Harvesting Safe
Arizona Leafy Greens

Arizona Leafy Greens Food Safety Training Kit

Arizona Leafy Green Products Shipper Marketing Agreement, 1688 W. Adams St. Phoenix, AZ 85007
Food Safety Consulting & Training Solutions, LLC, 1320 Goodyear Dr. Suite 205 El Paso, TX 79936

Introduction

The Arizona Leafy Greens Food Safety Training Kit (AZTK) was developed to establish a uniform food safety training program for the industry. This program provides strategies that can be used with the employees at the Leafy Greens growing and harvesting operations. The AZTK content covers the employee training areas suggested in the "Commodity Specific Food Safety Guidelines for the Production and Harvest of Lettuce and Leafy Greens."

The AZTK includes five lessons designed to provide employees in the leafy greens industry with the knowledge, skills and a comprehensive explanation of the food safety rules and policies that they need to follow at work. However, each company is different and different rules and policies may apply at each work site.

Before organizing a program, the instructor should become familiar with the lessons and how to present them. Therefore, it is advisable to read this entire instructor's guide carefully and understand the content and organization of the program.

The AZTK contains the following components:

Section 1. Overview of the Arizona Leafy Greens Food Safety Training Kit

Section 2. Instructor's Guide

Section 3. Lesson Plans

- Module 1- The ABCs of Leafy Greens Safety
- Module 2- Prevention and Control of Leafy Greens Contamination
- Module 3- Personal Hygiene Practices in the Field
- Module 4- Handwashing and Glove Usage
- Module 5- Cross-Contamination in the Field

Section 4. Additional Resources

The supplementary slide presentations are included in two formats: Microsoft PowerPoint, and a flipchart to use at a tailgate meeting at the ranch ("Tailgate Food Safety Training Kit.")

Acknowledgements & Credits

The Arizona Leafy Greens Food Safety Committee would like to acknowledge and thank the following individuals for reviewing the Leafy Greens Food Safety Training Kit and providing technical information, training insights and practical suggestions for improvement of this kit.

Vicki Scott
President
Scott Resources

Mike Villaneva
Technical Director
CA LGMA

Arizona Leafy Greens Food Safety Committee 2019-2020
C.R. Waters – Chair, Clint Duke, Alex Muller, Kristina Nunes, and Kami Weddle.

AZ Leafy Green Technical Subcommittee 2019-2020
Vicki Scott – Chair, Amanda Brooks, Bob Mills, Kristina Nunes, Jeremy Vanderzyl, Kevin Watson, and Kami Weddle.

The Arizona LGMA also extends appreciation and thanks to the following companies for allowing their operations to be photographed.
(Please note: All "incorrect" photos were staged in the field.)

Amigo Farms, Inc. ● **Dole Fresh Vegetables** ● **Taylor Farms**

Teressa Lopez – AZ Leafy Green Marketing Committee Administrator

Ed Foster – Assistant Director ADA, Supervisor of Standardization

Mark Killian – Director, Arizona Department of Agriculture

The Arizona Leafy Greens Food Safety Training Kit was prepared by:

Sergio Nieto-Montenegro, Ph.D., Jose Luis Almanza & **America Chavez-Martinez, Ph.D.**

Food Safety Consulting & Training Solutions, LLC.
1320 Goodyear Dr., Suite 205. El Paso, TX 79936.

Luisa Ortega, Adrian Mojica, Salvador Aguilar, Valeria Aguilar, Ana Renteria, Edwin Torres, Ivette Ramirez, and Rocio Ortega are acknowledged for assistance with graphics, editing, translating and formatting.

Table of Contents

Harvesting Safe
Arizona Leafy Greens

Section 1

Overview of the Arizona Leafy Greens Food Safety Training Kit

Overview

The Arizona Leafy Greens Food Safety Training Kit (AZTK) was developed with the sponsorship of the Arizona Leafy Green Products Shipper Marketing Agreement (AZ LGMA). The lessons are designed to provide employees in the industry with the knowledge and skills they need to minimize the risk of product contamination. The lessons are presented in English and Spanish.

Target Audience

The AZTK was developed for production supervisors, quality control personnel, extension educators, and/or industry consultants who wish to conduct food safety training at leafy greens farms. The lessons are specifically targeted at workers who handle leafy greens before, during, or after harvest. However, others who may come into contact with leafy greens or who are key in the growing process should receive food safety training. Everyone in the farm who has contact with leafy greens needs to receive training in accordance with their responsibility. We recommend that supervisors, managers and owners also participate in the training; this is an excellent way to send a strong message to employees that the farm is seriously committed to its food safety program.

The lessons in this kit were specifically developed to take into account cultural attributes of Hispanic workers who make up the majority of employees in the Arizona leafy greens industry. Thus, they are presented in both English and Spanish. Uniform application of the lessons in this kit makes it possible for every employee in the industry to receive the same basic food safety training, whether presented in-house by supervisors or by external trainers.

Goals and Objectives

The overall goal of the program is to ensure the wholesomeness and safety of fresh leafy greens.

The specific objectives are as follows:

1. Provide training materials on food safety and hygiene practices that are specifically designed for workers in the Arizona leafy greens industry.
2. Present materials (in English and Spanish) that take into account specific cultural attributes of Hispanic leafy greens handlers.
3. Help the leafy greens industry satisfy third party audit training requirements for leafy greens growers.

Modules Summary

The following lessons are included:

Module 1. The ABCs of Leafy Greens Safety.

In this module, the instructor will describe the concept of food safety and its importance to the leafy greens industry. Participants will learn about food safety, foodborne illnesses and their symptoms, as well as the impact that foodborne ilnesses can have on work time, job security and family income. The instructor will also discuss an actual foodborne illness outbreak to explain what foodborne illness outbreaks are, and the effects and consequences outbreaks can have on the leafy greens industry.

Module 2. Prevention and Control of Leafy Greens Contamination

In this module, the instructor will explain what a contaminant is and help participants to identify the three different types of leafy greens contaminants and how they may affect leafy greens consumers. Examples of contamination events will be used to demonstrate the need for basic controls to protect leafy greens from contamination.

Module 3. Personal Hygiene Practices in the Field.

The instructor will describe the concept of personal hygiene and its importance to food safety. This lesson covers three important personal hygiene topics impacting the production of safe leafy greens: 1) protective clothing, 2) personal practices, and 3) personal health and wounds.

For each of these areas, the instructor will explain and demonstrate appropriate procedures and behaviors for lowering the risk of leafy greens contamination. The module will teach proper personal hygiene rules and procedures that need to be followed in the field to protect leafy greens from contamination.

Module 4. Handwashing and Glove Usage.

During this lesson, the instructor will explain the importance of handwashing and the correct procedure for handwashing that needs to be used at work. This lesson also describes the proper use of gloves and hand sanitizer to prevent leafy greens cross-contamination. For each of these areas, the instructor will explain and demonstrate appropriate procedures and behaviors for lowering the risk of leafy greens contamination.

Module 5. Cross-contamination in the Field.

The instructor will describe the concept of cross-contamination, its causes, why it is a problem for leafy greens and its importance of preventing cross-contamination to ensure food safety. Prevention strategies and ways to prevent cross-contamination are discussed. The instructor will describe situations that can happen at the ranch that might lead to product contamination. These events include animal intrusion, glass in the field, blood in the harvested product, and unsuitable packaging materials. This module also reviews food safety strategies for preventing cross-contamination. For each of these areas, the instructor will explain and demonstrate appropriate procedures and behaviors required for lowering the risk of leafy greens contamination. Harvesters will also be trained to:

(1) Recognize leafy greens that must not be harvested, including those that may be contaminated with known or reasonably foreseeable contaminants.

(2) Inspect harvest containers and equipment to ensure that they are clean, functioning properly, and maintained so as not to become a source of contamination of covered produce with known or reasonably foreseeable contaminants.

(3) Correct problems with non-compliant harvest containers or equipment or report such problems to the foreman (or other responsible party, as appropriate to the person's job responsibilities).

Additionally, employees will be trained to take measures to identify any leafy greens that are reasonably likely to be contaminated, including leafy greens that are visually contaminated with animal feces or have dropped to the ground and then take measures to ensure these leafy greens are not harvested.

Optional Slides

Some of the modules include additional slides that are optional. These slides are not part of the regular Arizona FSTK training curriculum, but they can be used to enhance the training experience whenever there are participants that have received this training several times before or if the instructor wants to take the training to the next level and provide more detailed information on specific food safety topics. These slides can also be used whenever you have employees to whom you want to give a deeper understanding of certain topics.

How to Use the Training Kit

The AZTK contains the following sections:

1. Overview of the Arizona Leafy Greens Food Safety Training Kit
2. Instructor's Guide
3. Lesson Plans
4. Additional Resources

A brief description of each of the sections is presented below.

Section 1. Overview of the Arizona Leafy Greens Food Safety Training Kit

This section includes a summary of each of the five modules included in the kit, the training program goals and objectives, and the target audience for the program. Specific instructions on how to use the kit are also included in this section of the program.

Section 2. Instructor's Guide

The Instructor's Guide contains important information for planning and implementing an effective training session at a leafy greens operation. Because this section of the AZTK can make training sessions run more smoothly, it is strongly recommended that instructors become familiar with this material before training begins. In addition, there is information on the importance of follow-up training and continuous enforcement of food safety rules. Make sure to discuss these points with the upper management at the company where the training program is being held.

Section 3. Lesson Plans

The lesson plans are the core of the AZTK, and instructors should thoroughly understand this section before starting training sessions.

The first page of each lesson plan contains a summary of the lesson along with learning objectives to be met during the training session. The following pages include a copy of each slide that supplements the text. This lesson page contains the PowerPoint program. Under each slide is text that the instructor can use to explain the material. The information within brackets is intended to deepen the instructor's understanding, not to be read to participants. Additionally, several activities are embedded in the PowerPoint presentations and come with specific instructions for conducting them.

Section 4. Additional Resources

This section contains posters that can be used as message reinforcers to remind employees of the need to follow good food safety practices every day. In this section there are several supplemental activities that can be used during training sessions and recommendations for using the training kit. A sample log to document each training session and a knowledge test to evaluate the extent to which the participants learned the material is included in this section. A certificate of attendance template can be printed for presentation to participants at the end of the training.

Example of a Lesson Plan Page

Copy of the PowerPoint Slide

Module 3

Slide's Title

The Importance of Health and Personal Hygiene

Scripted Text

This indicates text that the instructor can use to explain the material within each slide. Instructions for presenting the information are placed within brackets and in italics. This material should not be read to participants.

Good health and personal hygiene are essential to prevent the introduction and spread of microbes in the leafy greens production and handling environments where we work.

Note that the harvester shown in this photo is wearing clean clothes and a hair restraint while working.

Personal hygiene stops being a personal issue when handling food that others will eat. Your personal hygiene practices could affect the safety of leafy greens.

Always follow your company's health and personal hygiene policy.

Visitors must be informed of the ranch's health and hygiene policies to protect leafy greens from contamination and they must follow them at all times. They also need to have access to the restrooms and handwashing stations.

Let´s review more information about hygiene practices.

Page Number

6 Personal Hygiene Practices in the Field

Activities

People learn by doing. The AZTK includes several activities designed to enhance the learning process. The location of the instructions for the activity within the lesson plan indicates the point during the training session at which they should be presented. Some of the activities are embedded in the slide presentations and require no preparation steps. However, a few require planning well before training sessions begin; instructions are provided in the lesson plans.

The descriptions for each activity are in three sections:

(1) Purpose of the Activity. This describes the information to be introduced or reinforced by the activity.

(2) Supplies. This tells which supplies and materials will be needed for conducting the activity. It is advisable to look at these at least a week or two in advance and just before starting the training session to make sure everything that is needed is ready.

(3) Procedure. This section describes the process for preparing and conducting the activity.


Module 2

Activity 1:
Leafy Greens Contaminants

Activity 1 - Leafy Greens Contaminants

Let's move on, but first let's do an activity. *[Leave this slide up while you pass out the prepared Ziploc® bags containing contaminants.]* Where have you seen the things in these bags? *[Give participants time to look, think and answer.]*

Some of these materials have actually been found in harvested containers at various ranches and packing houses.

What would happen if a consumer found any of these materials along with their leafy greens?

What if the person accidentally ate one of these things?

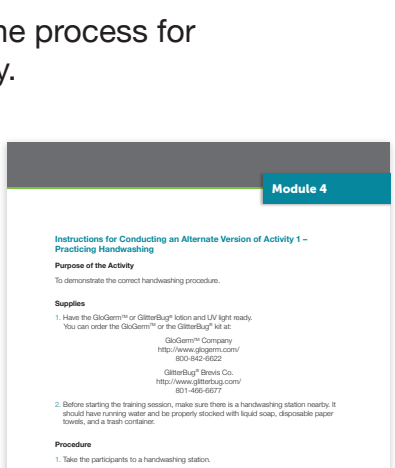
Which items could cause a person to choke or break a tooth?

Contaminants can cause loss of sales. Some companies have lost accounts due to physical contaminants, which damage the quality of the product and even cause injuries.

[Close with the following message:] The contaminants we see here can get into food because of poor practices during harvesting, coring, sorting, handling, or packing. Illness, serious injuries, choking and even a bad reputation can result from finding physical contaminants in harvested leafy greens.

4 Leafy Greens Contamination and Controls

This slide alerts you to the point during the training session where you need to conduct an activity.


Module 4

Instructions for Conducting an Alternate Version of Activity 1 – Practicing Handwashing

Purpose of the Activity

To demonstrate the correct handwashing procedure.

Supplies

1. Have the GloGerm™ or GlitterBug® lotion and UV light ready. You can order the GloGerm™ or the GlitterBug® kit at:

   GloGerm™ Company
   http://www.glogerm.com/
   800-842-6622

   GlitterBug® Brevis Co.
   http://www.glitterbug.com/
   801-466-6677

2. Before starting the training session, make sure there is a handwashing station nearby. It should have running water and be properly stocked with liquid soap, disposable paper towels, and a trash container.

Procedure

1. Take the participants to a handwashing station.
2. Apply GloGerm™ or GlitterBug® lotion to your hands and ask a couple of participants to volunteer to apply lotion to their hands.
3. Put your hands and the participants' hands under the UV light and show them to others. You may have to dim the lights in order to see the glow.
4. Ask the volunteers to just soak their hands instead of washing them properly.
5. Wash your hands using the correct handwashing procedure.
6. Put your hands under the UV light and show them that your hands are not glowing. Now ask the volunteers to put their hands under the UV light and show the glow.
7. Ask participants to tell you what happened and why they think their hands still glow.

Handwashing and Glove Usage 21

This page includes the instructions for planning and conducting the activity. A list of supplies is also included here.

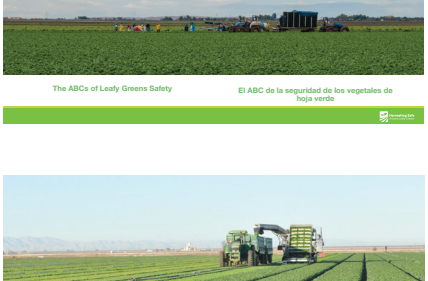
How to Use
"The Tailgate Food Safety Training Kit"

The training has been developed to rely on illustrations and visual aids containing simple messages. To use the tailgate food safety training kit, set the flipchart on a table and flip through the pages.

Each page contains an illustration that corresponds to the text on the following page. Each page contains text that is a script that the instructor can read to participants to explain the material that participants are looking at on the illustration. After reading, flip the page and go to the next page.

The training session is designed to last no more than 25 minutes. In a normal viewing condition 10 to 12 employees should be able to see the flipchart; therefore, the instructor need not memorize the text. However, to make the training sessions more effective, the instructor should have sufficient familiarity and understanding of the material. Information in brackets is intended to provide additional information for the instructor to enhance the participant learning experience. Each text page contains a small box depicting the picture that is on the presentation side of the page.

Sample Pages of the Tailgate Food Safety Training Kits



Harvesting Safe
Arizona Leafy Greens

Section 2

Instructor's Guide

The lessons provided in the AZTK are designed to help leafy greens growers reach the food safety training goals required in the "Commodity Specific Food Safety Guidelines for the Production and Harvest of Lettuce and Leafy Greens".

Concepts in each of the lessons are conveyed and reinforced using established adult education principles for communicating food safety risks, including discussion topics, demonstrations, and hands-on activities. It is the responsibility of each farm to make sure that the knowledge and skills provided in this program are implemented and followed daily.

This section contains recommendations for creating the best possible learning environment for a training program. Please read it carefully before beginning the program.

Program Delivery

The learning objectives, content, delivery format, discussion topics, and hands on learning activities in this kit have been developed to provide an optimal learning environment for teaching the basics of food safety to leafy greens workers. Each lesson has been developed as a set of slides and visuals aids that should take approximately 20-25 minutes.

Of the various ways to present the training program, the easiest and most convenient is through a PowerPoint presentation. However, since some training sites are not equipped with a computer and a projector, several presentation options are offered. The effectiveness of the training sessions should not be affected by the format as long as all the material in each lesson is presented.

Power Point Slides

Presenting the slides and visual aids as Microsoft PowerPoint presentations is the most efficient way to deliver the lessons. For this method, you will need a laptop computer that is loaded with Microsoft PowerPoint or PowerPoint Presentation software and a computer projector. Since the program files are very large, it is advisable to copy them to your computer hard drive before using them.

Printed Posters or Handouts

A low technology option for presenting the materials is to print the slides, posters, and handouts on paper and pass them out to the participants. Each individual may then follow along as the instructor goes through the lesson.

Tips for Improving the Effectiveness of the Training Sessions

We know that learning is not effective when participants are bored, tired, hungry or distracted. The amount of material that participants retain is often proportional to the amount of fun they are having. Therefore, make the training comfortable, even entertaining, while at the same time, maintaining a respectful environment that conveys the impression that food safety is a serious matter. Keeping a positive attitude about the training sessions is an important starting point for developing a food safety culture.

People learn better by "doing" rather than just by "hearing". The activities included in the lessons give participants hands-on experience that reinforces the information. Read through the lessons and prepare the easy-to-assemble activity materials ahead of time. Here are a few tips for making the most of each training session:

Do Your Homework

Obtain a copy of the company's food safety rules and policies and be sure that your message is consistent with these policies. For instance, some companies require specific types of hair restraints or the use of gloves when handling leafy greens.

Handwashing Stations

The second lesson teaches handwashing skills, perhaps the most important component of the training program. Therefore, it is important to present the lesson near a handwashing station or a restroom equipped with a sink. Before starting the training, make sure the handwashing station has running water and is properly stocked with soap, disposable paper towels and a trash container.

Location

The food safety training lessons are designed for presentation in a conference room or at the ranch. If the location does not have a well-equipped conference room, be creative in locating a place to hold successful training sessions. Consider the employees' lunchroom, a warehouse, a shop, or even a common area in worker housing facilities.

Scheduling

Each lesson is designed to take about 20-25 minutes. All lessons may be presented in one sitting. But if there are time restrictions or if it appears that the attention span of the participants is limited, the lessons may be presented in five sessions held on different days.

If you schedule the training session around meal times or during breaks, workers are more likely to be thinking about food. People have routines for eating at work, so whenever possible, plan your training sessions accordingly. Another poor scheduling choice is to hold a training session at the end of the day when workers are tired and ready to go home.

Workers who are paid on a per-piece basis may present another challenge for scheduling training.

For instance, harvesters may see training as a waste of time and may be reluctant to attend since they will not be earning income during the session. Companies that pay workers while attending food safety training sessions make an important investment that could protect them in the future.

In any case, it is your obligation as an instructor to make it clear why food safety training is important to the workers and to the success of the company. Remember, keeping a positive attitude about the training sessions is an important starting point for developing a positive food safety culture.

Preparation

It is important for the instructor to arrive early at the training site to check that the equipment is working properly and to make sure all the materials are ready. Perhaps more importantly, it allows for interaction as the participants arrive, which helps to establish a good environment. Be respectful of others' time by starting the session on time and pacing the lesson to fit within the scheduled time.

Class Size

Small class sizes are recommended since some people feel intimidated about participating in larger groups. To boost participation and create a better learning environment, limit the class size to no more than 10 to 15 workers.

Projection Screen

If you are using PowerPoint slides, you will need a projection screen or a light colored wall that is free of any obstructing objects that might block or distort the images.

Seating

Make sure each participant has a comfortable place to sit. This will encourage participant attention throughout the session.

Food and Beverages

Providing a simple snack and beverage or even lunch for the group can help to keep the right attitude during training sessions. But keep in mind that rich foods high in fat or sugar can cause drowsiness.

Power

It is important that electrical outlets are working and conveniently located at the selected training location. Keep in mind that you may need extension cords for a computer and a projector.

Noise and Distractions

The place you choose for training should be quiet enough so that the instructor can clearly be heard and discussions can occur without distraction. Nothing is worse for maintaining a good learning environment than having the instructor yell to be heard over a loud piece of equipment or power generator. An excessively noisy place definitely is not conducive to learning. Also, ask participants to turn off their cell phones.

