in buildings where produce or produce equipment, tools or baskets are being stored.

The tractor was recently used to move manure out of livestock housing. There is manure on the bucket and tires of the tractor. There is manure dust all over the tractor. The manure or the manure dust has germs and bacteria that can get on the watermelons. The germs and bacteria will stay on the watermelons and make people sick when they eat them.

Trucks, ATVs, Utility vehicles and other vehicles used on a farm can also be carriers of germs and bacteria from animals. Never drive into animal areas and then drive into produce harvest or packing areas without cleaning and disinfecting the vehicle. Your farm may have vehicles dedicated for specific activities to prevent carrying germs and bacteria to growing and packing areas for produce.

Don't handle money then handle produce. Never lay money or anything else that is dirty on produce. Be careful with produce that has dirt on it coming into contact or being close enough to berries or other fruits or vegetables that are hard to wash and are eaten raw.

The same biosecurity practices that keep disease away from livestock and poultry can be used to prevent germs and bacteria from getting on produce. Always bathe and wear clean clothes to work and keep any items you bring to work clean. If the farm where you work has livestock and poultry, be aware of how you may carry germs and bacteria from the livestock and poultry to the produce areas. This is important even if you do not work with the livestock/poultry directly. Where possible wear different boots or shoes when working with poultry, livestock, manure or compost. If that isn't possible, wear disposable booties while working with livestock or poultry and clean and disinfect your shoes before and after putting the booties on. If you can't wear clean clothing after working with livestock or poultry, wear disposable clothing over your clothes while working with animals and dispose of it before you leave the animal areas. Always follow the biosecurity procedures for the farm where you are working.

Presentation 03: Pre-harvest Activities

How you apply untreated soil amendments of animal origin can have potential risk of produce contamination. Don't overhead apply untreated soil amendments of animal origin to the soil, these amendment should be incorporated within the soil with in an interval that doesn't pose a food safety risk.

Incorporating untreated soil amendments into the soil helps to lower the risk of potential contamination to covered produce.

Side dressing with soil amendments of animal origin can be a potential source of contamination to the edible portion of covered produce.

Application of soil amendments of animal origin should not pose a risk of contamination. Manure shouldn't be applied to the produce that is ready to be harvest. Implement an interval that prevents this contamination.

It is best to incorporate manure into the soil when it doesn't pose a risk to covered produce. Applying manure to non covered produce (e.g. covered crop, row crops, etc) helps to prevent this contamination but also still allows the nutrients to be applied to the land.

Properly composting soil amendments of animal origin can help to reduce to microbial risk associated with it. However, once a product is properly composted it is important to keep it free from contamination. The finished compost should be stored or covered so that it doesn't become re-contaminated by either animal feces or the addition of another material (i.e. water, straw, etc).

Although these piles of compost were properly composted, they are no longer considered treated. They are unprotected, leaving them vulnerable to contamination; bird feces, untreated waste, etc.

This compost pile looks to be protected from any potential points of contamination and is located away from any fields, water sources or water distribution system.

Equipment used on both covered and non covered produce should be cleaned and sanitized in between use. This helps to prevent the spread of potential contamination from non-covered produce activities to covered produce activities.

Equipment is not just tractors, wagons, etc, but also applies to any tools used to perform a covered activity and comes in contact with produce (e.g. knives, shovels, baskets, etc). Clean and sanitize equipment between the harvesting of non covered produce and covered produce.

Perform a pre-harvest assessment to identify potential animal intrusion and animal feces in the field and determine if these areas can be harvested from. If problems are found, please inform your supervisor so that corrective actions can be made to minimize the potential risk to the produce.

When animal feces are found, incorporate steps into your farms policy to minimize the risk from animal fecal contamination. Don't harvest any produce contaminated, determine a no-harvest buffer, and determine what to do with contamination and document. Make sure to always inform your supervisor of what you found.