Lighting

The light in the room should be low enough to allow participants to clearly see details of the slides or overheads. However, dim light may induce drowsiness and reduce attention.

Documenting Food Safety Training

Training should be documented regardless of an audit. It is important to document your training. This is specially important if your food safety plan is to be audited by a customer or a consultant. Be prepared to provide evidence that your workers have received the training. A written company policy presented to an employee during an orientation or a signed statement from the worker promising to follow food safety rules is usually not sufficient evidence.

Instead, an auditor will be looking for a report or records from the trainer or consultant describing the information that was given in the training, the date and location of the training, and an attendance list. Therefore, documenting your food safety training is essential.

One of the main responsibilities of the trainer is to make sure that each participant signs an attendance sheet at the beginning of the training session and to file it in a safe place, along with other documentation needed during an audit. Section 4 in the AZTK includes an example of a log to print and use to document each training session. A certificate of attendance template that can be printed and presented to each worker after finishing the program is also included.

Evaluating Food Safety Training

Continuous self-evaluation is necessary to determine how successful you have been in training sessions. In Section 4, a knowledge test is provided that you can use to evaluate the extent to which participants have learned the material. There are three ways to use the test:

1. Give the test immediately after all lessons are completed. This will give you a group average of how well the group learned as a result of training. Participants who score poorly compared to the rest of the class may require individual attention or retraining.

2. Conduct pre- and post-tests. Giving the test before training begins and then again immediately after all lessons are completed will provide a measure of how much the training session actually increased food safety knowledge. This will tell you if your efforts have been worthwhile and will help you to identify individual participants who may need additional training.

3. Conduct follow-up testing. Retesting several weeks or months after training has been completed can tell you how well participants have remembered what they learned. Declining scores may signal that it is time to conduct another training session.

   Another point to consider is testing limitations for those that have reading and writing limitations. A good solution may be to administer the test to individuals in a face-to-face format by reading the questions aloud and then recording answers on a score sheet.

Follow-Up Training and Supervisory Enforcement of the Rules

Merely acquiring knowledge does not always result in positive changes in behavior. This means that employees may know that regular handwashing is necessary to keep food safe, although actual increases in handwashing might not occur. In order for handwashing and other hygienic practices to become a habit, enforcement and monitoring is essential.

Management commitment is the key to the success of any food safety program, and the AZTK is no exception. But it is difficult for managers and owners to make sure that food safety practices learned during training sessions are followed on a daily basis.

The author's research at Penn State University has shown that supervisors and middle management are critical to maintaining appropriate food safety behaviors in the work environment because they deal directly with the daily routines that occur at farms and have experience in the complicated tasks associated with enforcing rules in other areas.

Therefore, training must be followed by supervisory enforcement of food safety rules. Management support of the importance of supervisors in this role will contribute to the success of the food safety program.

Here are a few recommendations that supervisors and everyone in management can follow to help to ensure the success of your food safety training program:

- Supervisors and other employees in leadership positions must act as role models by setting an example for handwashing and other rules. In other words, they must "practice what they preach". If they do not follow the same rules as other employees, they will lose credibility and become less effective in enforcing rules. Some companies have found success by having supervisors wash their hands at the same time as workers in the morning or after breaks. Over time, the behavior becomes a habit for everyone.

- A successful food safety training program also requires that supervisors respectfully communicate the rules to workers. Supervisors should regularly ask employees if they have washed their hands and insist that they wash them if they have not done so. If an employee is doing something wrong, describe the problem and, if possible, demonstrate the appropriate way

to perform the procedure. Rule enforcement is most effective when done in a respectful manner. Instead of harsh comments or a loud voice, use comments such as "please", "thank you", "you are welcome", "I would like you to do this" or "let's all work together to do this". If regular lapses in behavior occur and disciplinary actions are required, talk to the worker in private. Never embarrass an employee in front of others since this can unnecessarily create a tense work environment.

- Consistent and fair enforcement of food safety rules is also essential. Each employee who has received the training knows how important it is to follow the rules; no excuses can be made for lapses in appropriate behaviors.

- Showing favoritism to certain employees has no place on the farm. If supervisors do not enforce rules fairly or show favoritism, workers will see little reason to follow the rules. This may be a problem if family or friends are involved. However, asking family and friends for their support in following the food safety rules can be helpful.

- When workers are conscientiously following the rules on a daily basis, take note of it by mentioning this to them. Regular, positive reinforcement and rewards are always more effective than negative comments and disciplinary actions.

Harvesting Safe
Arizona Leafy Greens

Section 3

Lesson Plans

Harvesting Safe
Arizona Leafy Greens

Arizona Leafy Greens Food Safety Training Kit

The ABCs of Leafy Greens Safety

Module
1

Lesson Summary

In this module, the instructor will describe the concept of food safety and its importance to the leafy greens industry.

Participants will learn about food safety, foodborne illnesses and their symptoms, as well as the impact that foodborne illnesses can have on work time, job security and family income.

The instructor will use an example of a produce-related foodborne outbreak to explain what an outbreak is and how an outbreak can affect the employee, the farm, and the whole leafy greens industry.

Learning Objectives

After this lesson, participants will be able to:

- Understand what food safety means.
- Describe a foodborne illness and list its symptoms.
- Describe a recent foodborne outbreak originating in fresh produce and its impact on consumers and the produce growers.
- State the impact a foodborne outbreak can have on their work time, job security and family income.
- Describe how Leafy Greens grown in Arizona could cause a foodborne outbreak.

The ABCs of Leafy Greens Safety

Thank you for coming today. Please sign the attendance sheet.

In this lesson, we will learn what food safety is and why it is important to keep leafy greens safe from contamination.

These are the basic topics you need to learn in order to start lowering the risk of leafy greens contamination.

Why Are We Here?

Harvesting Safe
Arizona Leafy Greens

Why Are We Here?

Let's talk about why we are here today. We are going to talk about food safety. We will find out how food can become contaminated and how we in the leafy greens industry can help protect the leafy greens from that contamination.

As many of you know, our company has implemented a Good Agricultural Practices Program that follows the industry best practices established by the Leafy Greens Marketing Agreement Metrics. The Metrics are a set of science based food safety standards and practices used to measure and assess individual food safety compliance plans. Each of us plays an important role in this program.

Furthermore, the food safety standards that our company follows require ALL employees working in the leafy greens production, packing, and/or field areas to receive food safety training. This is also a customer's important requirement.

Activity 1-Leafy Greens Dishes

The first thing we will learn is the meaning of food safety. We have heard these words many times. Before we begin, let's do an activity that will help us to understand foodborne illnesses.

[The next slides include a series of questions. Ask each question and give participants time to look, think and answer each of the questions.]

[The purpose of this activity is to show that leafy greens are used in many different types of food and that even though it may look, smell and taste good, it can still be contaminated and make someone sick.]

What do you think of the salad when looking at this picture?

Leafy Greens Dishes

Now, what do you think of the meals when looking at these other pictures?

Would you eat them? Have you had any of these foods lately?

[Give participants some time to look, think and answer.]

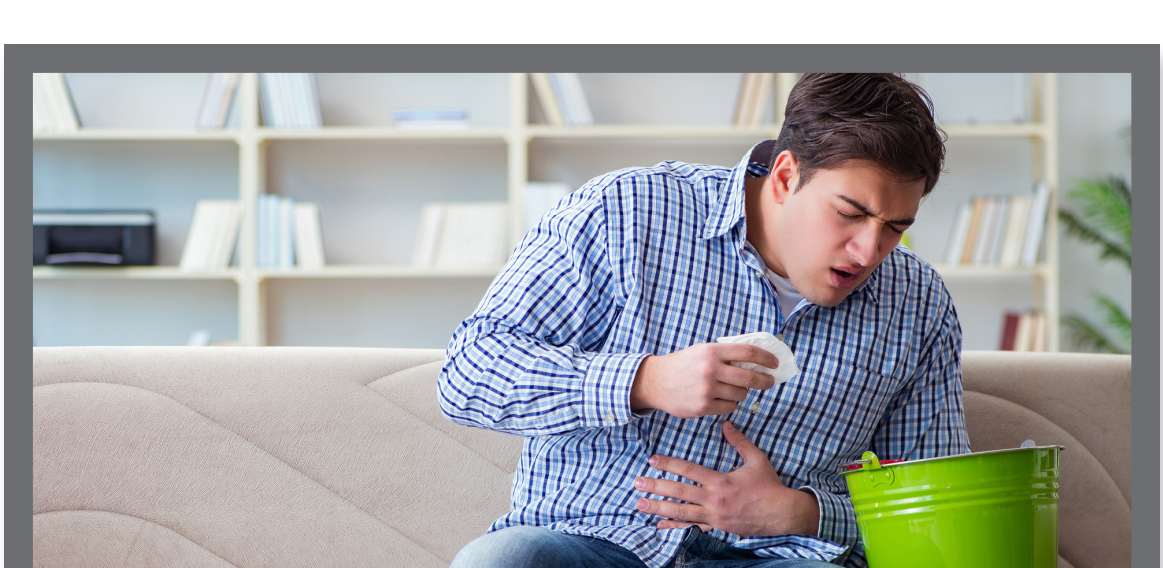
Which one looks better?

If a food looks good to eat, does that mean that it is safe to eat?

Do you think any of these dishes can make us sick? If so, why?

[Give participants time to answer.]

They look good and probably smell and taste good as well. No matter how it looks, food can make us sick if it is contaminated.



Foodborne Illnesses

Harvesting Safe
Arizona Leafy Greens

Foodborne Illnesses

Restaurant and home-prepared food can become contaminated and make people sick.

A contaminated food can taste good, smell good and even look good, yet make you sick.

A foodborne illness is caused by eating contaminated food. The feeling you get when you eat too much is called indigestion. This is not the same as being ill from eating contaminated food.

Symptoms of foodborne illnesses can be similar to flu-like symptoms including fever, diarrhea, and vomiting. In some cases, these symptoms can be severe and in some cases the illness can result in hospitalization and even death.

A foodborne outbreak is defined as two or more people become sick from eating the same contaminated food. But not all cases are reported and foodborne illness may be more common than what we see in the news.

Everyone, including you and your family, is vulnerable to foodborne illnesses. An important part of your job is to prevent leafy greens from becoming the cause of a foodborne illness.

What is Food Safety?

Let's learn the meaning of food safety. We have heard these words many times at work.

Ask participants: What does food safety mean to you? Who has had a foodborne illness?

[Give employees some time to share answers.]

Food safety refers to the conditions and practices that preserve the quality and safety of leafy greens to prevent contamination and foodborne illnesses.

Always remember, food safety practices prevent foodborne illness.

It is the responsibility of all of us to grow and harvest leafy greens that are safe for consumption.

In the food safety training you will receive today, we will provide you with the knowledge and skills needed to protect leafy greens from becoming contaminated.

Susceptible Populations

Anyone can get a foodborne illness, since everyone consumes food. However, people can be affected differently, depending on their age, immune system and other factors.

The risks and dangers of a foodborne illness are more severe in susceptible populations; those groups of people are less capable of fighting disease. Susceptible populations include the elderly, infants, young children, pregnant women, individuals with suppressed immune systems (such as people with AIDS), people receiving chemotherapy, and organ transplant recipients.

Optional Slide

Why is Food Safety Important?

The term food safety refers to the set of practices and procedures that reduce food hazards that may harm the health of the consumer. These operations apply to harvesting, processing, packing, storing, transporting, marketing and even preparing food in the home.

Food safety is a top priority for growers, processors, and anybody responsible for handling food. All consumers expect to get safe and good quality food!

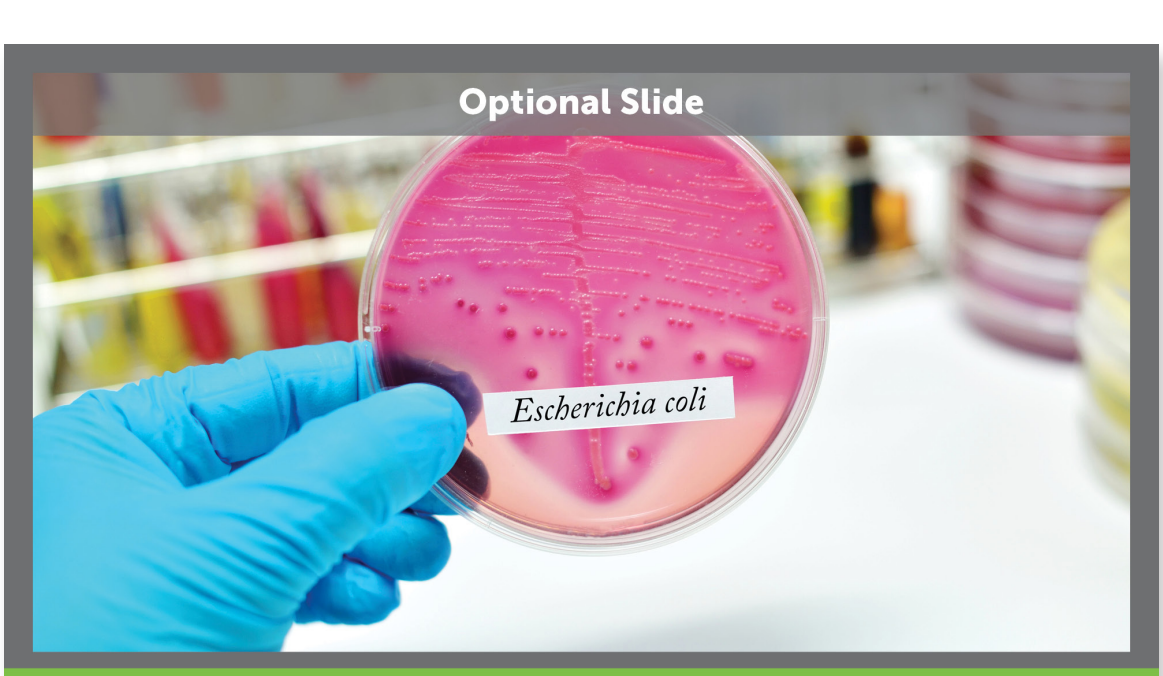
Optional Slide

Next, we will see a little about the microorganisms that cause foodborne illnesses: bacteria, viruses and parasites.

Bacteria

There are many bacteria that can cause foodborne illnesses. Next, we will review some of the most common bacteria associated with foodborne illnesses:

- *E. coli* O157:H7
- *Salmonella*
- *Listeria monocytogenes*



Optional Slide

Escherichia coli

Escherichia coli (*E. coli*) is a bacteria found in the intestine of warm-blooded animals and is commonly found in feces.

Most strains of *E. coli* are harmless, however, Shiga toxin-producing *E. coli* O157:H7 can cause severe foodborne disease. Symptoms of this disease include abdominal cramps, diarrhea (may be bloody), vomiting and fever.

To prevent this illness, it is necessary to have good hygiene practices, such as proper handwashing, and avoiding cross-contamination throughout the food chain.

Optional Slide

Salmonella

Salmonellosis is a foodborne illness cause by a bacteria called *Salmonella*. *Salmonella* is commonly present in poultry, birds and reptiles. *Salmonella* is a hardy bacteria that can survive several weeks in a dry environment and several months in water.

Salmonellosis in humans is generally contracted through the consumption of contaminated food of animal origin like eggs, meat, and poultry, but it has also been reported on vegetables contaminated by feces.

Symptoms include abdominal pain, acute onset of fever, diarrhea, nausea and vomiting.

Optional Slide

Listeria monocytogenes

Listeriosis is a foodborne disease caused by *Listeria monocytogenes*. It is a rare illness, but it has a high mortality rate for high risk populations or more susceptible populations, therefore, it is very important when it comes to public health.

The symptoms include fever, myalgia (muscle pain), septicemia (blood infection), meningitis (infection of the brain and spinal cord).

Listeria monocytogenes can be found in soil, water, vegetation, and the feces of some animals and in unproperly cleaned processing facilities. Moreover, it can survive and multiply at low temperatures so can be a problem in cold storage areas. Because it can be found in all of these places, it can contaminate food if not controlled.

Optional Slide

Viruses

A virus is a very small infectious agent (about one hundredth the size of most common bacteria). Some examples of viruses that cause foodborne illnesses include:

- Hepatitis A, which causes inflammation of the liver
- Norovirus causes diarrhea, vomiting, and abdominal swelling
- Rotavirus, associated with gastroenteritis in children

Viruses can only multiply inside living cells of other organisms. Because of this, foodborne transmission of viruses occurs when an infected person handles food and when their bodily fluids come into contact with the food and food surfaces. Unsanitary water can also be a source if that water was contaminated with feces. This is a primary reason why employee hygiene is so important.

Optional Slide

Parasites

Parasites range in size from tiny single-celled organisms to worms visible to the naked eye. They can be present in food or in water and can cause foodborne illness. Some of the most common parasites include:

- *Entamoeba histolytica* (Amebiasis)
- *Giardia duodenalis*
- *Cyclospora cayetanensis*
- *Toxoplasma gondii* (toxoplasmosis)
- *Trichinella spiralis*

When considering produce, the primary sources of parasites are employees infected by parasites and unsanitary water.

Optional Slide

Disease Causing Microorganisms

All of these microorganisms can cause foodborne illness and are easily transmittable from workers to leafy greens if proper procedures are not followed, such as proper handwashing, personal hygiene and wearing protective clothing. It is our responsibility to always follow proper food safety procedures to ensure these organisms don't contaminate the leafy greens with which we work. Always follow your company's rules!

Let's talk about a real situation where people got sick (and in a few cases) died because they ate contaminated leafy greens.

Contaminated Spinach with *E. coli* O157:H7

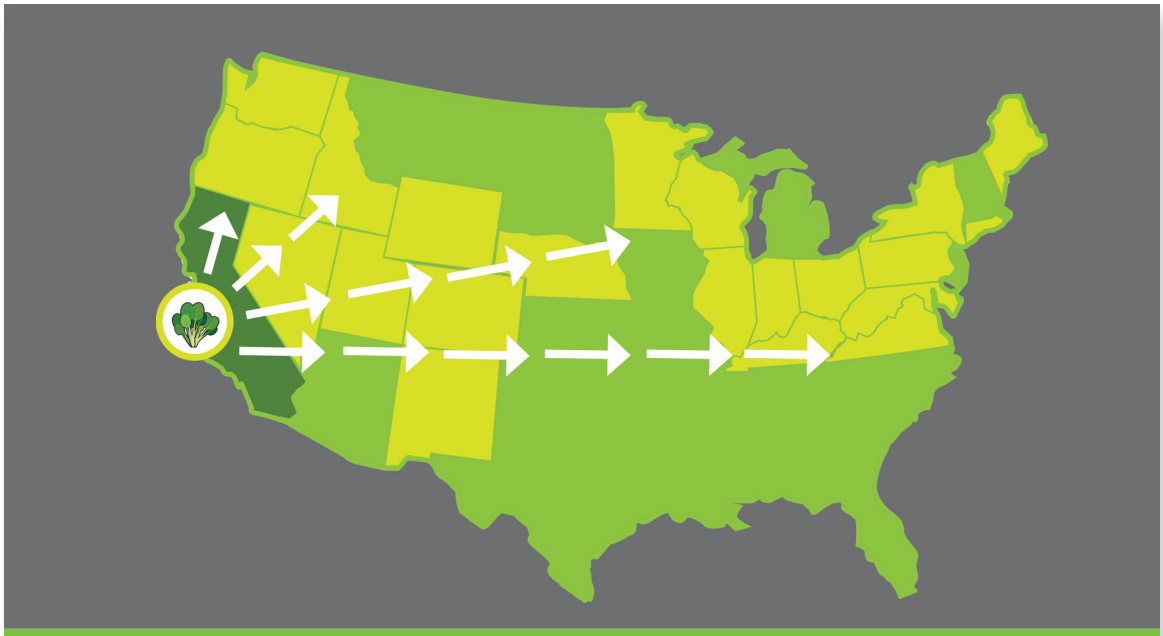
Harvesting Safe
Arizona Leafy Greens

Contaminated Spinach with *E. coli* O157:H7

Foodborne illnesses can have serious consequences for food companies and their employees. Let's take a closer look at this spinach incident.

On September 2006, the CDC received the news of an outbreak associated with bagged spinach in Wisconsin. Three days later, the FDA announced to consumers to stop eating bagged spinach due to the foodborne illness outbreak caused by contamination with the bacterium *Escherichia coli* O157:H7.

E. coli O157:H7 is a living organism from which only a few organisms need to be consumed in order to get sick. *E. coli* causes diarrhea, commonly with bloody stools; diarrhea may also be accompanied by abdominal cramps. This bacteria can potentially cause fatal illness.



California Spinach

After investigation, some risk factors were found. One risk factor was the presence of wild hogs in the spinach fields. Another factor was the water source used for irrigation was close to a livestock operation. However, the investigation was not able to pinpoint the exact source.

The spinach was grown in California, but by the time the outbreak was declared over, 199 people had become ill in 26 states and Canada and 3 people had died.

It was this outbreak that was the impetus for the creation of the LGMAs-Leafy Greens Marketing Agreements.

Financial Implications

Harvesting Safe
Arizona Leafy Greens

Financial Implications

The outbreak also had monetary consequences. Stores and restaurants immediately removed the spinach from their shelves and menus. The spinach harvest stopped and there was no further distribution. Consumers across the country stopped buying spinach.

Hundreds of people lost their jobs. Some people estimated that the spinach industry lost more than one hundred million dollars.

Even a year after the outbreak, the sales of spinach to consumers remained low, far below the levels sold before the outbreak.

This was a serious warning for the entire leafy greens industry.

Information on the outbreak of diseases related to food with spinach was obtained from: Calvin, L. 2007. “Outbreak Linked to Spinach Forces Reassessment of Food Safety Practices”. Amber Waves. Vol. 5, Issue 3, p. 24-31. USDA-Economic Research Service, Washington, D.C. Available from http://www.dhs.ca.gov/fdb/HTML/Food/EnvInvRpt.htm

Produce Foodborne Outbreaks

There have been many produce items implicated in foodborne illness outbreaks. The fresh produce industry has many challenges to overcome since this is an item sold and consumed without any kill step, such as cooking, that would completely eliminate pathogens.

The following are some examples of commodities that have been implicated in outbreaks in the United States over the past few years:

- Papayas contaminated with *Salmonella Kiambu, Thompson, Agona, Gaminara* in 2017.
- Cilantro contaminated with *Cyclospora cayetanensis* in 2014 and 2015.
- Cucumbers contaminated with *Salmonella* in 2015, 2014 and 2012.
- Romaine lettuce contaminated with *E. coli* O157:H7 in 2018.

Produce Foodborne Outbreaks

Other more detailed examples are presented below:

Cantaloupes

In 2011, the Centers for Disease Control and Prevention or "the CDC" reported that at least 147 people were infected with *Listeria monocytogenes* from foodborne illnesses in 28 states and 33 people died. After an investigation, the Food and Drug Administration or "the FDA" linked cantaloupes from a farm in Colorado to the listeriosis outbreak. The farm issued a product recall. The FDA determined that the outbreak might have been the result of the facility operating the equipment in an unsanitary manner.

Mangoes

The mango industry had *Samonella* contamination incidents in 1998, 1999, 2001 and 2012. Mangos are consumed fresh and there is no pathogen killing-step in the production chain. Additionally, *Salmonella* has the capability to be internalized in the fruit, and once that occurs, there is no conventional method to decontaminate the fruit.

Contamination incidents can happen to any type of commodity. Prevention is the key for all employees in the fruit and vegetable industries, including the leafy greens industry.

These incidents illustrate the importance of hygiene and sanitation practices at the farm, packinghouse, and warehouse. Remember, simple oversights or small changes from standard procedures can cause things to go terribly wrong. Always keep in mind that even simple things can have a huge impact on food safety.

What Would Happen if...A Foodborne Outbreak is Caused by Leafy Greens?

"This just in! Three more children have died. Arizona's leafy greens outbreak is spreading across the country.

Two hundred people became ill after eating leafy greens from a field in Arizona's growing region.

Seven hundred and fifty people have been hospitalized and 12 people have died in 35 states across the nation.

This incident is becoming one of the largest foodborne outbreaks related to produce."

If contaminated leafy greens are distributed across the United States to consumers through stores or restaurants, illness can occur in different places and at different times. This is not a situation we want to occur in our industry.

Foodborne illnesses can have serious consequences for a farm or food company, including its employees.

No to Leafy Greens!

What would happen if several people get sick from eating contaminated leafy greens?

If a leafy greens outbreak happens, what would happen with this company and your job?

Customers would most likely stop buying and eating leafy greens. The company would be forced to close, and employees would probably lose their jobs.

As you can see, you and your family would be directly affected in a situation like this, even if you do not get sick.

[Generate a short discussion on the consequences of this to the ranches and workers' jobs.]

What Did We Learn?

Harvesting Safe
Arizona Leafy Greens

What Did We Learn?

In this lesson you learned what foodborne illnesses are and the impact that a foodborne outbreak can have on your personal health, work, and family income.

Your job is to handle the leafy greens in the safest way possible and to always follow your company's food safety policies and procedures to minimize the risk of product contamination in the fields.

This is the end of our training on the ABCs of leafy greens safety.

What questions do you have?

Thank you for your coming today.

Please sign the attendance sheet.

Harvesting Safe
Arizona Leafy Greens

Arizona Leafy Greens Food Safety Training Kit

Prevention and Control of Leafy Greens Contamination

Module
2

Lesson Summary

In this module, the instructor will explain what a contaminant is and help participants to identify the three different types of leafy greens contaminants and how they may affect leafy greens consumers.

Examples of contamination that can occur at the ranch are also discussed and basic controls that can help to protect leafy greens from contamination.

Learning Objectives

After this lesson, participants will be able to:

- Describe what a contaminant is.
- Recognize the three types of leafy greens contaminants.
- Understand how to prevent leafy greens contamination.
- Identify the role employees play in the prevention of leafy greens contamination.

Prevention and Control of Leafy Greens Contamination

Thank you for coming today. Please sign the attendance sheet.

In this lesson, we will learn the three types of contaminants that can affect leafy greens; how leafy greens can become contaminated; and some of the different practices we can follow in our job to protect leafy greens from contamination.

These topics are very important for lowering the risk of leafy greens contamination.

Activity 1:
Leafy Greens Contaminants

Harvesting Safe
Arizona Leafy Greens

Activity 1-Leafy Greens Contaminants

1. *[Gather objects that may be physical contaminants in leafy greens. Objects that have actually been found in product may include: candy, chewed gum, bottle caps, candy and food wrappers, pens and pencils, napkins, hair, nails, wood chips, bills and coins, etc.]*

2. *[Place each object in an individual Ziploc sealable plastic bag; with enough bags so each participant will have a bag.]*

Let's move on, but first let's do an activity. *[Leave this slide up while you pass out the prepared Ziploc® bags containing contaminants.]* Where have you seen the things in these bags? *[Give participants time to look, think and answer.]*

Some of these materials have actually been found in the field or in harvested containers at various farms and packing houses.

What would happen if a consumer found any of these materials along with their leafy greens?

What if the person accidentally ate one of these things?

Which items could cause a person to choke or break a tooth?

Contaminants can cause loss of sales. Some companies have lost accounts due to physical contaminants, which damage the quality of the product and even cause injuries.

[Close with the following message:] The contaminants we see here can get into food because of poor practices during harvesting, coring, sorting, handling, or packing. Illness, serious injuries, choking and even a bad reputation can result from finding physical contaminants in harvested leafy greens.

Leafy Greens Contamination

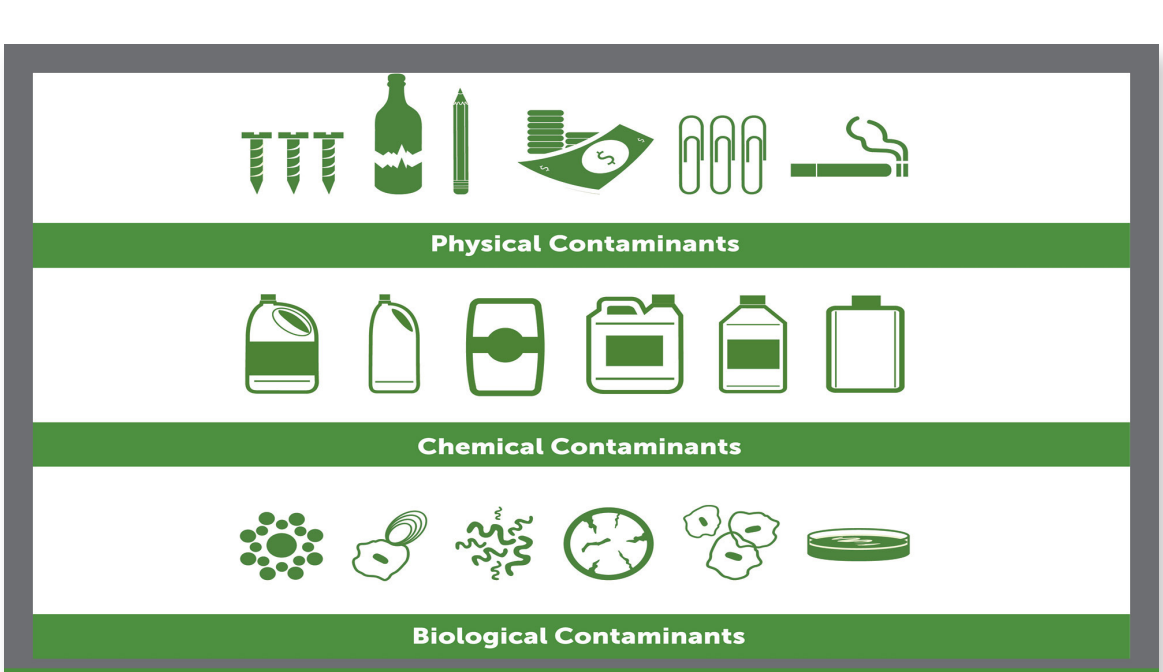
You probably have heard the word “contamination” many times.

To start, let’s discuss what contamination is and how you can prevent the leafy greens you harvest from becoming contaminated.

A contaminant is any material or item added intentionally or accidentally during the harvest, packing, storage, or distribution of leafy greens that can cause harm or foodborne illness to the consumers of the food.

How can a contaminant reach leafy greens?

Different types of contaminants can reach leafy greens by poor practices during their harvest, packing, storage or distribution.



Three Types of Contaminants

Now let's look at types of contaminants and how we can prevent them from getting on the product you work with.

There are three types of contaminants that could reach leafy greens at the ranch:

Physical contaminants

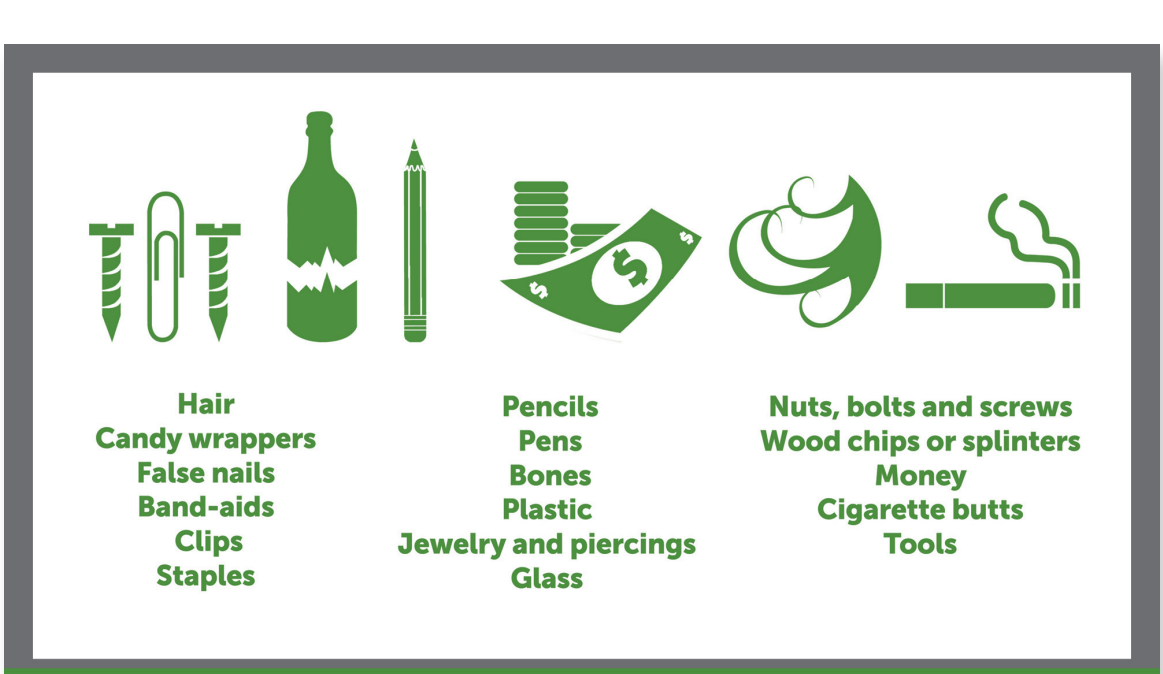
Chemical contaminants

Biological contaminants

Food safety programs, including this one, aim to minimize the risk of product contamination.

It is part of your job to protect the leafy greens you harvest from becoming contaminated and causing a foodborne outbreak.

Let´s review each one of these contaminants!



Physical Contaminants

A physical contaminant is a soft or hard foreign material that has found its way into leafy greens by accident or due to poor practices during harvesting, coring, sorting, handling, packing, or storing.

Physical contaminants can come from different places, such as office supplies used in reports or logs, glass or glass bottles, metal from equipment, wooden pallets, and plastic totes and bins. These physical hazards get into the products through bad practices that may occur during harvesting, packaging, or distribution. Some physical contaminants can seriously harm consumers because they may cause an obstruction in the throat, lacerations/cuts in the mouth, or tooth breakage. Physical contaminants include but are not limited to:

Hair	Pencils, pens	Nuts, bolts and screws
Candy wrappers	Bones	Wood chips or splinters
False nails	Plastic	Money
Adhesive Bandages	Jewelry and piercings	Cigarette butts
Clips, staples	Glass	Tools

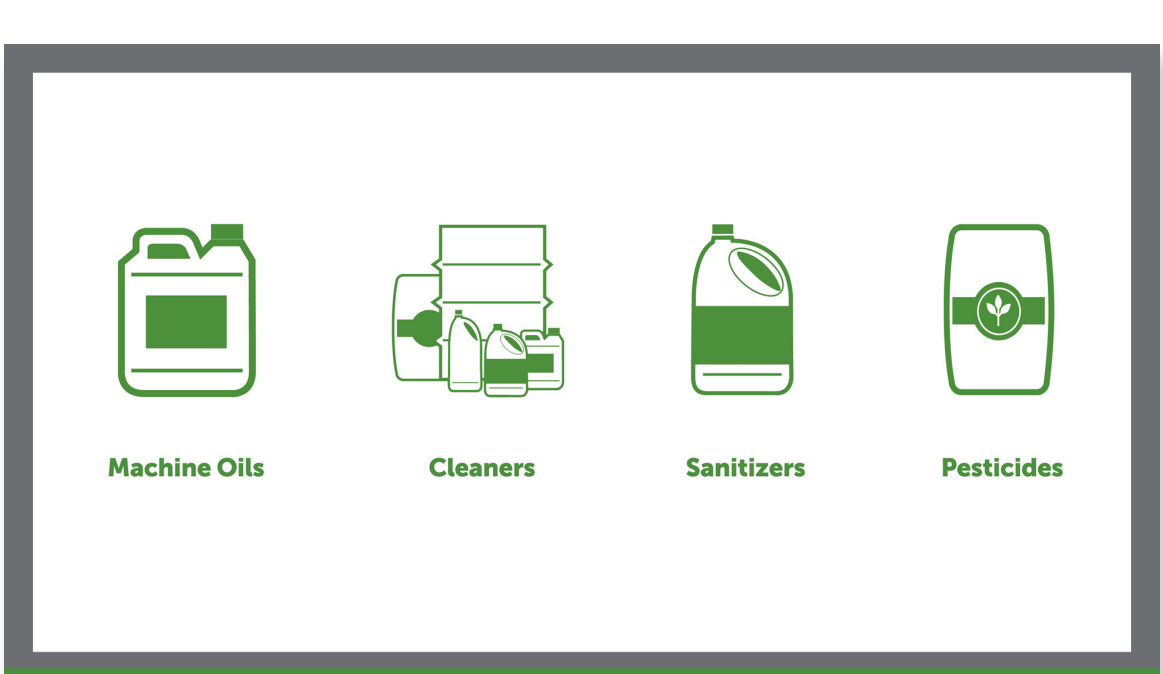
When you find a physical contaminant in the product, tell your foreman immediately.

Prevention and Control of Physical Contaminants

There are some basic control measures that can be put in place at the farm to prevent the contamination of leafy greens with physical contaminants. Some of these include but are not limited to:

- Do not use glass in the field.
- Eat and smoke only in the designated areas.
- Do not wear any jewelry or piercings while working on the farm.
- Use work equipment, such as knives, harvesting containers, pallets, etc., properly.
- Leave personal objects in designated areas.
- Clean up tools after use, watch for loose parts of machinery.
- Report damage in the tools or work equipment to your foreman before a contamination incident may occur.

Again, If you find any physical contaminants in the product, you should notify your foreman immediately!



Chemical Contaminants

Chemical contamination occurs when food products incorrectly come in contact with harmful chemical compounds during growing, harvesting and packing.

Even chemical compounds used in a leafy greens field could become a chemical contaminant if used improperly.

Chemical contaminants can lead to product spoilage, but worse, they may also poison consumers causing severe injury or death.

There are several potential sources for chemical contaminants to leafy greens:

- Pesticides
- Chemicals used for cleaning and sanitizing
- Oil and machine lubricants
- Water sanitizers

If you see any chemicals that are used incorrectly, not stored properly, or not properly labeled, report it immediately to your foreman.

When working with chemicals, remember to ALWAYS follow the manufacturer's instructions and use proper handling procedures. Never use inappropriate containers for storing or applying chemicals. Remember that chemical substances can be very dangerous if not handled properly.

Optional Slide

Additional Information About Chemicals

Other chemicals used in leafy greens operations include pesticides, agrochemicals, soil amendments, and crop treatments. The use of these substances has a rationale: correctly applied, they help decrease, control, or eliminate different agents that have the potential to damage crops as well as allowing crops to more efficiently capture the nutrients they need for their development.

These products are safe for human beings when they are used according to the manufacturer's recommendations for their use and application.

However, it is important to understand that the abuse or misuse of these products can be counterproductive in leafy greens farms and can even be dangerous to consumers and workers. It is therefore essential to follow the application instructions, safety measures, and precautions that the manufacturer and your company provide regarding their use.

Optional Slide

Additional Information About Chemicals (cont.)

When using pesticides in a leafy greens farm you must respect the maximum residue level (MRL) for pesticides. MRL is the maximum concentration of residue of the active ingredient (A.I.) allowed in an agricultural product. This is measured in milligrams of the chemical per kilogram (mg/kg) of leafy greens or as parts per million (ppm).

Each pesticide has its own MRL allowed by law. It is essential that all leafy greens farms ensure that pesticide residues present in their products are below the maximum permitted limits. To achieve this, it is necessary to use agrochemicals appropriately and to learn how to apply them properly.

Optional Slide

Additional Information About Chemicals (cont.)

Remember to ALWAYS follow the correct procedures whenever you handle chemical products. If this is not done, misuse can seriously endanger industry employees and consumers. There are some consequences for the misuse of chemicals:

1. We could put our health and the health of other employees at risk by causing the absorption of the products through the skin.
2. We could put the health of consumers at risk if they ingest leafy greens contaminated by agrochemicals.
3. We could put the environment at risk by improperly discharging the products into the natural environment.
4. We could put the company at risk by economic losses associated with a product rejection or recall.

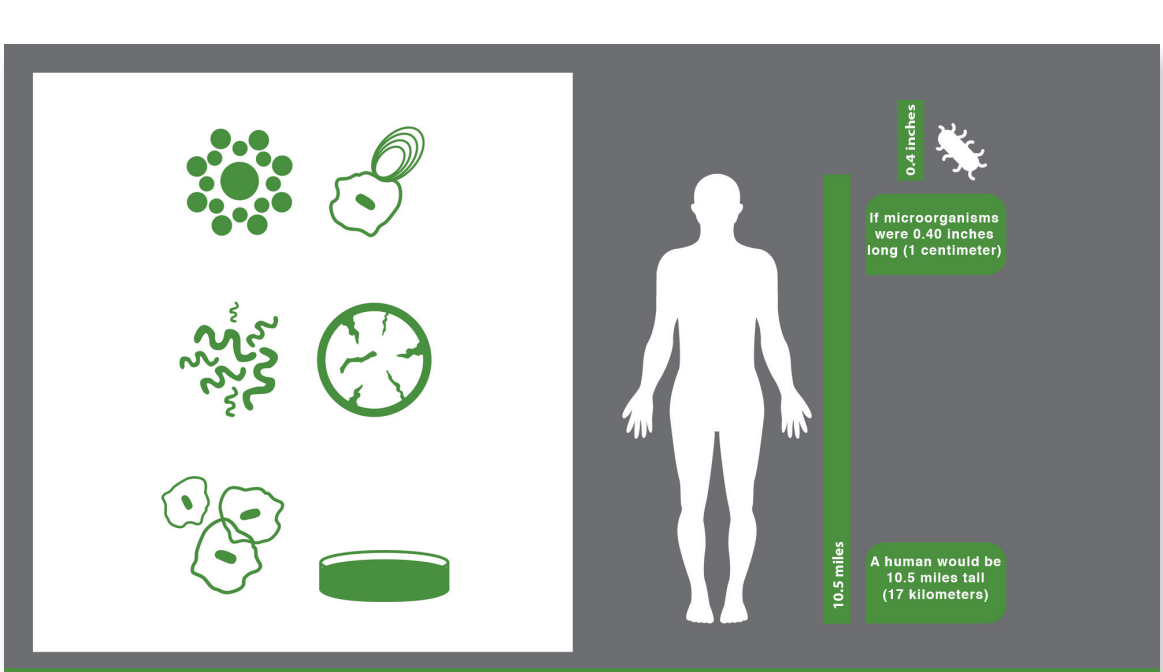
Remember that using chemicals properly is important to us, our community, and the environment.