Maintaining the grounds surrounding the farm to minimize sources of contamination, remove trash from fields to avoid them becoming a source of produce contamination. Don't store trash in a location that could contaminate produce, water sources or water distribution systems.

Know your water distribution system and identify any hazards and steps needed to be taken to minimize any known risk.

Inspecting your water system prior to the season will help you to identify any deficiencies (leaks, malfunctioning equipment) in your system and help to minimize any risk associated with these problems before they contact the produce.

The first step in maintaining your irrigation system is performing a visual inspection, checking for any worn out equipment, leaks, etc. Next, repair any problems identified during inspection.

Flushing and cleaning your irrigation lines at the end of the season can help to remove any build up or unwanted material such as bacteria that could pose a risk to your produce. Flushing your lines with an acid and then rinsing afterwards can help with this.

Know your water source (Surface water, well or municipal), perform routine inspection and maintenance.

Water can be a source of contamination, think about how that water is used and how it is applied to your crops to minimize the risk associated with it. Take efforts to minimize any risk associated with your water. From pictures, standing water around your well is not good, try to remove this water and correct design of your well. Removing the cows from the pond and moving them away from surrounding areas will minimize the risk.

Contamination in the soil (flooding, heavy metal contamination) can occur, know the history of your land and implement practices to minimize any risk associated with it.

Presentation 04: Harvest Activities

Like indicated before, we will cover several topics but all will be concentrated on finding out that what you will learn here will allow you to recognize that during harvest activities:

- they might be relevant sources of food borne pathogens,
- what might be routes of contamination (water, workers health and hygiene, wild and domesticated animals, waste -BSAAO),
- how you can help to prevent any potential source or route to contaminate the produce you are harvesting, and
- if there is a potential contamination, how you can assist your supervisor on correcting the situation to make sure the produce does not end up on the hands of a consumer.

It is important to pay attention to the instructions provided by your supervisor prior to start the harvest, during the harvest, before the breaks, after the breaks, and at the end of your harvest. Your supervisor might be providing you with new relevant information regarding the situation at the field and if any changes on the harvesting activities might be necessary to follow to avoid harvesting produce that should not be harvested.

And always notify your supervisor if you notice that something is not right!

Dropped produce is either produce that drops to the ground prior to harvest or during harvest activities, and it is also produce that touches the ground or it is still attached to the plant before harvest activities start. You should not be adding dropped produce to the basket that will end up for sale to the consumer.

Dropped produce is not produce that is intended to grow in the ground or on the ground, such as carrots or melons. However, strawberries should not be touching the ground directly and then harvested for consumption.

- Produce that touches the ground might get contaminated with pathogens;
- Produce might be damaged when it drops to the ground allowing pathogens to access the internal part of the produce;

If your farm uses plasticulture, and the produce still attached to the plant touches the plastic, not the ground, that produce is not considered dropped produce because there is a barrier (plastic) between the ground and the produce.

- Relevant sources of food borne pathogens: animal droppings that might be on the ground;
- Routes of contamination (water, workers health and hygiene, wild and domesticated animals, waste - BSAAO): dropped produce ends up on the harvest totes and might contaminate other produce;
- How you can help to prevent any potential source or route to contaminate the produce you are harvesting: not picking dropped produce; reducing the likelihood of creating dropped produce; “skirting” the plants to avoid produce to touch the ground when still attached to the plant;
- If there is a potential contamination, how you can assist your supervisor on correcting the situation to make sure the produce does not end up on the hands of the consumer: pay attention to your supervisor’s information on dropped produce.

Visually contaminated produce

We are asking you to be vigilant and pay attention if there is animal activity on the produce.

Animal activity sometimes is easy to identify because we see their activity on the produce: we observe when produce has animal droppings on it, such as bird or deer feces

- Relevant sources of food borne pathogens: animal
- what might be routes of contamination (water, workers health and hygiene, wild and domesticated animals, waste -BSAAO),
- how you can help to prevent any potential source or route to contaminate the produce you are harvesting, and

If there is a potential contamination, how you can assist your supervisor on correcting the situation to make sure the produce does not end up on the hands of the consumer.