Prevention and Control of Chemical Contaminants

There are basic controls that can be used in the field to prevent chemical contaminants from reaching leafy greens. Whenever you use or are around chemical products, remember:

- ALWAYS follow the label´s instructions and ALWAYS use the amount indicated by the manufacturer on the product label.
- Store chemical products in original containers or properly labeled containers if chemical product is stored in a different container.
- All cleaners and sanitizers, whether in use or in storage, must be clearly labeled.
- Smaller containers should also be labeled with the name of their contents.
- Report any leakage or spillage from equipment and machines.
- Safety Data Sheets (SDS) must be readily available for every chemical used in your operation.

- NEVER use soaps or sanitizers in excess. ALWAYS follow the manufacturer's instructions.
- More is not necessarily better. In fact, sometimes more is dangerous. Use the correct amount for the task.
- Whenever you handle chemical products, you must use personal protective equipment (PPE) as instructed by your foreman or as listed on the label.
- Water used for chemical products applications must ALWAYS come from a trusted source and have acceptable microbiological quality for its intended use. Ask your foreman if you are not sure what to do.
- Inform your foreman if you see any chemicals that are used incorrectly or if any of these products are not properly labeled or stored.



Biological Contaminants

The third and last category of contaminants that can affect leafy greens are biological contaminants. This category includes microorganisms or microbes, such as bacteria, viruses and parasites.

Microorganisms or microbes are very small living organisms; they can be seen only under the microscope.

They are so small that if a microbe was 1 centimeter in length (0.4 inches), then a human adult would measure about 17 kilometers (10 miles) in height.

Most microbes are not harmful. We generally live in harmony with microbes. They are found everywhere: in the air, water, our body, soil, the environment, and even in the food we eat. But there are some disease causing microorganisms, if present in sufficient number on the leafy greens, can cause illness to someone who consumes that product. It is necessary to keep disease-causing microbes from contaminating leafy greens.

The Good, the Bad & the Ugly

In this lesson we will classify microorganisms or microbes in three categories: The good, the bad, and the ugly.

The GOOD include microbes that are beneficial for humans and are used to produce foods such as beer, bread, yogurt and cheese. Some of them are even used to produce drugs and antibiotics.

The BAD microorganisms are called pathogens and are the ones that make people sick.

The UGLY microorganisms do not hurt people, but they cause spoilage of food. They produce undesirable tastes, odors, textures, or appearances. Spoilage is a food quality issue, not a food safety issue.

The Bad Microbes

Harvesting Safe
Arizona Leafy Greens

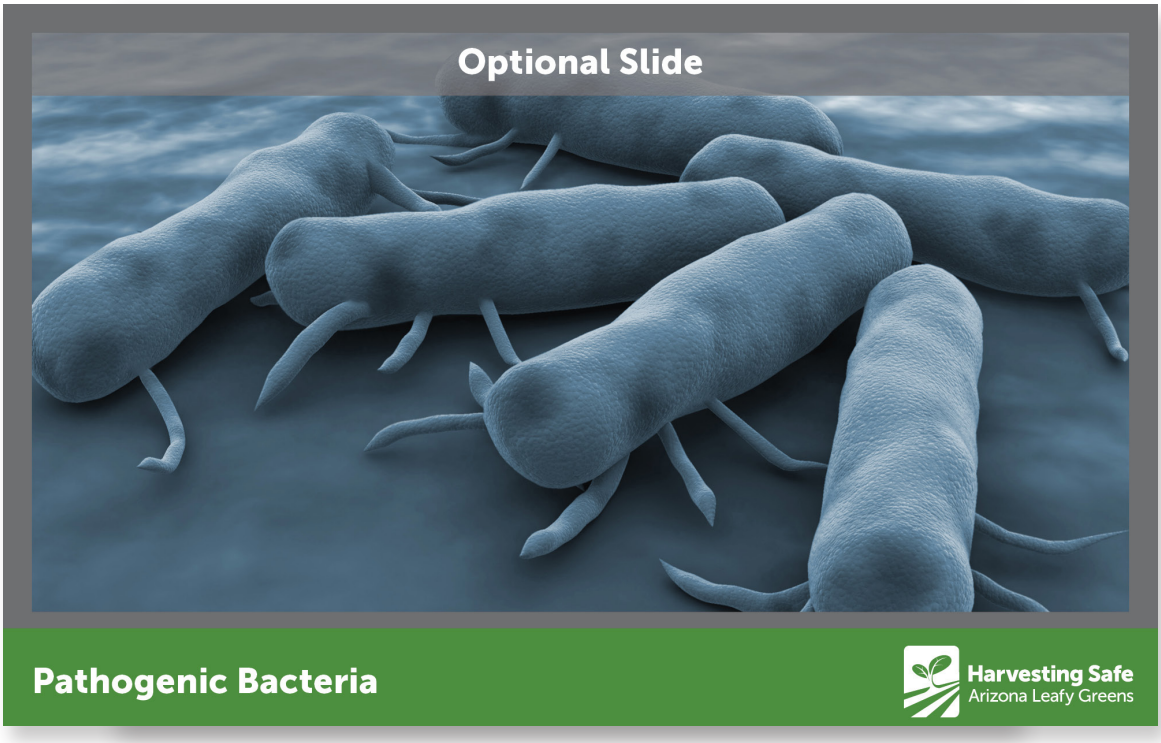
The Bad Microbes

In this lesson, we will focus on the bad microorganisms, or pathogens. As an employee, you play a key role in reducing the incidence of pathogenic microorganisms in the leafy greens you work with.

There are some types of bad microbes on or inside our body and there are others that are present in the environment.

Remember that bad microbes are the ones that cause foodborne illnesses. We definitely want to avoid getting bad microbes on the leafy greens we work with.

Good production and sanitary practices, known as good agricultural practices, can keep leafy greens from becoming contaminated with bad microbes.



Optional Slide

Pathogenic Bacteria

Humans bodies are colonized by many microorganisms; it is estimated that the human body is inhabited by approximately the same number of non-human cells (microorganisms) as human cells. As stated before, some microorganisms that colonize human bodies co-exist with us without causing any harm, while others can make us sick (pathogenic). These pathogenic bacteria can also be found inside normal human bodies, even if you are not sick. It is because of this that personal hygiene practices we follow while working with leafy greens are so important.

Bacteria can be found on our skin, and hair, and in saliva and feces. We must follow proper procedures when washing our hands, wearing clean clothes, and following proper personal practices to protect the food from becoming contaminated with pathogenic bacteria. If even one pathogenic bacteria gets on leafy greens, it may grow and multiply until there are enough bacteria to cause a foodborne illness.

Optional Slide

Pathogenic Bacteria

There are several conditions bacteria need in order to grow and multiply, these conditions are normally known as FATTOM:

Food: Bacteria require food in order to grow. Leafy greens can be an excellent source of food for bacteria to grow if they become contaminated.

Acidity: The acidity of foods can affect how bacteria grow and multiply inside them. Pathogenic bacteria require a slightly acidic pH level of 4.6-7.5, while leafy greens pH can vary but is usually found between 5.5 - 6.8*.

Time: Bacteria require time to grow. Since it can sometimes take several days for leafy greens to go from farm to table, this gives bacteria plenty of time to grow between the moment the leafy green is harvested and the time the consumer eats it.

Temperature: Pathogens grow best in temperatures between 41-135 °F (5-57 °C), a range referred to as the temperature danger zone. Even though leafy greens are cooled for storage and transport, if present bacteria would remain there and grow once the temperature gets warmer.

Optional Slide

Pathogenic Bacteria (cont.)

Also, most leafy greens are eaten raw. This means that there is no cooking or any other process that could raise the temperature to a point that would kill the bacteria if present on the leafy greens.

Oxygen: Almost all foodborne pathogens require oxygen to grow. Since our leafy greens are eaten fresh and are not canned or vacuum sealed, they are in frequent contact with oxygen that helps bacteria grow.

Moisture: Water is essential for bacteria to grow. We measure the amount of water available for use as water activity (a_w) and it is measured on a scale of 0 to 1.0. Pathogens grow best in foods that have an a_w between 0.95 and 1.0. Leafy Greens typically have an a_w of 0.996 to 0.998**, which means that is sufficient to support bacterial growth.

*pH values from "pH Values of Common Foods and Ingredients", Clemson University Cooperative Extension.

**a_w value from "Water Activity in Foods: Fundamentals and Applications" Gustavo V. Barbosa-Cánovas, Anthony J. Fontana Jr., Shelly J. Schmidt, Theodore P. Labuza (25 September 2007) ISBN:9780813824086.

Optional Slide

Pathogenic Bacteria (cont.)

If pathogenic bacteria end up on the leafy greens we are handling, these factors allow the bacteria to multiply and increase the risk of foodborne illness.

Foodborne illnesses occur when the microorganism multiplies in the food until it reaches the minimum infective dose (MID), which is the number of microorganisms needed to cause illness in humans. The MID varies between different pathogens and can range from as few as 10 cells to as many as 100,000 cells.

Because of this, it is highly likely that if pathogenic bacteria get into the leafy greens, the people that eat them are going to get sick. Our goal is to prevent the pathogenic bacteria from getting onto the leafy greens. Following proper procedures to wash our hands, wearing clean clothes, and following proper personal practices will help to protect the food from becoming contaminated.

Optional Slide

Contamination Sources

There are several ways from different contamination sources that bacteria and other biological contaminants can use to enter leafy greens:

Humans: Humans can carry pathogens and spread them to leafy greens, food contact surfaces, or other people while they work at the farm. The intestinal microflora of humans has many organisms. Pathogens can easily be spread by fecal material (either directly or indirectly), saliva, mucous, or other bodily fluids. This is especially important if you are sick. When sick, you can transfer your illness-causing organisms to the leafy greens.

Animals: Animals can carry pathogens and spread contamination through the field as they move or defecate. Whether they are wild or domesticated animals, they can contaminate leafy greens by directly or indirectly coming into contact with them or with food contact surfaces.

Water: Many bacteria can be carried through water. If a water source has been contaminated, it needs to be treated or handled in a manner that prevents it from contaminating leafy greens.

Optional Slide

Contamination Sources (cont.)

Soil amendments: Raw manure represents a significant microbial risk to leafy greens since animal manures can contain human pathogens. Soil amendments need to be treated or handled in a manner that prevents leafy greens from becoming contaminated.

Surfaces, equipment, tools, and buildings: Equipment and utensils, such as knives and containers may become contaminated during harvesting or storage if they are mishandled or not sanitized correctly. These surfaces can contaminate leafy greens if they are not properly cleaned or maintained.

Can these potential sources of contamination be found in a leafy greens farm (i.e., workers, animals, water, soil amendments, and tools)?

Yes, they can! That is why it is our job to do everything we can to keep the leafy greens we work with from becoming contaminated. Microorganisms can enter leafy greens through many different routes because they are found virtually everywhere.

Prevention and Control of Biological Contaminants

Remember, microbes that cause illness are called pathogens, but you don't have to remember that name. What you must remember is that preventing them from reaching leafy greens is very important and can be accomplished by doing some of the following basic practices:

- Always follow your company's personal hygiene rules.
- Wash your hands before handling leafy greens or entering the work area, after eating, using the rest room, taking a break, and whenever your hands have been contaminated.
- Do not handle animals or fecal material when working with leafy greens.
- Inform your foreman if you're sick.
- Avoid going to areas where there are animals or raw manure present.

- Properly wash and sanitize your work utensils.
- Keep boxes and re-usable containers clean and always inspect them for evidence of contamination before using them.
- Follow the instructions provided by the company's food safety professional.

Remember that food safety programs are designed to help reduce the risk of physical, chemical, and biological contamination of leafy greens.

Activity 2-Basic Controls for Contamination Prevention

Harvesting Safe
Arizona Leafy Greens

Activity 2-Basic Controls for Contamination Prevention

For each of the following potential contaminant, suggest a control measure that helps to minimize the risk of contamination. What must be done to prevent contamination?

1. Glass in the field.

_____

_____

2. Misuse of pesticides in the field.

_____

_____

3. A fake finger nail in leafy greens.

_____

_____

4. Bad microbes.

_____

_____

5. Machine oil in the field.

_____

_____

What Did We Learn?

Harvesting Safe
Arizona Leafy Greens

What Did We Learn?

In this lesson you learned to identify the three types of leafy greens contaminants as well as some controls you can apply during your everyday work activities to prevent product from becoming contaminated.

Your job is to safely handle the leafy greens you work with to prevent contamination that may cause illness or injury to consumers.

Following the company's rules is a critical part of your job. You must not make up your own rules. ALWAYS follow your company's food safety policies and procedures so that leafy greens are protected from contamination. You make a difference!

Never guess or improvise. If you are not sure about something, ask your foreman.

If you see something wrong, notify your foreman immediately. You have a key role in protecting the leafy greens that people eat. Food safety is non-negotiable.

This is the end of our training on leafy greens contamination and controls.

Do you have any questions? Thank you for coming to this training. Please remember to sign the attendance sheet.

Harvesting Safe
Arizona Leafy Greens

Arizona Leafy Greens Food Safety Training Kit

Personal Hygiene Practices in the Field

Module
3

Lesson Summary

The instructor will describe the concept of personal hygiene and its importance to food safety. This lesson covers the three personal hygiene areas for the production of safe leafy greens: 1) protective clothing, 2) personal practices, and 3) personal health and wounds.

For each of these areas, the instructor will explain and demonstrate appropriate procedures and behaviors for lowering the risk of leafy greens contamination.

The module will teach good personal hygiene habits and the personal hygiene rules and procedures that need to be followed in the field to protect leafy greens from contamination.

Learning Objectives

At the end of this lesson, participants will be able to:

- State how poor personal hygiene directly affects the safety of leafy greens.
- List the different areas of personal hygiene.
- Demonstrate correct usage of clothing and protective garments and how to properly wear a hair restraint.
- Tell workers why personal hygiene policies must be followed while working with leafy greens.
- Explain how personal health can affect food safety.

Personal Hygiene Practices

Thank you for coming today. Please sign the attendance sheet.

In this lesson, we will cover personal hygiene practices.

These topics are very important for lowering the risk of leafy greens contamination.

We will discuss specific procedures that must be followed at work.

Good personal hygiene is critical for minimizing the risk of food contamination. It is essential to prevent the introduction and spread of microbes in the growing and harvesting areas.

What is Personal Hygiene?

What is “personal hygiene”? *[Let a participant give a definition.]*

Personal hygiene refers to habits of cleanliness: clothing, hair, hands, everything! Personal hygiene also can include other factors such as smoking, eating, drinking, coughing, sneezing, spitting, and wearing jewelry and piercings on the job.

The person you see in this picture provides an example of very poor hygiene.

Poor personal hygiene practices in the workplace MAY result in leafy greens contamination.

The Importance of Health and Personal Hygiene

Good health and personal hygiene are essential to prevent the introduction and spread of microbes in the leafy greens production and handling environments where we work.

Note that the harvester shown in this photo is wearing clean clothes and a hair restraint while working.

Personal hygiene stops being a personal issue when handling food that others will eat. Your personal hygiene practices could affect the safety of leafy greens.

Always follow your company's health and personal hygiene policy.

Visitors must be informed of the farm's health and hygiene policies to protect leafy greens from contamination and they must follow them at all times. They also need to have access to the restrooms and handwashing stations.

Let´s review more information about hygiene practices.

Optional Slide

How Do Pathogens Spread?

There are always microorganisms on our hands and outer garments, and these generally reflect the environment in which we live and work, as well as our personal hygiene habits.

Humans can spread pathogens through many routes, but the most common one is known as the fecal-oral route. This happens when we use the restroom if we don't wash our hands before handling leafy greens. This contaminates the product with fecal material and can lead to a foodborne illness.

Pathogens can also spread through saliva, mucus, blood, and contact with other contaminated surfaces, such as clothing or hands that may become contaminated while eating, smoking, sneezing or handling animals.

Because of this, it is important to always wash our hands before starting to work with leafy greens, always wear the appropriate protective clothing, and to always change gloves, aprons and sleeves whenever they might have become contaminated or soiled.

The Three Areas of Personal Hygiene

Good personal hygiene is critical for minimizing the risk of leafy greens contamination. We will classify personal hygiene into three areas:

1. Protective Garments and Appropriate Clothing. This includes clothing, aprons, arm sleeves, hair restraints, and, in some cases, gloves.

2. Personal Practices. These are the things we do daily, such as eating, drinking, smoking and using the restroom.

3. Personal Health and Wounds. This area includes your day-to-day health and any wounds you may have.

1. Protective Garments & Appropriate Clothing

Proper clothing and coverings include uniforms, aprons, arm sleeves, hair restraints and gloves.

To keep product clean and safe, you need to bathe daily and wear clean clothes to work every day. Shorts, tank tops, ragged, or torn clothing are not acceptable. Clothing with sequins, pom-poms, fur, stones, or other objects that could break off is also prohibited.

In some instances, employees may have to use protective garments such as arm sleeves and aprons at all times during harvest operations.

ALWAYS maintain adequate personal cleanliness and wear suitable protective garments specific to your job functions.

Follow your company's dress code to minimize the risk of contaminating leafy green vegetables.

Footwear

You must wear clean and appropriate footwear; boots or closed-toed shoes, whatever is required for your job. This is also important for your safety.

You are not allowed to be barefoot nor wear open-toed shoes or sandals when working at a leafy greens field.

Change your shoes when entering a leafy greens field if you worked with or walked through a pile of untreated soil amendment or raw manure.

In this photograph, the employee is wearing long boots and closed-toed shoes that are well suited for working in the field. There are many different footwear options that are well suited for working at the ranch. Always follow your company's policy.

Hairnets & Beard Nets

Harvesting Safe
Arizona Leafy Greens

Hairnets & Beard Nets

It is important to keep hair from falling into food. Hair harbor bacteria and can cross contaminate food. Consumers consider food with a strand of hair unappealing.

To prevent hair from falling into leafy greens or on harvest utensils, you need to use a hair restraint such as a hairnet, mesh cap, hat, scarf, or bandanna. The type of hair restraint depends on the policies of your company, but it should always be kept clean.

You also should properly tie long hair back. Use hair restraints adequately. When wearing a hairnet, cover all your hair and ears.

If you have a beard or mustache, you are required to wear a beard net.

Some companies allow their employees to wear hats. If you wear a hat, you still may need to wear a hairnet under the hat.

In this picture you can see a harvester using a hairnet. What kinds of hair restraints are used in the leafy greens field where you work?

Arm Sleeves & Aprons

Harvesting Safe
Arizona Leafy Greens

Arm Sleeves & Aprons

If harvesting a value added product, wear an apron and arm sleeves.

Heavily soiled and/or damaged aprons and arm sleeves should be replaced.

Protective garments aim to protect the product from becoming contaminated.

Follow your company dress code to minimize the risk of leafy greens contamination.

Remember, protective garments are intended to protect the food products from contamination, not to protect you from the food.

Glove Usage

Harvesting Safe
Arizona Leafy Greens

Glove Usage

The use of gloves may be mandatory for some employees. Always follow your company's policy.

Here are a few things you need to know about your gloves:

- Wear the correct size and wear them only for the assigned use.
- Keep your gloves clean and sanitized. If the gloves are dirty, torn or contaminated, replace them immediately.
- Remove gloves every time you leave your work station.
- Change gloves after handling a dirty surface or raw materials.
- Replace disposable gloves if they become soiled, broken or contaminated. If they are reusable gloves, wash them and disinfect them properly.
- Notify your foreman whenever a glove or a piece of glove has fallen onto the product.

- Throw old gloves in the designated trash can.
- Remove gloves before entering the restroom.
- Remember that you should ALWAYS wash your hands before putting on your gloves. Gloves do NOT replace handwashing.
- Reusable gloves must be cleaned and sanitized.
- Gloves are used to protect leafy greens from contamination, not for protecting your hands.
- Always follow your company's glove usage policy.

Optional Slide

Protective Clothing

Even though protective clothing such as overalls, gloves, sleeves, aprons, hairnets and footwear help to keep your personal clothes clean and dry, their main purpose is to protect food from contamination from you and your clothes.

Protective clothing should completely cover all personal clothing. Hairnets should completely contain and cover hair. When required, cover beards and moustaches with beard nets. Whenever you wear this clothing you need to make sure that it fits you reasonably well. For example, aprons that are too small may not cover your clothing properly, and clothing or footwear that is the wrong size may limit movement and lead to accidents.

If required for your job, always wear the correct size of protective clothing and make sure that it is covering the areas that it is supposed to cover.

Optional Slide

Case Study

Next let's review some examples of things that can happen in a leafy greens field in regard to employees wearing or not wearing proper clothing.

Clean clothes

Antonio has two jobs; he works as a harvester for a leafy greens farm and as a dog groomer on the weekends. One Monday he was running late for work on the farm and he didn't have time to look for clean work clothes, so he decided to use the same clothes he had used the day before during his other job. He was about to start harvesting when his supervisor noticed that Antonio's clothes were covered in dog hair. What do Antonio and the supervisor need to do?

Antonio can't work while wearing dirty or ripped clothes. He needs to go home and change into an appropriate outfit for working at a leafy greens farm.

Optional Slide

Case Study

Hair Nets and Beard Nets

Adrian works as part of a harvesting crew at a leafy greens farm. He has a beard that he doesn't like to shave, and, as such, he always has to wear a beard net whenever he enters the field. This morning he couldn't find the beard nets among the supplies for the day's work. What should Adrian do?

Adrian needs to inform his supervisor that there are no more beard nets so that the supervisor can resupply them, that way Adrian can put one on and start to work. It´s important to note that not all farms allow the use of a beard net, and some farms might require you to shave in order to work with leafy greens. Always follow your company´s policy.

Optional Slide

Case Study

Arm Sleeves and Aprons

Ivette was going to go to work at the field, so she put on a clean sweater before going to work. Since she was wearing an old sweater she didn't mind if her clothes got stained while working so she didn't put on any disposable sleeves or an apron before starting to work. Is this practice correct? What should Ivette do?

Protective clothing is meant to protect the food from contamination, not to protect you from the food. Always wear whatever protective clothing is required by your company for the specific activities you do.

Optional Slide

Case Study

Gloves

Rocio works at a leafy greens farm. While working, she normally wears medium size gloves, but today she only found that the medium size box was still sealed, and the small size gloves were open. Not wanting to open a whole new box for a single pair of gloves, she put on the small ones instead. As she put them on, there was a small rip in between the fingers, but since it wasn't visible, she left them on and started to work. What should Rocio have done?

Always wear the correct size gloves, if the gloves you are wearing become ripped or torn you need to throw them away and put on new gloves. If a piece of glove falls in the product it needs to be removed and disposed of.

2. Personal Practices

Let's move on to good personal practices. These are some of our daily behaviors and include other areas important to personal hygiene. We all must follow certain good hygiene practices in the field while harvesting in order to protect the leafy greens.

Wherever products are grown or handled, the following personal practices are prohibited:

- Smoking
- Chewing gum
- Chewing tobacco
- Eating and drinking-other than water
- Snacking
- Spitting

Do not bring personal items such as jewelry, backpacks, and personal adornments.

Do not wear jewelry and other personal objects in areas where product is grown or handled. None of these things are allowed around leafy greens at the ranches!

In the next sections, we will address each of the personal hygiene practices.

Personal Cleanliness

It is important to maintain good personal cleanliness and to take care of your health in order to help prevent leafy greens contamination.

Remember to bathe and wear clean clothing daily.

This practice is essential to protect leafy greens from contamination.

Eating & Drinking

When eating and drinking, we can transfer saliva from our mouths to our hands and increase the risk of contaminating food. Saliva contains millions of bad microbes; we do not want to pass them on to food.

Eating food, chewing gum, or drinking beverages is not allowed in areas where leafy greens are grown, handled, stored, or packed. Drinking of water is allowed in the designated area on the harvesting machine.

All workers, foremen, and management must eat and drink ONLY in designated areas away from equipment, unharvested product, food contact surfaces, and food packaging materials. These are areas where the risk of contaminating leafy greens with microbes is low. When going on break, remove your protective garments and follow the company policies and remember to always wash your hands before returning to work.

As you can see in the pictures, these areas are far away from product and work equipment, which will help prevent leafy greens contamination.

Smoking and Tobacco Products

[Instructor's note: There are several ranches that do not have a designated area for smoking since they have a no smoking policy. If this is your case, only mention that it is strictly prohibited to smoke in the field.]

The practices are the same for smoking and other uses of tobacco products.

Smoke only in the designated areas.

Remember to wash your hands before returning to work.

ALWAYS! Use the Restrooms

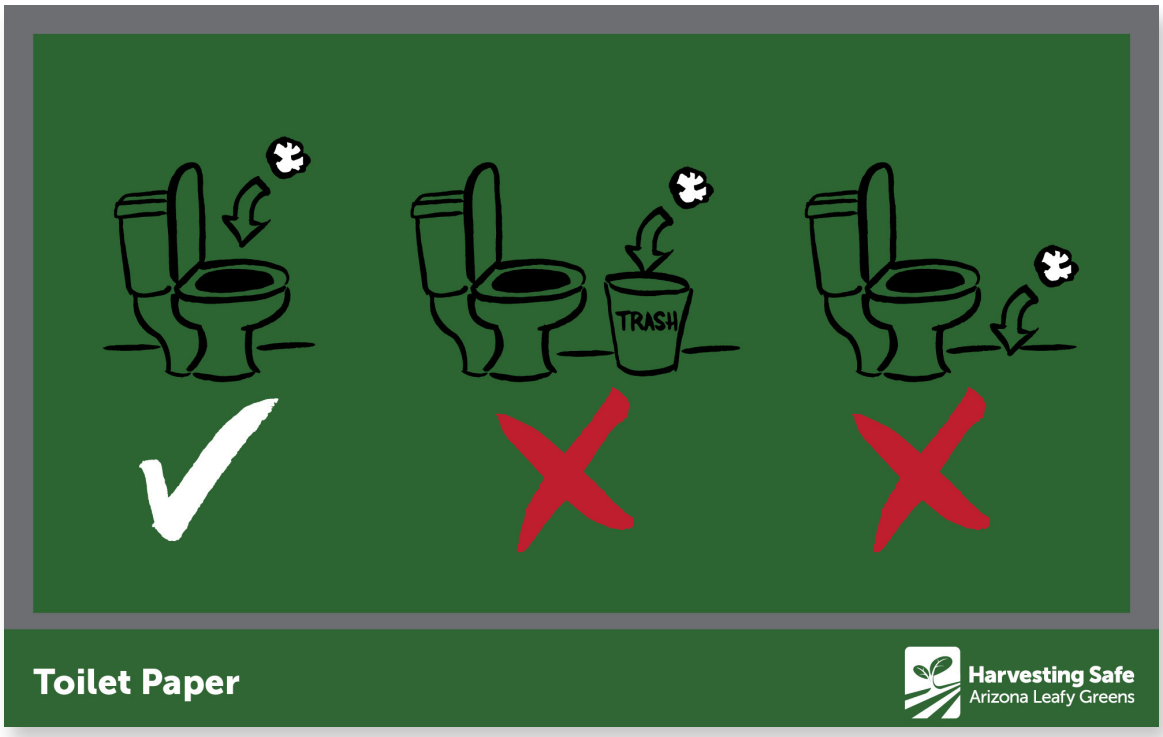
Harvesting Safe
Arizona Leafy Greens

ALWAYS! Use the Restrooms

Feces are one of the main sources of food contamination. You must ALWAYS use the restroom provided by the company.

The company should provide at least one toilet facility per 20 employees, each within a 1/4 mile or 5 minute walk of the work site.

Some companies have a zero tolerance policy for employees who urinate or defecate outdoors.



Toilet Paper

The following is a sensitive topic: If not properly disposed, soiled toilet paper could be a major source of contamination.

It is very important to put soiled toilet paper in the toilet, not in the trash can or on the floor.

A food safety inspector finding soiled toilet paper on the restroom floor or in the trash can results in a major deviation on the audit.

All visitors must have access to all the ranch's toilets and handwashing facilities.

Personal Items

Do not bring any personal items to your working area; these might fall onto product and become a source of contamination.

Personal items are NOT allowed in the field or near the equipment (loose items such as pens and pencils, backpacks, radios, headphones, cell phones, etc.)

Properly store personal items at a designated area before starting work or, better yet, leave them at home.

Cell Phones

Harvesting Safe
Arizona Leafy Greens

Cell Phones

Do not use your cell phone in the active leafy greens production and harvesting areas. If you must use your phone, exit the growing area. Remember to wash your hands before returning to work.

Foremen and supervisors are an exception to this rule, since a phone is one of the items they use regularly to perform their job duties.

If a foreman needs to touch product, they need to wash their hands before doing so.

Jewelry & Make Up

Now let's talk about jewelry: many of us like to wear jewelry such as rings and watches, and many women like to wear makeup (cosmetics) and nail polish.

But in leafy greens production areas, we have to think about the customer. Jewelry, makeup (cosmetics), and nail polish can get into the product, equipment, or containers we are handling, thereby becoming physical contaminants.

Do not wear any jewelry - no rings, brooches, watches, bracelets, necklaces, pins, earrings, nose rings, hairpins, combs, or such. The only piece of jewelry that may be worn is a plain wedding band.

False nails, jeweled nails and nail polish are not allowed in the workplace. False eyelashes are prohibited.

Always follow the company's jewelry, nails and makeup policy.

Leaving Working Areas

Harvesting Safe
Arizona Leafy Greens

Leaving Working Areas

It is important to wear clean clothes and follow the company dress code. Before leaving the work area to go to the restroom, lunch, or anywhere else, put all coats, aprons, gloves, and other protection equipment such as arm guards or plastic sleeves (hair coverings, if required) in a designated area; do not drop these items on the ground.

Put the items back on when returning to work. Remember to wash your hands before returning to work.

Finally, when leaving production areas, remember to always follow the previously designated walkways.

DO NOT take shortcuts.

No Spitting

Spitting is a dirty habit that can spread disease. Sputum might land unnoticed in the product. Remember that saliva contains millions of microbes.

Spitting is strictly prohibited in the field. If you need to spit, do it far away from the product, never on roadways near the field because it can be tracked into the field.

Optional Demonstration:

We all notice people spitting in work areas where leafy greens are being harvested or packed.

[Spit directly [trying to be loud] into a cup/bottle that contains water, coffee, or juice. Pass it around and offer the participants a drink from this container.]

How would you feel if you had to drink from that container?

Sneezing, Coughing & Nose Blowing

When we spit, sneeze, or cough, we can contaminate food with saliva. Do not sneeze or cough directly on the leafy greens you are harvesting or handling. Do not spit while you are in food production areas.

What if you can't move away quickly? Should you sneeze into your arm and change your outer garments? If you sneeze and cough, you should never use your uniform as a paper towel.

If you use your hands to cover a sneeze, cough, or blow your nose, wash your hands right away.

Do not blow your nose in the field or near product. Go to an appropriate area outside the field and wash your hands afterwards.

Optional Slide

Case Study

Let's review another case study example of something that can happen in a leafy greens field.

Leaving Working Areas

Angelica works in a farm harvesting leafy greens. Every day she has a lunch break at noon. At this time she goes to the designated area to eat. Today she packed BBQ ribs for lunch, so she decided to keep her apron on to protect her clothes from getting stained. Is this practice correct? What should Angelica have done?

Optional Slide

Case Study

Roberto took a short bathroom break from harvesting leafy greens. Before going to the restroom he took off all of his protective clothing including an apron, sleeves, gloves and hairnet. After finishing he left the restroom and put on all of his protective garments on including his apron, sleeves, hairnet and a new pair of gloves. Did Roberto miss something before returning to work?

Roberto didn't wash his hands. Remember to always wash your hands before returning to work after leaving the field, especially after going to the restroom, eating, handling animals or animal manure or handling surfaces or objects that could be a source of contamination such as cellphones, radios, controls, steering wheels, or shaking other people's hands.

3. Personal Health & Wounds

Personal health and wounds is the last area of personal hygiene in this lesson.

Several foodborne outbreaks have resulted when sick employees worked with food products.

Workers suffering from some diseases must be excluded or banned from the fields. These ill employees can pass some bad microbes to food, and this must be prevented.

While proper personal hygiene techniques can prevent the transfer of harmful microorganisms from employees to the food they are producing, it may not be good enough if someone has an illness.

Personal Health

The Arizona Leafy Greens Industry Agreement states: “Workers with diarrheal disease or symptoms of other infectious disease are prohibited from being in the field and handling fresh produce and food contact surfaces”.

Workers who have one of these diseases can contaminate leafy greens and make someone who eats them sick. If you have any of the following signs or symptoms, do not work with leafy greens or food contact surfaces:

- Diarrhea
- Hacking cough
- Some types of fever
- Vomiting
- Jaundice
- Sore throat with fever
- An infected sore or wound

If you have any of these symptoms, you must inform your foreman before starting work. Depending on the type of sickness you have and the company’s policy, your foreman may change your work activity to one that doesn’t require you to handle leafy greens or even exclude you from work temporarily until you have recovered.

Each company is different; follow your company policies on this matter.

Optional Slide

Foodborne Illness Symptoms

When working with leafy greens while having symptoms such as nausea, vomiting, diarrhea, jaundice (yellow coloring of the skin), or a sore throat with fever, an sick worker can transfer their disease-causing microorganisms to the leafy greens. These organisms can then be transmitted to the consumer of those contaminated leafy greens. In an earlier lesson we learned about an outbreak in which people got sick from eating leafy greens. The cause of those foodborne illnesses was eating leafy greens contaminated with *E. coli* O157:H7, but this is not the only bacteria that can cause a food borne illness. Other microorganisms that can contaminate leafy greens and cause illness that lead to hospitalization or death include:

- *Salmonella*
- *Staphylococcus aureus*
- *Listeria monocytogenes*
- *Norovirus*
- *Hepatitis A virus*
- *Cyclospora cayetanensis*

These microorganisms are easily transmittable from workers to leafy greens if proper procedures are not followed. As such, it is our responsibility to always follow proper food safety procedures to ensure these bacteria don't contaminate the leafy greens with which we work.

Wounds & Cuts

The same goes for wounds and cuts. The Arizona Leafy Greens Industry Agreement states: “Workers with open cuts or lesions are prohibited from handling fresh produce and food contact surfaces without specific measures to prevent cross-contamination”.

If you have a cut or an open sore you should report it to your supervisor before you start working.

If you cut your hand or finger while harvesting leafy greens, tell your supervisor about the incident. Check that you are OK and the bleeding has stopped. However, if the cut is major or bleeding can’t be stopped, seek medical attention. If the cut is not serious, wash your hands, apply a bandage, then cover it with a glove. Use only bandages provided by your supervisor; these are metal detectable. Your supervisor will decide if it is appropriate for you to return to work.

Wounds & Cuts

Did blood get on any product? Any product that comes in contact with blood or any other body fluid must be disposed of properly.

After a blood incident in the field, your foreman must look around and do a quick assessment to find out if there is any contaminated product or food contact surface with blood. The harvesting can proceed only after this inspection is conducted.

What would you do with the leafy greens in this photo?

Your company has a policy describing procedures for handling/disposition of produce or food-contact surfaces that have come into contact with blood or other body fluids. Always follow it!

Activity 1: Personal Practices

Incorrect/Correct

Before we move on, let's review some examples of situations that happen within the leafy greens industry and that we covered today.

I will display a slide with two pictures and ask you what is wrong in the picture on the left side of the slide.

We will then look at the correct way that is shown in the picture on the right side of the slide.

[The purpose of this activity is to demonstrate appropriate personal hygiene practices that should be followed in the leafy greens industry.]

Incorrect/Correct

What is incorrect in this picture?

Why?

[Participants must answer both questions.]

The picture on the left side shows the employee leaving personal items in the product boxes. Packaging materials should only be used to store leafy greens.

Personal items are NOT allowed at the ranch/field. As illustrated on the right, store personal items in a designated area before starting to work.

Incorrect/Correct

What is incorrect in this picture?

Why?

[Let participants answer.]

The harvester is wearing earrings when working with food products.

In the picture on the right, an employee has removed his watch and is storing it in his back pack.

Always leave your personal belongings in a designated area before starting to work. No jewelry is allowed in the leafy greens fields with the possible exception of a single gold band if the company policy allows.

Incorrect/Correct

Can anyone tell me what is wrong?

Why?

[Participants must answer both questions.]

This picture shows an employee wearing protective garments when entering the restroom.

Clothing/garments can become contaminated in the restroom.

Remove your protective garments before entering the restroom and store them at a designated area.

Some companies require employees to also remove hair coverings when leaving harvesting areas.

When you go to break, remember to remove your protective garments and follow the company policies.

Incorrect/Correct

What is incorrect in this picture?

Why?

[Participants must answer both questions.]

The worker is not wearing gloves while working in the field. Does your company policy require gloves?

Incorrect/Correct

What is incorrect in this picture?

Why?

[Participants must answer both questions.]

Employees are eating in the leafy greens field.

All of us – workers and management – must ONLY eat and drink in designated areas away from equipment and unharvested product where the risk of contaminating leafy greens with microbes is low.

Remember to wash your hands before returning to work.

Incorrect/Correct

What is incorrect in this picture?

Why?

[Participants must answer both questions.]

This worker is wearing a clean apron, gloves and arm sleeves, but his sleeve is not worn properly. Sleeves should cover all of your forearm.

All body parts must be covered when working with value added food products.

In the picture on the right you can also see the employee is wearing a hair restraint and the beard net properly.

Incorrect/Correct

What is incorrect in this picture?

Why?

[Participants must answer both questions.]

This harvester is not wearing his hairnet.

In the next picture the worker is wearing his hairnet correctly: Hairnets should cover all visible hair and the ears.

If you wear a hat, you still may need to wear a hairnet.

Incorrect/Correct

What is incorrect in this picture?

Why?

[Participants must answer both questions.]

This worker is wearing gloves, arm sleeves, and a clean apron, but her sleeve is torn. The sleeve should be replaced immediately.

All body parts must be covered when working with value added food products.

Incorrect/Correct

What is incorrect in this picture?

Why?

[Participants must answer both questions.]

This harvester is not wearing his hairnet.

In the next picture the worker is wearing his hairnet correctly: Hairnets should cover all visible hair and the ears.

If you wear a hat, you still may need to wear a hairnet.

Incorrect/Correct

What is incorrect in this picture?

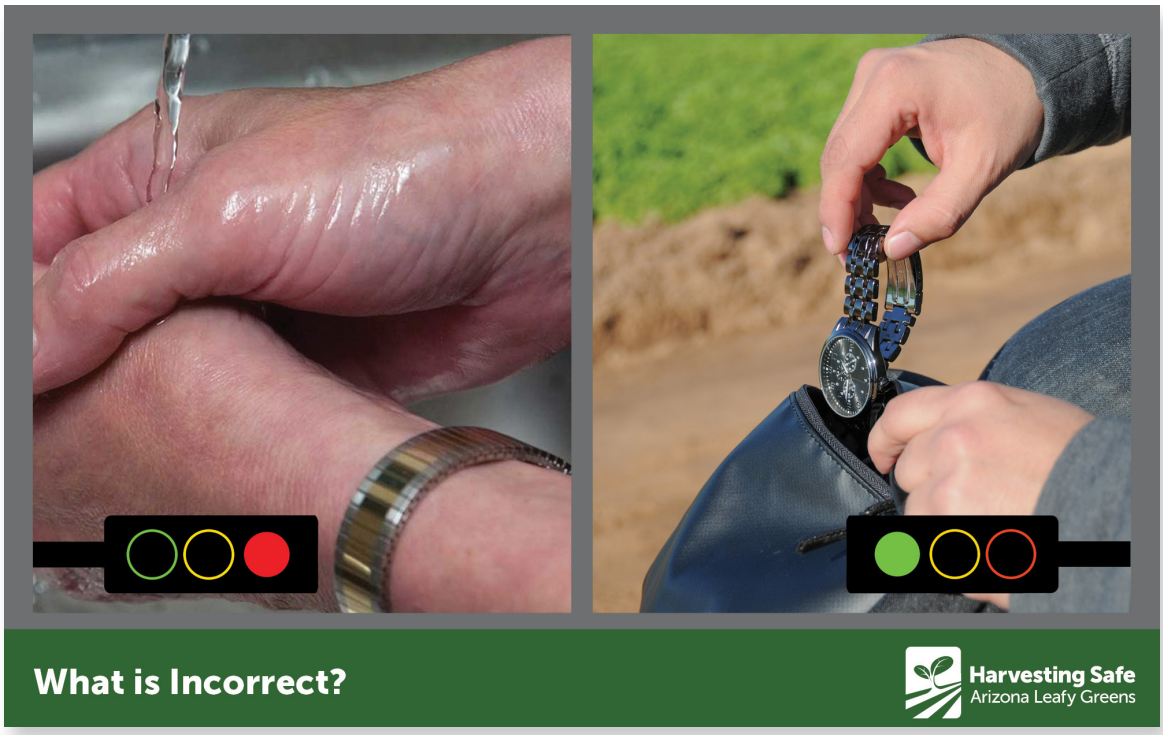
Why?