Animal activity

We also would like you to pay attention if there is animal activity around the produce when we cannot observe animal droppings either because of the color of the dropping being masked by the color of the produce or because the way we harvest does not allow us to pay close attention if the produce has animal droppings on it.

When this happens, we rely on visual clues that might indicate that animals were around or on the produce and we need to be properly trained to identify if the produce that shows signs of animal presence should or should not be harvested.

Those visual clues can be animal tracks, damaged produce, and animal feces around the perimeter of the harvest areas

- Relevant sources of food borne pathogens: animal droppings;
- Routes of contamination (water, workers health and hygiene, wild and domesticated animals, waste - BSAAO): birds, deer, hogs, dogs, livestock;
- How you can help to prevent any potential source or route to contaminate the produce you are harvesting: scouting the areas prior to harvest to reduce the likelihood of harvesting potentially contaminated produce;
- If there is a potential contamination, how you can assist your supervisor on correcting the situation to make sure the produce does not end up on the hands of the consumer: inform your supervisor of animal activity and discuss why produce should not be harvested.

Damaged produce

Not only for quality reasons, but for public health reasons, we should not harvest produce that is damaged with cuts, bruises, or abrasions. Pathogens can enter the produce through damaged areas, and might stay there and produce diseases to the consumer of the produce. We should also limit the handling of the produce and be careful when we harvest to avoid damaging the produce with the harvesting tools, or the harvesting totes (we will talk about this on the next slides).

- Relevant sources of food borne pathogens: animal droppings
- What might be routes of contamination (water, workers health and hygiene, wild and domesticated animals, waste -BSAAO):
- How you can help to prevent any potential source or route to contaminate the produce you are harvesting: not harvesting damaged produce
- If there is a potential contamination, how you can assist your supervisor on correcting the situation to make sure the produce does not end up on the hands of a consumer.

Harvest totes

Your harvest totes can contaminate and/or damage produce if they are not properly clean and if they are not properly maintained. Totes that are damaged can cut the produce with sharp edges, or allow dirt to stay on the areas that cannot be properly clean. You should pay attention to the harvest totes and avoid using them if they seem to be dirty or if they can potentially damage the produce that you are going to be putting in it.

At the end of the harvest day or during a break, you might need to clean your harvest totes. Pay attention to the instructions of your supervisor on how and how often you need to clean the harvest totes. If someone else is cleaning the harvest totes, make sure that you are visually inspecting that the harvest totes are free of

debris prior to start adding produce in it. If the totes does not look to be clean, do not use it, and inform your supervisor about it.

Your supervisors have already mentioned where and how the harvest totes are to be stored at the end of the harvest, follow the instructions. If the totes are not properly stored, animals could contaminate them.

- Relevant sources of food borne pathogens: animal
- What might be routes of contamination (water, workers health and hygiene, wild and domesticated animals, waste -BSAAO),
- How you can help to prevent any potential source or route to contaminate the produce you are harvesting, and
- If there is a potential contamination, how you can assist your supervisor on correcting the situation to make sure the produce does not end up on the hands of the consumer.

Harvest tools

The same way as with your harvest totes, harvest tools can contaminate the produce that is being harvest if they are not properly maintained and cleaned. It is important to avoid contaminating the tools that you use for harvesting when you take a break to use the restroom, or when you break for lunch, or at the end of the harvest. Temporary storage of the harvest tools should be done in a manner that does not contaminate the tool, not on your pants or shirt pockets, the ground, or leaving them on the plants. Follow your supervisor instructions on how to properly temporarily store the harvest tools.

At the end of the harvest, properly clean and store the tools that you are using to avoid them to become a source of contamination.

- Relevant sources of food borne pathogens: animal
- What might be routes of contamination (water, workers health and hygiene, wild and domesticated animals, waste -BSAAO),
- How you can help to prevent any potential source or route to contaminate the produce you are harvesting, and
- If there is a potential contamination, how you can assist your supervisor on correcting the situation to make sure the produce does not end up on the hands of the consumer.