[Participants must answer both questions.]

This harvester is not wearing his beard net properly.

In the next picture the worker is correctly wearing his beard net.

If you have a beard or mustache, you are required to wear a beard net.



What is Incorrect?

This is the activity's last slide.

What is incorrect in this picture?

Wearing a watch is not acceptable at work.

They represent a physical hazard to food.

Activity 2-Case Studies

Now that we have completed the employee personal hygiene lesson, read the following case studies and identify the practices that can promote leafy greens contamination.

Discuss what you would do in each one of the four scenarios. Green Leafy Greens, LLC has 20 employees in the field and have the following situations:

1. Two employees arrived late at work and don´t wash their hands, but are using gloves.
2. During the break for lunch, all employees wash their hands, but the handwashing station did not have any hand soap.
3. One employee is walking into the field using flip flops and smoking.
4. All of them are using hairnets, gloves, arm sleeves and an apron when handling value added product.

Do you have any questions? Thank you for coming to this training. Please remember to sign the attendance sheet.

Harvesting Safe
Arizona Leafy Greens

Arizona Leafy Greens Food Safety Training Kit

Handwashing and Glove Usage

Module
4

Lesson Summary

During this lesson, the instructor will explain the importance of handwashing and will also explain the purpose of and the correct procedure for handwashing that needs to be used at work.

This lesson also describes the proper use of gloves and hand sanitizers to prevent leafy greens cross-contamination. For each of these areas, the instructor will explain and demonstrate appropriate procedures and behaviors for lowering the risk of leafy greens contamination.

Learning Objectives

At the end of this lesson, participants will be able to:

- State the importance of handwashing to avoid product contamination.
- List the situations when handwashing is required.
- Demonstrate appropriate handwashing techniques.
- Explain the proper handwashing procedure.
- Learn how to properly use gloves.
- Learn the appropriate use of hand sanitizers.

Handwashing and Glove Usage

Thank you for coming today. Please sign the attendance sheet.

In this lesson, we will cover handwashing and glove usage.

These topics are very important for lowering the risk of leafy greens contamination.

We will discuss specific procedures that must be followed at work.

Handwashing

Handwashing is the single most important food safety practice.

Handwashing is an easy and effective way to reduce the spread of biological contamination on leafy greens. Your hands are in contact with leafy greens all the time. They must be clean to prevent contamination.

Your hands can spread microbes to everything you touch.

Our hands come into contact with many different objects throughout the day, these objects are not always clean and our hands can become contaminated with microbes. When we don´t wash our hands, the dirt and microbes can be transferred to leafy greens during our work. For this reason, you must keep your hands clean AT ALL TIMES.

The rule is simple: handwashing reduces the number of microbes on hands and reduces the chance of contaminating the leafy greens you work with. It is the simplest and, probably, the fastest way to minimize contamination.

Improper handwashing has been responsible for a number of foodborne illnesses.

Big Mistake!

The employee in these pictures is making a big mistake. He did not wash his hands after using the restroom.

This may seem like a small mistake, but, in reality, this can be major source of contamination to leafy greens. If contaminated, the bacteria on his hands could potentially be transmitted to leafy greens and everything else he touches. You must keep your hands clean at all times!

When is Handwashing Needed?

Always wash your hands before going to your workstation at the beginning of the day.

But that is not enough!

Handwashing must be a regular activity; keep your hands clean throughout the day. Wash your hands often throughout the day. Wash your hands BEFORE:

- Starting work.
- Putting on gloves, if applicable.

When is Handwashing Needed?

You should also wash your hands AFTER doing the following activities:

- Using the restroom. THIS IS THE MOST IMPORTANT HANDWASHING OPPORTUNITY.
- Taking a break or eating.
- Touching your nose or face.
- Coughing or sneezing on your hands.
- As soon as possible after touching animals or animal waste.
- Smoking.
- Using your cellphone.
- Any other time hands may have become contaminated.

You should also wash your hands thoroughly any time that they could have become soiled or contaminated.

Proper Handwashing Procedure

Wetting your hands or washing them without soap is not enough to remove microbes or chemical products from your hands.

There is a correct way to wash your hands at work. A quick soak or wetting your hands without soap is not good enough. Let's go over each of the handwashing steps:

Step 1. Wet your hands with water.

Step 2. Apply soap.

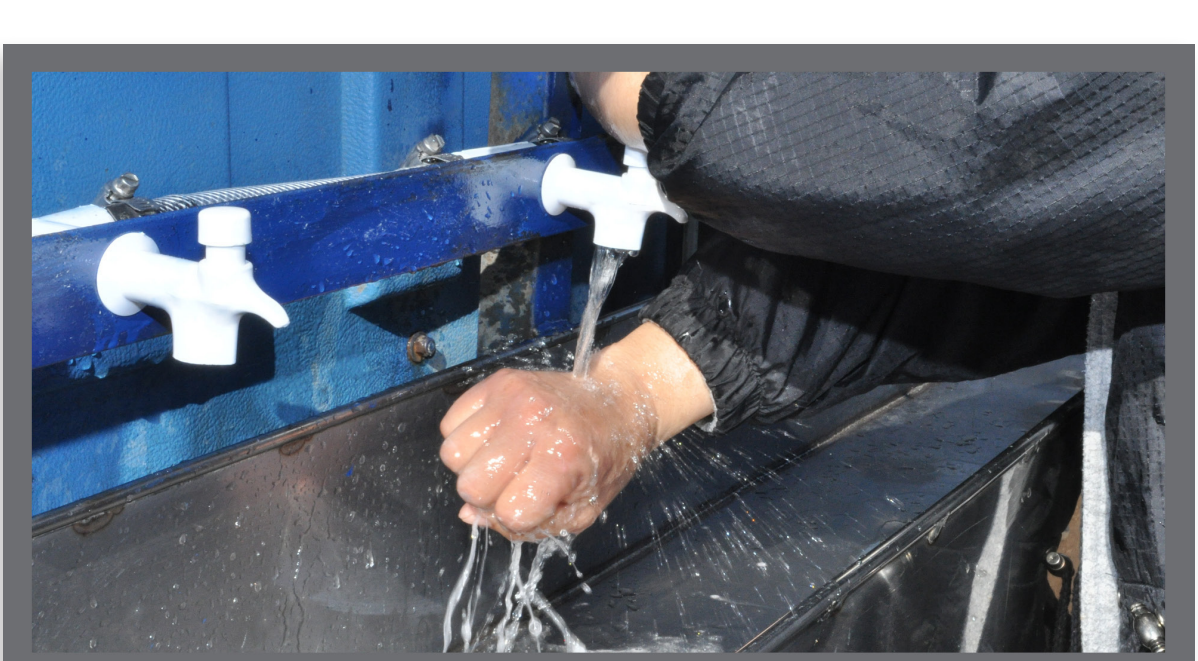
Step 3. Lather and scrub your hands and arms for about 20 seconds. Do not forget the areas under your nails and between your fingers.

Step 4. Rinse thoroughly with water.

Step 5. Dry your hands using a clean paper towel.

Step 6. If required for your job, put on your gloves.

Please note that some companies might require their employees to use hand sanitizers after hand washing and before putting on gloves.



Step 1. Wet Your Hands

Let's review each handwashing step in more detail.

If you do not do all of the steps, or do them in the wrong order, you have not washed your hands properly.

The first step is to wet your hands with clean running water.

Step 2. Apply Soap

Harvesting Safe
Arizona Leafy Greens

Step 2. Apply Soap

Step 2 is to apply the soap to your hands.

Soap loosens bacteria and soil that adhere to the skin's surface.

Step 3. Lather and Scrub

For step 3, lather and scrub your hands and arms for about 20 seconds. Remember the areas under your nails and between your fingers.

Remember, it takes about 20 seconds to do a good job.

Create enough friction and ensure fingertips and areas between fingers are rubbed.

Friction is probably the most important factor in removing bacteria from hands.

Step 4. Rinse Your Hands with Water

Make sure to remove all soap from your hands.

Step 5. Dry Your Hands

Harvesting Safe
Arizona Leafy Greens

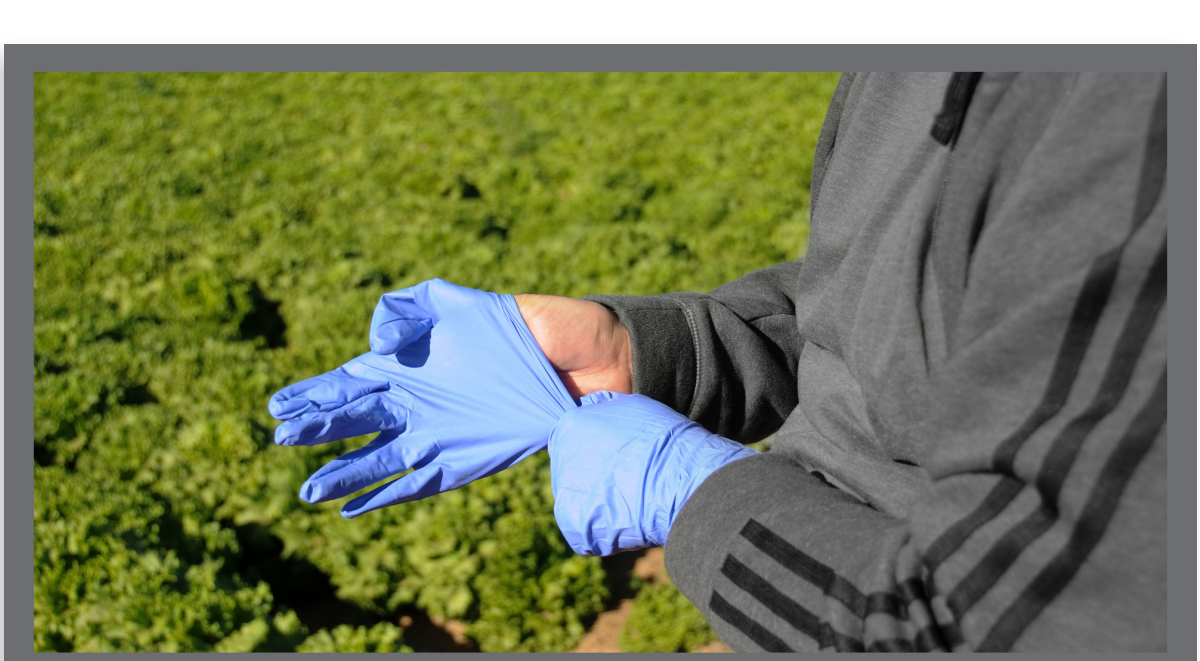
Step 5. Dry Your Hands

Dry your hands thoroughly using a disposable paper towel or any other approved drying method such as a warm air dryer or a continuous supply of clean towels.

Always throw away the disposable paper towel in the trash can or designated area.

Do not dry your hands on your working clothes or outer garments. You would be recontaminating your hands with this practice.

Some companies require their employees to use hand sanitizers after handwashing and before putting on gloves.



Step 6. If Required, Put on Your Gloves

If you work in an area where gloves are required, put them on!

If your company also requires sanitizer application on gloves, do so before returning to work.

Now you are ready to go to work.

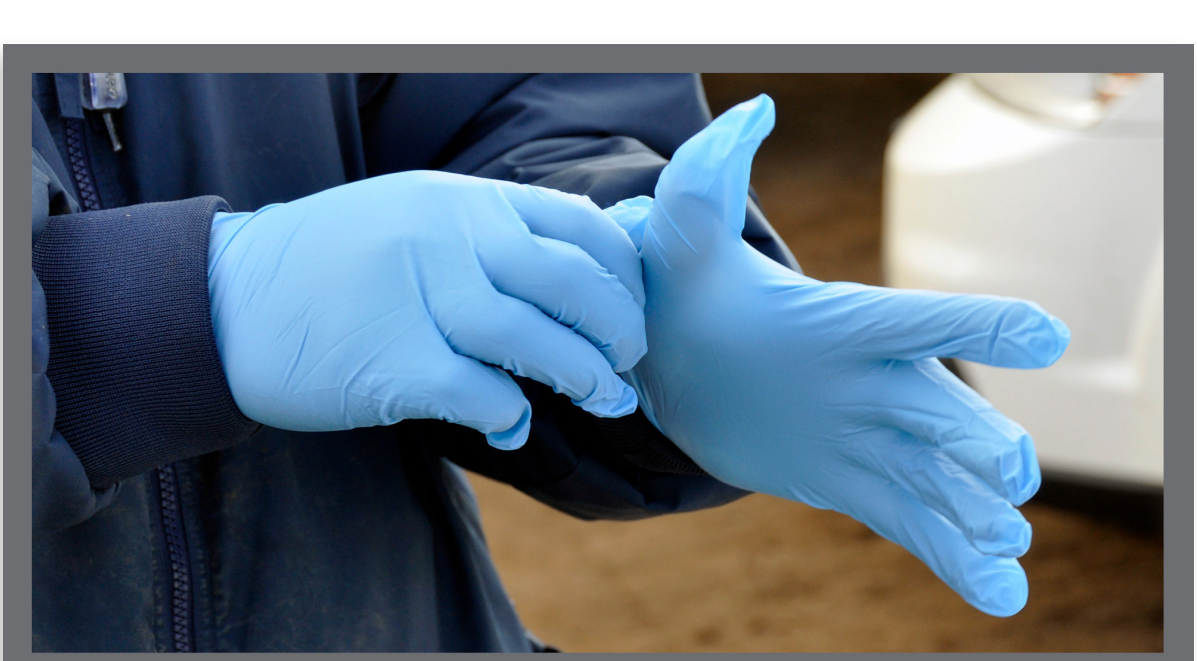
If required for your job, put on your gloves.

Some companies require their employees to use hand sanitizers after handwashing and before putting on gloves. Hand sanitizers do not replace handwashing with water and soap.

Other companies also require sanitizer application on gloves. Always follow your company procedure and if required, do not skip this step.

These six steps will help you to ensure you wash your hands properly. If you find it difficult to remember them, check the posters placed next to the field's handwashing stations, which demonstrate the proper procedure to wash your hands.

Handwashing stations must be in sufficiently close proximity to toilet facilities.



Are Gloves Enough? NO

If you wear gloves, does that mean that you do not have to wash your hands?

[Wait a moment or a response.]

NO, gloves cannot completely protect products from contamination.

You must wash your hands before putting on gloves. If you have contaminated or dirty hands, you will pass the microbes to the gloves and then to the product.

Treat gloves as though they were your hands.

Glove Usage

Even when using gloves, it is necessary to wash your hands before putting on the gloves.

Handwashing is the first line of defense against leafy greens contamination; gloves provide a second barrier for preventing contamination.

Gloves cannot completely protect the products from contamination. If you have dirty or contaminated hands, you will pass the microbes to the gloves and then to the product. If you use reusable gloves to handle leafy greens, then gloves must also be washed and sanitized following your company's policy.

You should understand that gloves are meant to protect leafy greens from contamination, not to protect your hands. Always follow the company´s glove usage policy keeping in mind that gloves are not a substitute for proper handwashing

Hand-Glove Sanitizer

Harvesting Safe
Arizona Leafy Greens

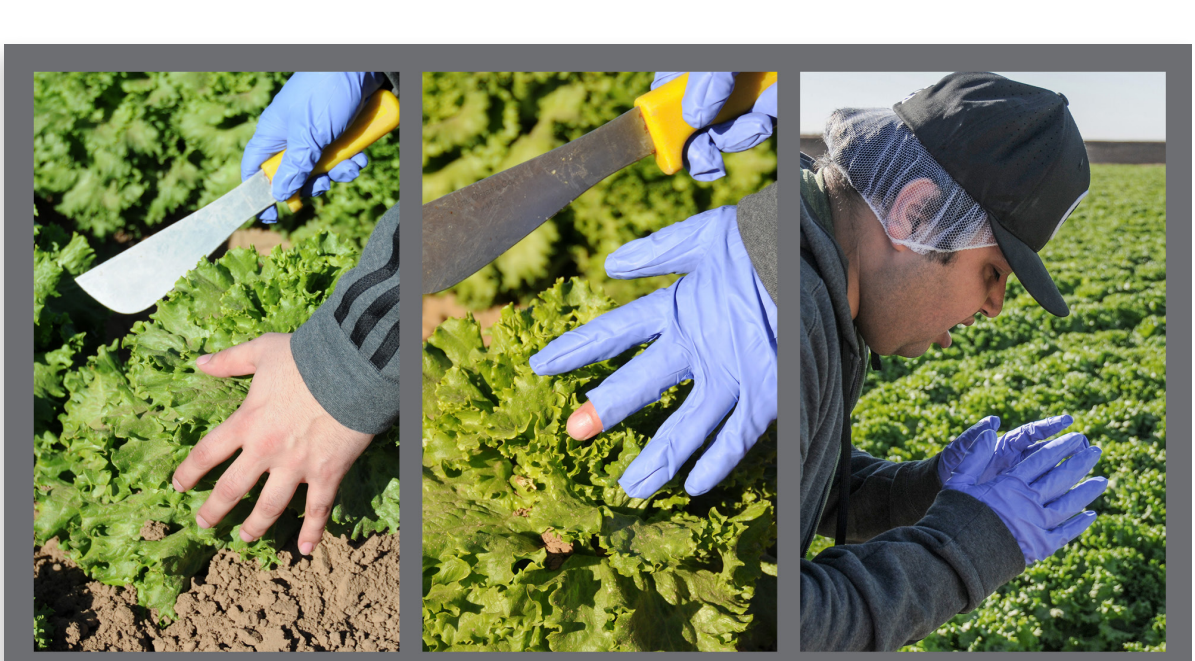
Hand-Glove Sanitizer

Some farms require employees to use hand sanitizers after handwashing.

Other companies also require sanitizer application on gloves.

Do not skip this procedure. Hand sanitizers can reduce bacterial populations on clean hands or clean gloves. However, hand sanitizers do not replace proper handwashing with water and soap.

If a hand sanitizer is used at your facility, use only the one provided by the company, not one brought from home. ONLY FDA/USDA approved sanitizers can be used in leafy greens production.



Glove Usage

The pictures on the slide show the incorrect use of gloves.

The first picture shows an employee harvesting with no gloves.

The second picture shows an employee using torn gloves. Change gloves anytime they become soiled or torn.

The third picture shows the employee sneezing with gloves on.

If the company chooses to use gloves in handling leafy greens or food contact surfaces, gloves must be maintained in an intact and sanitary condition and replaced when no longer functioning as intended.

Activity 1-Practicing Handwashing

Harvesting Safe
Arizona Leafy Greens

Activity 1- Practicing Handwashing

This is the end of the lecture. But before we end, we have an important activity: We will go through the six handwashing steps at the handwashing station.

Now I want everyone to show me that you know the correct way to wash your hands. I need a volunteer to start.

[Ask for a volunteer to come up to the sink. Make sure he/she goes through the previously discussed steps, especially the lathering step for 20 seconds.]

[Ask the rest of the group to judge how well the volunteer washed his/her hands.]

[When the first volunteer is finished, demonstrate the correct handwashing procedure to all participants, then have the rest do the same procedure. Be sure each person follows the correct handwashing procedure.]

This is the end of our discussion about personal handwashing. What questions do you have?

[If you have the GloGerm™ or Glitterbug® lotion proceed to do the handwashing activity included in the next page.]

Thank you for coming. Please be sure that you have signed the attendance sheet.

Instructions for Conducting an Alternate Version of Activity 1 – Practicing Handwashing

Purpose of the Activity

To demonstrate the correct handwashing procedure.

Supplies

1. Have the GloGerm™ or GlitterBug® lotion and UV light ready. You can order the GloGerm™ or the GlitterBug® kit at:

   GloGerm™ Company
   http://www.glogerm.com/
   800-842-6622

   GlitterBug® Brevis Co.
   http://www.glitterbug.com/
   801-466-6677

2. Before starting the training session, make sure there is a handwashing station nearby. It should have running water and be properly stocked with liquid soap, disposable paper towels, and a trash container.

Procedure

1. Take the participants to a handwashing station.
2. Apply GloGerm™ or GlitterBug® lotion to your hands and ask a couple of participants to volunteer to apply lotion to their hands.
3. Put your hands and the participants' hands under the UV light and show them to others. You may have to dim the lights in order to see the glow.
4. Ask the volunteers to just soak their hands instead of washing them properly.
5. Wash your hands using the correct handwashing procedure.
6. Put your hands under the UV light and show them that your hands are not glowing. Now ask the volunteers to put their hands under the UV light and show the glow.
7. Ask participants to tell you what happened and why they think their hands still glow.

Handwashing and Glove Usage

This is the end of our training on handwashing and glove usage.

What questions do you have?

Thank you for your participation.

Please remember to sign the attendance sheet.

Harvesting Safe
Arizona Leafy Greens

Arizona Leafy Greens Food Safety Training Kit

Cross-Contamination in the Field

Module
5

Lesson Summary

The instructor will describe the concept of cross-contamination, how it occurs, why it is a problem for leafy greens and why it is critical to food safety. Prevention strategies and ways to prevent cross-contamination are also covered. The instructor will describe situations that can happen at the farm that might lead to product contamination. These events include animal intrusion discovery, glass in the field, blood in harvested product, and unsuitable packaging materials. This module also reviews food safety strategies for preventing cross-contamination.

For each of these areas, the instructor will explain and demonstrate appropriate procedures and behaviors for lowering the risk of leafy greens contamination. Harvesters will also be trained to:

1. Recognize leafy greens that must not be harvested, including those that may be contaminated with known or reasonably foreseeable contaminants.
2. Inspect harvest containers and equipment to ensure that they are clean, functioning properly, and maintained so as not to become a source of contamination of produce with known or reasonably foreseeable contaminants.
3. Correct problems with harvest containers or equipment, or report such problems to the foreman (or other responsible party), as appropriate to the person's job responsibilities.

Additionally, employees will be trained to identify and not harvest any leafy greens that are reasonably likely to be contaminated, this includes leafy greens that are visually contaminated with animal feces or have dropped to the ground.

Learning Objectives

At the end of this lesson, participants will be able to:

- State what cross-contamination is and how it can be prevented at the ranch.
- Identify potential contaminants in the field.
- Report to their foreman any potential situation for cross-contamination.
- Demonstrate appropriate practices to prevent cross-contamination.

Cross-Contamination in the Field

Thank you for coming today. Please remember to sign the attendance sheet.

In this module, we will review practices for preventing cross-contamination in the field.

This topic is very important to protect leafy greens from becoming contaminated.

What is Cross-Contamination?

Harvesting Safe
Arizona Leafy Greens

What is Cross-Contamination?

Remember that a contaminant is a physical, chemical, or biological agent present in a food that can cause illness or injury to the consumer. Leafy greens are the only thing that should be present in a product tote, carton, bin, box, or container.

You probably have heard the term “cross-contamination” at work. Does anyone know what cross-contamination is?

Cross-contamination is the transfer of harmful substances or microbes (contaminants) from something DIRTY to something CLEAN - in our case, to the leafy greens we work with.

Cross-contamination is a serious matter because it can make our customers ill, as well as reduce the leafy greens shelf life and/or quality.

We will cover several practices in the field may that lead to cross-contamination.

[This section may include practices that do not apply to all ranches; you should show only the ones that are used or apply to your operation.]

Food-Contact Surfaces – FSMA Training Requirement

A food contact surface is a part of equipment or tools with which leafy greens have direct contact or from which it can drip, or splash on a food or surface that is usually in contact with the food.

Some examples of food contact surfaces are: conveyor belts, table tops, working tables, elevators, knives, containers, packaging materials, liners, and bins. Food-contact surfaces are more likely than other surfaces to be sources of cross-contamination.

Proper sanitation is one key element to prevent cross-contamination. It is very important to follow the proper procedures for cleaning and sanitizing.

Bins, tables, baskets, mechanical harvesters, brushes, and buckets must be cleaned and sanitized daily.

Make sure all cleaning and sanitizing procedures are effective. Harvesters must always be aware of any sign of contamination on food contact surfaces. If you see a potential contamination risk, stop working and tell your foreman immediately.

Foremen need to make sure that the sanitation process of food contact surfaces, as well all the monitoring activities and corrective actions, are effective and documented.

Harvesting Machines-Food Contact Surfaces

A harvesting machine can have several food contact surfaces. Remember that any part of the harvesting machine with which leafy greens normally come into contact, or from which food may drain, drip or splash into a food or onto a surface that is normally in contact with food is considered a food contact surface.

Do not walk, step, sit, or lie on food contact surfaces of equipment. Make sure that drip pans are in place; check and clean them before the equipment enters the field.

It is your job to follow proper procedures for cleaning and sanitizing food contact surfaces to minimize cross-contamination. Note that all cleaning procedures effectiveness is monitored and evaluated through documentation, visual and microbial evaluations. Your supervisors are in charge of documenting all monitoring activities and corrective actions. They also play a key role in preventing cross-contamination.

Harvesting Tools & Equipment

One way to prevent leafy greens cross-contamination through harvest utensils, like knives and extraction rings, is to keep them clean and in good condition.

To clean harvesting tools, you should have chlorine based chemicals or another sanitizing solution available at an appropriate concentration in line with your company procedures. This solution is used to keep your tools clean while you're working.

Your foreman is responsible for providing the sanitizing solution and monitoring and documenting its concentration.

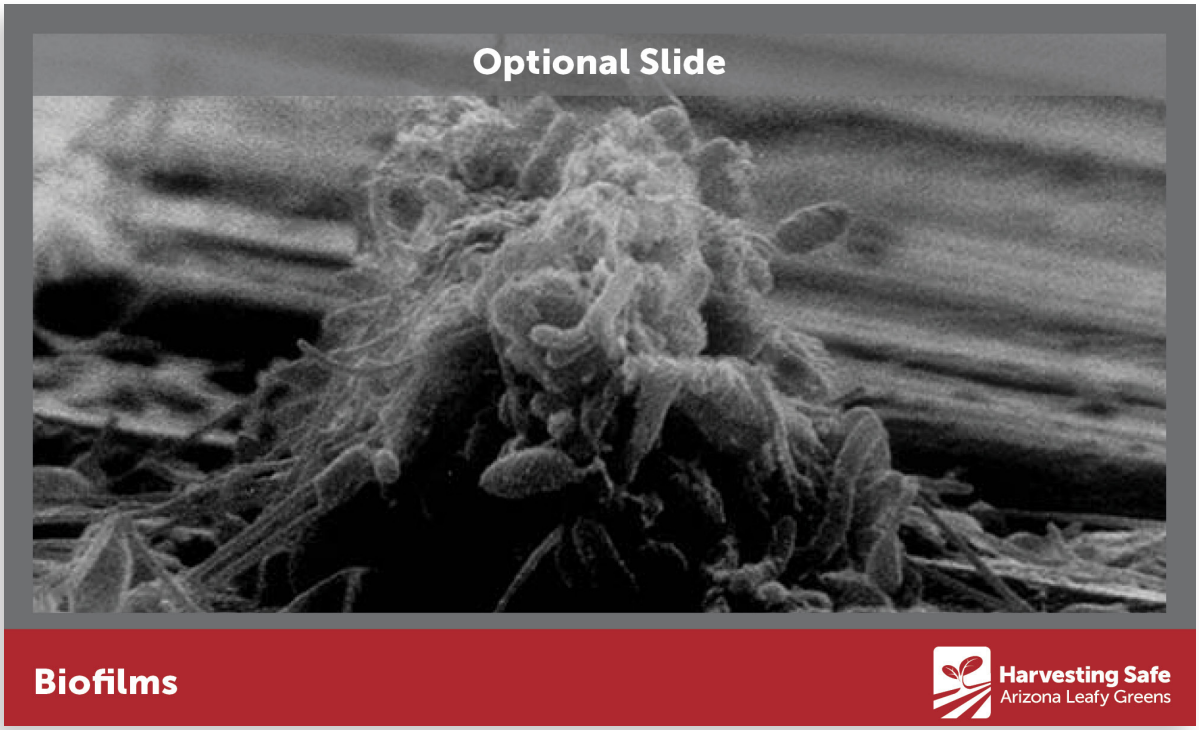
Optional Slide

Biofilms

Biofilms are the accumulation of microorganisms stuck on a surface and are frequently found in hard-to-remove or clean structures. Biofilm formations house and protect bacteria from the external agents such as sanitizers and provides an anchorage point for microorganisms to remain on that surface. Biofilms also allow other bacteria and food particles to stick to that surface.

Biofilms form on surfaces that have not been cleaned and sanitized properly.

An excellent example of a biofilm is the scum or plaque that builds up on your teeth. If you brush your teeth at night, by morning the bacteria will have built up a film on the surface of the teeth. Even after brushing, bacteria can remain in the warm and moist environment of your mouth.



Optional Slide

Biofilms (cont.)

The same sort of film can build up on the surfaces of harvesting utensils and equipment and lead to product contamination. If equipment is not cleaned properly, the water and leafy greens debris can become a source of nutrition for the microorganisms in the biofilm, contributing to their growth.

Because of this, regular cleaning and sanitizing is the best way to prevent the formation of biofilms. Scrub the food contact surfaces on harvesting utensils when cleaning them and always sanitize your knives before using them.

Optional Slide

Harborage Sites

Harborage sites are areas on equipment that are difficult to clean and sanitize effectively. Dirt, product, and other types of organic material can accumulate in these areas providing nutrients and water that can allow bacteria to grow. Biofilms can form in these sites as well.

When combined with other factors like time, temperature and food residue, harborage sites can be particularly hazardous.

These sites need special attention during cleaning and sanitizing. It is very important for sanitation crews to take their time cleaning.

Some common harborage sites present in leafy greens farms include:

Optional Slide

Harborage Sites (cont.)

- Ledges and protective coverings
- Rollers
- Conveyor belts
- Equipment seams
- Temporary repairs
- Welds
- Control panels
- Improper maintained cleaning tools such as cracks on knives, tools or containers

These slides show potential harborage sites in several locations of the equipment in a leafy greens farm. Let's go over each one of them and identify the potential harborage sites.

Optional Slide

Sanitation

Sanitation is the maintenance or restoration of clean, hygienic conditions. On a leafy greens farm, sanitation programs are needed to eliminate microorganisms from harvesting utensils and equipment that can cause food spoilage or illness.

Sanitation programs include cleaning and sanitizing steps. Cleaning and sanitizing are two different activities with two different objectives. It is important to make the distinction, as one without the other results in a process that does not work.

Cleaning and sanitizing are more than just keeping things clean: they are important activities on the leafy greens farm to reduce contamination.

Cleaning is the physical removal of dust, soil and debris such as leaves and stems; in general, all of the visible and invisible soil is removed from food contact and non-contact food surfaces.

Optional Slide

Cleaning vs. Sanitizing

Soil provides the nutrients for microorganisms to grow and can easily accumulate on harvesting utensils and equipment while working in the field (dirt, dust, grease, leafy greens residue, etc.) Most often, the cleaning process will require physical action (i.e., scrubbing, elbow grease) to ensure that the surfaces are clean.

During this step, a specified cleaner (or detergent) is applied and used according to the manufacturer's directions. These directions are specific for the type of cleaner and cleaning application and include chemical concentration, contact time, and temperature. The cleaner helps remove grime and soils through interaction of the detergent and that soil.

After cleaning, no leafy greens residues should remain on any part of the equipment or utensils. The purpose of cleaning is to remove soil so that sanitation can occur.

Cleaning & Sanitizing Picking Knives

When leaving the field or your work area to go to a break or for some other purpose, leave your knives and other harvest utensils in the container filled with sanitizing solution until you return to work.

You must sanitize your harvest utensils including knives, as frequently as reasonably necessary to protect against contamination but, a minimum of the BEGINNING and END of each day and at ANYTIME you go outside the field or if your tools become contaminated (e.g. when falls to the ground). Always follow your company's procedure.

ALWAYS use harvesting tools in good condition. Splintered knives, broken handles or the use of duct tape on the handles of tools, such as knives, is not allowed in the field.

Harvesting Containers – FSMA Training Requirement

Leafy greens containers such as bins and totes must be inspected before they are used. Use ONLY containers that are clean and undamaged.

You must inspect all containers looking for loose pieces, pests, pest droppings, diesel, oil, trash, dirt, feces or any other potential contaminant. If you see any of these items, report it immediately to your foreman and do not use the container.

If reusable containers are used in your company, they must be properly cleaned and sanitized.

Leafy greens containers must not be used to store or transport personal items, tools, cans, clothes, etc. Harvest containers should only be used to contain and transport leafy greens.

Contaminated packaging materials must be discarded and contaminated reusable containers need to be washed properly.

Containers ALWAYS have to be stored on pallets, trucks or trailers, and never directly on the ground. Their assembly should also not be done on the ground. Additionally, a buffer basket or pallet must be used to keep containers for leafy greens from contacting the ground.

Do not store or stage harvesting containers near water sources, pesticides, chemical mixing or storage areas, or portable toilets.

Pallets

Pallets are used to stack leafy greens containers and move them from the field to the cooler.

Pallets can also become a source of contamination. They must be in good condition and free of potential contaminants such as machine oil, diesel, soil, dirt, pests, pest droppings and feces. Inspect all pallets looking for cracks and other structural damage. They must not have nails or splinters that can fall into leafy greens. Discard all damaged pallets.

Don't walk on pallets and do not leave personal items on pallets.

Always place harvested product on pallets and not on the ground.

Packaging Materials – FSMA Training Requirement

Packaging materials are food contact surfaces. They must be clean and undamaged to prevent leafy greens contamination.

Before using them, you must inspect all containers looking for loose pieces, pests, pest droppings, diesel, oil, trash, dirt, feces or any other potential contaminant. If you see any of these items, report it immediately to your foreman and do not use the container.

If you see contaminated or torn packaging materials, you must discard it.

Do not store or leave packaging materials near water sources, pesticides, mixing or storage areas for chemicals or portable toilets.

Packing materials ALWAYS have to be stored on pallets, trucks or trailers, never directly on the ground.

Harvesting Machines

Harvesting machines have many food contact surfaces that can also become a source of contamination. Any farming equipment that comes into contact with raw manure, insufficiently treated compost, waters of unknown quality, animal hazards (such as animal droppings) or other potential sources of contamination must be cleaned and sanitized following company procedures. If you spot any of these contamination sources when harvesting, it is your job to notify your foreman immediately.

The product that has been in contact with contamination must be discarded.

It is important that harvesting machines are cleaned and sanitized following the company's procedures. Sanitation must be done away from the product and other equipment. Runoff of water and cleaning products are not allowed to reach the growing area. Use only the water source authorized by your foreman.

When you are done cleaning, store the harvesting machines in an area away from potential hazard sources including roads, buildings, wells, chemical storage areas, animals, and farm inputs. These practices will help to minimize the risk of cross-contamination.

Equipment Damage and Breakage

Harvesting Safe
Arizona Leafy Greens

Equipment Damage and Breakage

There should not be any loose or damaged parts on the harvesting machine, tractors or trailers that can get into the product. This includes hinges and bolts, screws, nuts or glass/ brittle plastic lighting.

Loose or damaged parts should be replaced or fixed immediately using the appropriate material, otherwise they can become a source of physical contamination. Do not use cords, tape, wires, and/or cardboard to make temporary repairs.

Your job is not to fix things. If you see something that is not working correctly or that does not look normal, report it immediately to your foreman so it can be inspected and repaired, if needed.

Maintenance employees must also follow good personal hygiene practices. They always have to make sure that all the tools used are not left behind in the field or near any leafy greens.

Leafy Greens on the Ground – FSMA Training Requirement

Bad microbes can be in the soil and may cross-contaminate the harvested leafy greens if not controlled.

Think about yourself for a moment: would you give your family food that was in the dirt?

If the harvested product or a container with product falls to the ground while harvesting, you need to THROW AWAY all the product that came in contact with the ground.

Do not harvest dropped leafy greens. Always follow your foreman's instructions.

Finally, any packaging container that contacts the ground must be sent back for sanitation or be disposed of properly.

In the pictures, the harvester is shown placing a lettuce head that fell to the ground back into the box. This practice is unacceptable.

Harvested Product Protection – FSMA Training Requirement

You must protect harvested product from soil. Do not stack soiled bins on top of each other if the bottom of one bin has had direct contact with soil unless a protective barrier (i.e., liner, cover, etc.) is used to separate the containers.

Place the container on a pallet or platform. Any packaging container that contacts the ground must be sent back for sanitation or be disposed of properly.

Animals in the Field – FSMA Training Requirement

Wild animals, livestock, or domestic animals can be carriers of disease causing microorganisms. Leafy greens fields and blocks are susceptible to animal intrusion because leafy greens are generally grown in rural areas that may have adjacent wetlands, wild lands, or parks harboring wildlife. Any type of animal in the field may lead to crop contamination. This poses a significant risk to the safety of the leafy greens through physical contact or fecal matter.

If you find some evidence of animal intrusion in the field while harvesting, you must report it to the foreman and do not harvest any product that is visibly contaminated. Examples of animal intrusion evidences are: animals in the field, feces, downed fences, feathers, hairs, animal tracks, bitten vegetables, among others.

What do you see in this picture?

Is there any risk for leafy greens safety?

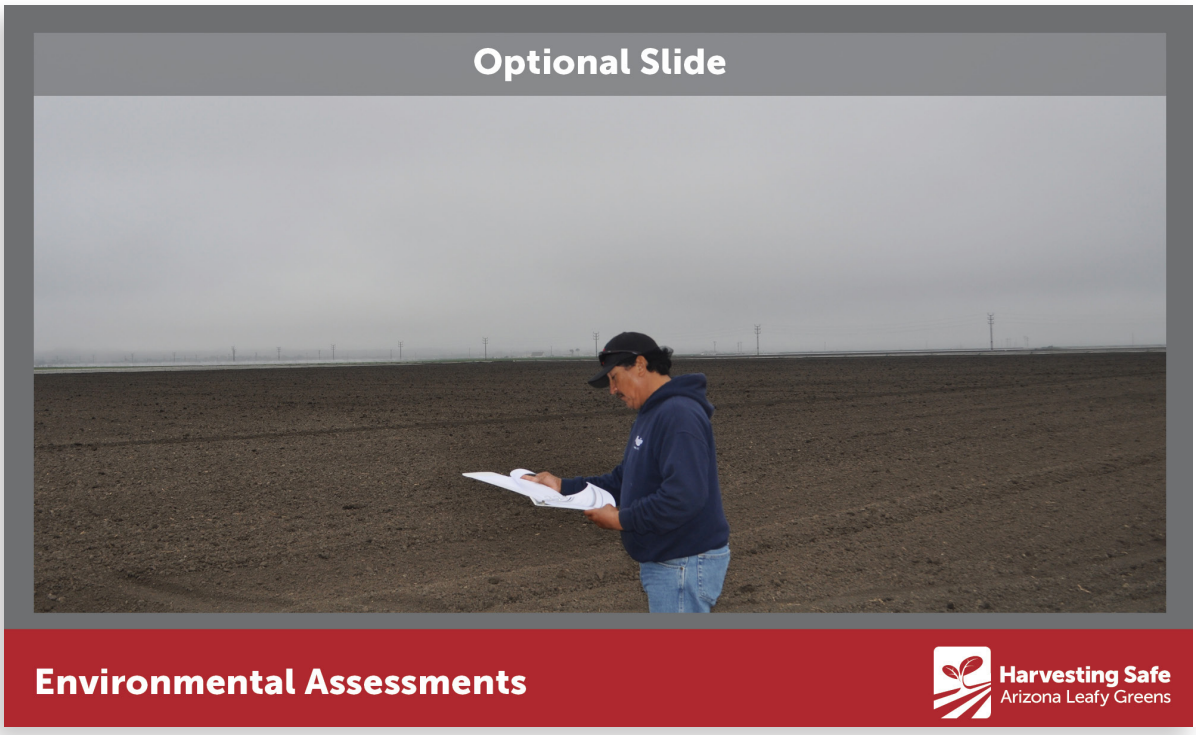
Optional Slide

Environmental Assessments

One of the key activities required in a leafy greens food safety program is the development of environmental assessments. Each company conducts food safety environmental assessments at all farms where leafy greens are grown and harvested in order to monitor how well the company's standard operating procedures are being followed.

This monitoring requires visual observation of field conditions with a focus on potential physical, chemical and biological contaminants. In the assessment, the assessor is also checking to see if employees are following standard operating procedures according to the company's food safety standard protocol.

The information collected during an environmental assessment is documented. This information is used as evidence that a food safety program is in place at the farm.



Optional Slide

Environmental Assessments (cont.)

Every year at the start of the season, the grower performs a pre-season environmental assessment to evaluate the potential risks that can affect the leafy greens grown in a specific field.

The following environmental assessments are performed before the harvest. There are two types of environmental assessments related to harvest practices:

1. Pre-harvest assessment.- It is done within the week prior to harvesting (1 to 7 days before harvesting).

2. Daily harvest assessment.- It is done each day of the harvest before starting to harvest in that specific block.

Optional Slide

Environmental Assessments (cont.)

Pre-harvest assessments are an important tool when it comes to determining if leafy greens are safe to harvest and eat. By using all of the assessments: pre-season, pre-harvest and daily harvest assessments, growers can see how the risk in the field changed during the season and if any elements noted during the pre-season assessment need to be reassessed for potential risks of contamination.

The purpose of the assessment is to determine if any factors external to the food itself have impacted its safety. These factors can include, but are not limited to:

- Wildlife and domestic animals
- Adjacent land use
- Isolated events such as flooding in the fields

Weather events such as hail and storms can cause crop damage and affect food safety. Storms can affect the microbiological quality of surface water sources such as rivers and canals.