Pest control

- Relevant sources of food borne pathogens: animal
- What might be routes of contamination (water, workers health and hygiene, wild and domesticated animals, waste -BSAAO),
- How you can help to prevent any potential source or route to contaminate the produce you are harvesting, and

- If there is a potential contamination, how you can assist your supervisor on correcting the situation to make sure the produce does not end up on the hands of the consumer.

Presentation 05: Post Harvest Activities

The same hazards that may contaminate produce in the field may do so post-harvest as well (i.e. workers, water, wildlife and waste).

Red – Workers feet on conveyors

Yellow – Is a stacking tool, shows the pallets are being worked with product to ship

Floor- Employee drinks, trash litter the floor.

This is a grading line, the employees shoes if not in sanitary condition could contaminate the produce on the line.

Workers should store tools/clothing correctly in a sanitary way.

Workers should store produce in a sanitary way. In this picture produce is stored directly on the floor and produce is stored under the refrigeration unit – which is an additional potential problem if drip pan doesn't catch water.

Workers should store personal food and drinks separately from produce. Check conditions of storage areas prior to loading. Another issue from this picture is that the cooler is in disrepair.

Workers should not store product directly under the refrigeration unit if condensation is an issue.

Workers should not store clean packaging materials directly on the floor or in an unsanitary manner. This picture shows storing food contact cardboard on the floor directly or in an unsanitary condition in an outbuilding.

Workers should identify and report any potential wildlife issues they find in the packing area to their supervisor. Look up and down if birds are found in the rafters.

Waste should be collected and stored in a sanitary manner so that it doesn't cause a potential for contamination.

Waste contamination in the field can be moved to the packing area. Be careful about which vehicles can enter packing area to avoid contamination from field.

Always follow instructions from management on what water to use and how to use it. Water for wash needs monitoring according to the farms procedures (temp, ph, concentration, turbidity, etc). Speak with your supervisor to determine what needs to be monitored in your water.

Keeping things clean is keeping things safe. In this picture, container is dirty, table is dirty and chemicals are stored on the table where the produce is going, this is not safe.

Cleaning and disinfecting equipment:

First- Wash with clean water to remove soil and produce residue that may have built up. Try to get off as much as the built up plant matter/soil/decay with the running water first

Second- Use soap, clean water and a brush if necessary to loosen material that may be built up on what you are cleaning.

Third- Rinse the surface with clean water after it is scrubbed.

Fourth- Prepare the correct amount of sanitizer that will be added to the water.

Fifth- Immerse the container in the sanitizer and water solution.

Sixth- Place the cleaned and sanitized containers off of the ground to air dry. Do not nest/stack the containers wet, only stack after they are dry.

Use the same procedure to clean and sanitize tables, production lines, etc.

Different areas of packinghouse may require a different frequency of cleaning and sanitizing.

Examples of Zone 1 or TOUCHING PRODUCE: Conveyor belts, brushes, bumpers, tables, tubing, utensils (knives, cutting boards), ice makers and ice storage bins, gloves, aprons.

Zone 2: Non-product contact areas that are adjacent to contact surfaces. Examples of Zone 2: Lubricants, equipment framework supports, drip shields over the produce, lights, water nozzles, equipment buttons, phones (workers will be checking their phones before touching produce), cleaning tools (brooms, mops, buckets, sponges).

Zone 3: Non-product contact areas within the packing/processing area that are removed from produce contact surfaces BUT could result in cross-contamination. Examples of Zone 3: Floors, hoses, condensate, forklifts, trash cans, walls and ceilings, pallets, drains

When you are cleaning one area, be careful not to contaminate another area. Cover or remove equipment around the area you are cleaning.

Ensure that the vehicles you are loading produce into are in clean and sound condition. Trailer on left is in disrepair, trailer on right clean.