Optional Slide

Environmental Assessments (cont.)

If there is evidence that wildlife or other animals have been in the field, corrective actions need to be taken to reduce the risk of leafy greens contamination and ensure that contaminated product is not harvested. One example of these corrective actions is establishing a no-harvest buffer zone around the parts of the field that could have been potentially contaminated.

It is important to remember that any corrective action taken needs to be documented (or else it did not occur from an auditor's perspective). Documentation of corrective actions not only ensures that the appropriate steps are taken, but also helps track trends in animal activity to ensure that leafy greens remain safe to eat.

Always follow your company's policy and inform a foreman whenever leafy greens are at risk of contamination.

**Fecal Matter-
FSMA Training Requirement**

Harvesting Safe
Arizona Leafy Greens

Fecal Matter-FSMA Training Requirement

Feces are one of the highest risks of contamination in the field. Feces contain microbes that can cause foodborne illness and even death.

What if fecal material is found in the field?

If you find any evidence of fecal matter, immediately report it to your foreman. Your foreman or food safety professional must conduct a food safety assessment to determine if it is safe to keep harvesting. Harvesting cannot begin until the food safety assessment is finished and the area is clear of contamination.

Do not harvest any product that has contact with fecal matter and do not put harvesting containers with leafy greens near fecal matter.

These are some measures to do to minimize the risk of leafy greens contamination at harvest:

- Do not harvest any product that has contact with fecal matter.
- Do not place harvesting containers with leafy greens near fecal matter.
- Do not harvest any product that is within 5 feet of the contamination or whatever distance your company's policy states.

Fecal Matter

Harvesting Safe
Arizona Leafy Greens

Fecal Matter

What to do if you find fecal matter contamination?

- The first step is to contact your foreman and inform him/her what you found.
- NEVER harvest any leafy greens that may be contaminated.
- Your foreman will establish a no-harvest buffer zone around the contaminated area to reduce the risk of harvesting contaminated product.
- Your foreman will then have to make a decision about what to do with the contamination (remove it, leave it, bury it, or use another strategy). This has to be done following the companies' policy. It is important to consider the risks that could result from these actions, such as the possible cross-contamination of equipment or tools.
- Remember that all actions taken need to be documented (monitoring, deterrence and corrective actions).

Buffer Zone

Harvesting Safe
Arizona Leafy Greens

Buffer Zones

A buffer zone is a marked section around a potentially contaminated crop area of the crop that you do not harvest. ALWAYS stay alert for any areas marked with flags. These represent buffer or protective zones around any animal activity and will help to adequately control the hazard or minimize the risk of contamination.

What could happen if you harvest a block that has fecal matter on the ground? Take a few minutes to discuss this.

Do not harvest any product within a 5 feet radius of contamination and ALWAYS be aware of flagged areas. These represent buffer zones around any animal activity and will help to adequately control or minimize the risk of leafy green contamination.

Transportation Vehicles

Harvesting Safe
Arizona Leafy Greens

Transportation Vehicles

All the vehicles used to transport leafy greens from the field to the coolers must be cleaned before transporting leafy greens and must be adequate for transporting leafy greens.

Always use equipment such as pallets, forklifts, tractors, and vehicles that contact leafy greens in a manner that minimizes the potential for product or food contact surface contamination.

It is your job to check that the vehicle is clean. If you are not sure about the vehicle's cleanliness, do not load leafy greens until it is clean.

Remember to check for any potential physical hazards on the vehicle prior to loading it.

Water

Water is widely used in leafy greens fields for many different activities, including irrigation, product dehydration prevention, and handwashing, among others. If water is not well managed or is contaminated, it can become a source of cross-contamination.

Always use water from an approved known source.

Optional Slide

Water

Knowing the source of the water used during the growing and harvesting of leafy greens can help prevent their contamination.

Different water sources carry different risks. In general, surface water (for example the water from a river, stream or canal) has the highest risk, while municipal water (water that is cleaned and treated by the city and transported through sealed pipe so that it is potable) has the lowest risk.

There are many factors that could cause biological or chemical water contamination. Always be aware if there are any risks that could result in contamination of the water source:

- Do livestock and domestic animals have access to the water?
- Is there wildlife activity in the water source (migratory birds, fish, beavers, etc.)?

Optional Slide

Water (cont.)

- Is the water source also used for recreational purposes?
- Is there evidence that wells are not maintained (broken pumps and casing, etc.)?
- Is there runoff or spills from chemicals such as oil, fuel, pesticides or manure?
- Are there any potential sources of contamination upstream? (i.e. CAFO or a Concentrated Animal Feeding Operation, recreational areas, etc.)?

It's important to remember that water that comes in contact with food contact surfaces or the harvested product cannot come from a surface water source unless it has been properly treated before use. Always ask your foreman before using water from an unknown source or from a source that has not been specifically designated for this use.

Blood

If you have a cut or cut your hand while working, make sure you are OK and that you do not need medical attention. If the cut is not serious, wash your hands, put on a bandage, and then cover it with a glove. Be sure blleeding has stopped. You cannot use a simple bandage, you must use ONLY the bandages provided by the foreman, since they are special bandages that can be detected by a metal detector if it should fall into the product.

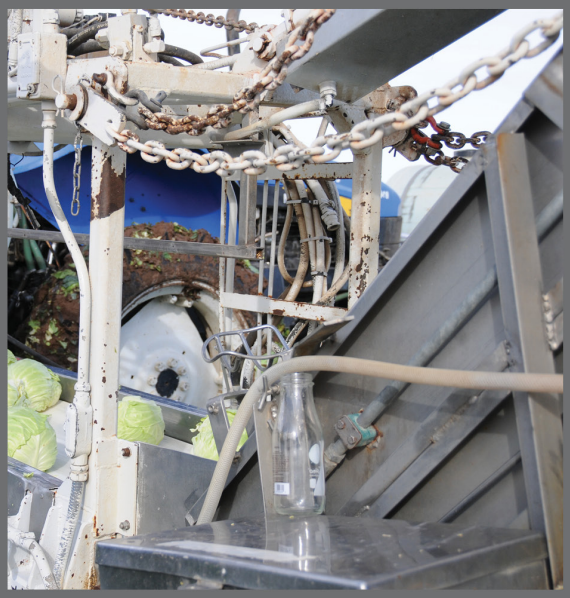
You should ALWAYS tell your foreman about the incident.

If the cut is severe, and you cannot stop the bleeding, seek medical attention. Your foreman will decide if you can return to work.

You and your foreman must ensure that blood did not contaminate any of your work equipment or utensils. If blood or another bodily fluid fell on the harvesting equipment or packaging materials, they must be discarded or cleaned and sanitized following your company's policy for cleaning blood.

If blood fell on the leafy greens, they should be discarded immediately. If leafy greens are contaminated with blood or any other bodily fluids, they must be disposed of as directed by your company's policy.

Do not harvest any product with evidence of blood or any other bodily fluid.



Glass

Harvesting Safe
Arizona Leafy Greens

Glass

All glass objects are prohibited in leafy greens fields, including bottles, glasses and watches. Employees must not bring glass items into the production, harvesting, and storage areas.

Approved glass and brittle plastics are restricted to authorized personnel; adequate measures are to be taken to prevent breakage. No unprotected glass is permitted in production areas unless it is a tool used to perform a job and is available only as glass material. Also, all lights must be shielded.

If a piece of glass falls on the leafy greens or in a leafy greens container, do not just remove the piece of glass from the container; you MUST discard or dispose of the affected leafy greens. Report the incident immediately to your foreman so that appropriate measures can be taken following your company's glass and brittle plastic policy.

Leaks and Spills

Harvesting Safe
Arizona Leafy Greens

Leaks and Spills

Harvesting equipment must always be free of fluid leaks or excess grease.

Equipment leaks and spills must be cleaned and the affected soil and plants removed and disposed of properly.

Any leafy greens that come in contact with dirt, grease or oil must be discarded.

Portable restroom units must be cleaned and serviced regularly to prevent leaking or spilling.

If you spot a leak or a spill, stop harvesting and report it immediately to your foreman.

Chemical Contaminants

Chemical contamination occurs when food products come in contact with harmful chemical compounds during growing, harvesting, and packing.

Chemical contaminants in the field include:

- Pesticides
- Cleaning compounds
- Sanitizing products
- Machine oils

If you see any chemical products being used or stored incorrectly, report it to your foreman. If you see a chemical container that is not labeled, report it to your foreman.

Remember to ALWAYS follow the correct procedures whenever you handle chemical products at work.

Trash and Debris

Waste and trash are sources of contamination and should be placed in designated containers. These containers should be emptied daily and more often, if necessary.

Cleaning waste containers or taking out trash might not be your responsibility, but if you see that receptacles are full, you should tell your foreman immediately.

Food debris can attract pests and rodents to the field. Eat only at designated areas and do not leave trash behind; it may end up in the field, increasing the risk of contamination.

You must always wash your hands after handling waste or trash. This step will help prevent cross-contamination.

Follow your company's Standard Operating Procedure (SOP) for handling trash.

Optional Slide

Food Defense

Food defense is a term used to define activities associated with protecting food from intentional contamination.

The company's food defense plan will normally address the following areas:

- General security
- Storage security
- Shipping and receiving security
- Water and ice security
- Personnel security.

Optional Slide

Food Defense

As an employee, you play an essential role in food defense at your farm. There are several ways in which you can help keep leafy greens safe from intentional contamination. Some of these include:

- Be aware of suspicious behaviors. Report suspicious events that may point to intentional contamination to your foreman.
- Know who should be on the farm. Some companies require employees to be identifiable through uniforms or ID badges. When it comes to visitors, some companies require visitors such as vendors or contractors to have a badge issued upon entering the farm or be escorted by farm personnel. If you do not recognize someone or they do not have the proper ID, notify your foreman.
- Identify unusual behavior. Is someone in an area where they do not belong? Are they hiding something under their uniform? Employees should not bring personal items into production areas. Inform your foreman if you notice anything that could be considered suspicious behavior.

Visitors

Harvesting Safe
Arizona Leafy Greens

Visitors

The farm operation has a system to record the entry and exit of visitors. This helps ensure that visitors are accounted for, which will assist in preventing intentional contamination of product or some other unwanted activity on the farm.

Every time there is a visitor, you have to make them aware of the farm's food safety policies and procedures so that they do not contaminate leafy greens and food contact surfaces.

All visitors must adhere to the company policies and procedures at all times. Do not hesitate to report to your foreman any inappropriate behavior or any practice that might put the leafy greens at risk for contamination.

Employees should be alert when visitors are present to help ensure those visitors are following food safety policies. Visitors must have access to the restrooms and handwashing stations.

If you see any suspicious behavior by a visitor that may cause leafy greens contamination, report it to your foreman.

Optional Slide

Food Safety Programs: SOPs & Records

What is a Food Safety Program?

Your company has a food safety program in place to prevent leafy greens from contamination. This program is written in the company's food safety manual, which is prepared by the Food Safety Professional and contains your company's policies, standard operating procedures (SOPs), and records.

A SOP is a detailed description of what a company (i.e. grower, harvester, or shipper) will do, how it will be done, who will do it, and when it will be done. The simplest definition of a SOP is: a written document outlining a company's normal operating procedure.

SOPs are an integral part of a company's food safety program. They must be carried out without any deviation or modification to guarantee the desired outcome. In many cases, it is useful to create records to accompany SOPs.

There is a common saying in the food industry, "If it isn't documented, it didn't happen".

Optional Slide

Food Safety Programs: SOPs & Records (cont.)

The only way we can provide written proof that something happened is by keeping records and documentation of the practices followed in the company. Not only is it a best practice when it comes to food safety, it is also a requirement in most food safety standards and in government regulations.

Records and logs provide proof that things were done correctly, and that any problems that happened in the field have been corrected. They demonstrate that leafy greens are safe to eat. Because of this, it is important that all the information recorded on logs is:

a) **True.** Document falsification is illegal. Always fill out logs with the actual information. It is better to document a problem so that it may be corrected than to hide it and put people's health at risk.

b) **Accurate.** Always document the information as accurately as possible. This information is used to make sure that products are safe to eat and to trace any problems that occur back to their source. Always record information exactly as it is obtained (i.e. all available digits for temperatures, concentrations, times and other values), do not round numbers up or down.

Optional Slide

Food Safety Programs: SOPs & Records (cont.)

c) Legible. Try to make sure your handwriting is legible. Do not cross out or write over mistakes in an attempt to correct them. A common practice in the industry is to cross out the mistake with a single line, add your initials/signature and date next to it, and write down the correct value. Remember you should also never use pencil or erasable ink pens to fill out logs.

d) Done in a timely manner. Logs must be filled out at the moment the activity is done. If you wait until later to fill them out, you might forget things or remember them differently. Remember that logs need to be true and accurate. Logs must never be filled out beforehand. This is considered document falsification and is a major deviation and illegal.

e) Dated and signed/initialed. Logs need to be dated and signed/initialed by the person performing the activity. If a crew is performing an activity, a member of the crew should sign and date the log. A foreman who is observing the person or the crew should NOT sign and date the log; it must always be the person who is performing the activity.

Activity 1-Case Studies

Harvesting Safe
Arizona Leafy Greens

Activity 1-Case Studies

Let's review some examples of situations that can happen within the leafy greens industry that we covered today.

I will display a picture and ask you about the situation in that picture. You should discuss the cross-contamination potential of that specific situation.

[The purpose of this activity is to have participants discuss situations that lead to cross-contamination in the field.]

Remember, biological, physical, and chemical contaminants are everywhere; therefore, cross-contamination can occur from food handlers like you or the environment (air, food contact surfaces, pests, equipment, etc.).

Case Study 1-What is My Job?

What is happening in these pictures?

[Give participants a few seconds to provide answers.]

In the first picture, the employee is lifting the product that fell on the ground and in the second picture he is putting that product into the box.

The employee is not following the company´s procedure for proper handling of product or packaging materials that come into contact with soil. Dropped leafy greens must not be harvested.

Remember, microbes will be in the soil or on the ground and can contaminate the harvested leafy greens. Your job is to protect them from contamination.

Case Study 2-What is My Job?

Harvesting Safe
Arizona Leafy Greens

Case Study 2-What is My job?

What would you do in the following situation:

You walk through the fields prior to harvest and see fecal matter on the product.

[Give participants a few seconds to provide answers.]

If you find any evidence of fecal matter, immediately report it to your foreman. Product with evidence of fecal matter must not be harvested.

Animal feces contain bad microbes that can cause foodborne illness and even death. Your foreman or food safety professional must conduct a food safety assessment to determine if it is safe to keep harvesting. Harvesting cannot begin until a food safety assessment is finished.

Case Study 3-What is My Job?

Harvesting Safe
Arizona Leafy Greens

Case Study 3-What is My Job?

What would you do in the following situation: The harvesting utensil falls to the ground while harvesting leafy greens.

[Give participants a few seconds to provide answers.]

Harvesting utensils must be CLEAN and in good condition. You must wash and sanitize your tools when leaving the field, when returning to work after breaks, when moving from one field to another, or if any contamination occurs.

Case Study 4-What is My Job?

Harvesting Safe
Arizona Leafy Greens

Case Study 4-What is My Job?

What is happening in these pictures?

You see a box (product container) with personal objects of an employee.

[Give participants a few seconds to provide answers.]

Never put personal items or clothes in leafy greens containers. It can represent a source of contamination.

Leafy greens containers should only be used to hold and transport leafy greens.

Thanks!

This is the end of our discussion about cross-contamination.

What questions do you have? Thank you for coming.

Please make sure that you have signed the attendance sheet.

Harvesting Safe
Arizona Leafy Greens

Section 4

Additional Resources

Additional Resources

This section contains additional resources for reinforcing the messages presented during the lessons and for evaluating and documenting food safety training.

Posters

Make plenty of copies of the posters in this section. Displaying them in work and break areas reminds employees of the need to follow food safety practices every day. For highest quality, print out the high-resolution versions available on the Arizona Leafy Green Products Shipper Marketing Agreement (AZ LGMA) website.

Additional Training Activities

Each activity includes a list of materials required for the activity, as well as the procedure you need to follow to perform the activity with your group. Some activities also include variations on the procedure so that you can adjust them to what you have available on the farm.

Training Log

Use the training log template for documenting training sessions. Have every participant sign the sheet before training begins and file it in a safe place along with other files that may be needed during an audit.

Evaluation Resources

If you want to evaluate how well the participants did during the class, you may use the test included in this section. If some participants have reading and writing limitations, you may administer it in a face-to-face interview format.

Certificate of Attendance

A template for a training certificate is provided that may be issued to each participant after the lessons are completed. There is space on the template to write the name of individual participants.

Posters

It is recommended that you print out the high resolution version of these posters available on the Arizona Leafy Green Products Shipper Marketing Agreement (AZ LGMA) website:

http://www.arizonaleafygreens.org

Posters

It is recommended that you print out the high resolution version of these posters available on the Arizona Leafy Green Products Shipper Marketing Agreement (AZ LGMA) website:

http://www.arizonaleafygreens.org

Posters

It is recommended that you print out the high resolution version of these posters available on the Arizona Leafy Green Products Shipper Marketing Agreement (AZ LGMA) website:

http://www.arizonaleafygreens.org

Additional Training Activities

The following are a series of optional activities you can run during your training sessions to keep participants engaged. These activities may require additional planning to gather the materials and handouts. The content also presents different ways to deliver the program included in the training kit. Each activity includes a list of materials required for the activity, as well as the procedure you need to follow to perform the activity with your group. Some activities also include variations on the procedure so that you can adjust them to what you have available on the farm or to what your group finds more engaging.

Activity #1-Why Food Safety?

Purpose:

To raise food safety awareness and understand the consequences of a foodborne outbreak.

Procedure:

Play the "Why Food Safety Is Important" video to participants. This video is included in the USB drive that was provided in this training.

Discussion questions:

You can use the following details and questions to either personalize the introduction to the video clip, or to highlight the outcomes after showing the clip:

- Riley is 17 years old and you can see and hear how she was impacted by the outbreak.
- What is your opinion about what you saw in the video?
- What was the most relevant part of the video to you?
- What if Lauren or Riley were one of your children? How would you feel?
- Does this help you understand the personal impact of food-borne illness?
- What dialogue do you remember the most and why?

Activity #2-Using the Bathroom and Toilet Paper

Purpose:
This activity is intended to underscore the importance of disposing of toilet paper correctly.

Materials:
A poster with a toilet icon or picture. You can find one in the Arizona LGMA Food Safety Training Kit Additional Resources Section.

Variation:
You may also use the field sanitary unit instead of pictures.

Introduction:
You must always use the bathrooms provided by the company—not the field or anywhere else—to take care of your personal business. If not, fecal matter or urine can contaminate the product. Soiled toilet paper must be disposed of in the toilet.

Procedure:
As you review the pictures (or demonstrate if you are using a field sanitary unit), explain to your students how to dispose of used toilet paper:

1. NOT on the floor **2.** NOT in the trash **3.** In the toilet!

Also explain why toilet paper should be handled this way:

"Toilet paper must always be disposed of in the toilet to prevent the spread of potentially harmful microorganisms in the field sanitary unit and into the field. This is a critical step to reduce the risk of contaminating product."

Closing Remarks:
The proper use of toilet paper and sanitary facilities is essential to ensure the safety of our product.

Activity #3-Wearing Jewelry

Purpose:

Use this activity to illustrate how jewelry worn while handling product can pose a food safety risk for the consumer.

Materials:

Different pieces of jewelry such as:

- Earrings.
- Rings.
- Chains.
- Bracelets.
- Hair fasteners.
- Watches.
- Loose stones.
- Ziploc bags with spinach or a bag or box of leafy greens for each team. You may split up a large bag into several smaller bags if necessary. You should have enough bags for handing at least 1 bag per 5-10 participants.

Introduction:

Jewelry cannot be worn when harvesting and handling product. It is important that employees understand that this decision is made to protect consumers and the quality of the product.

Variation:

Instead of conducting the activity, you can find and share images of teeth that have been damaged by biting into a piece of jewelry or a physical hazard in another product.

Procedure:

1. Prior to the activity, hide a piece of jewelry in each bag of salad.
2. Pass out the individual Ziploc sealable plastic bags with spinach or the bags of salad with physical contaminants.
3. Ask participants to carefully look at the salad in each bag.
4. When all teams are finished, ask each group to describe what kinds of problems they found in the bags of salad.
5. Ask participants what would happen if a consumer found or even ate any of these materials along with their salad? Ask them to identify which objects could cause someone to break a tooth or cause them to choke.
6. Ask participants how they would feel if they were to receive such a product, or if they suffered tooth damage when biting a piece of jewelry that fell into their salad.
7. Discuss their answers and make sure they understand how physical contaminants such as jewelry can end up in the final product. Contamination can result in leafy greens being rejected by the buyer, reduces the quality of the product, and could even injure someone.

Closing Remarks:

"Jewelry might not sound as risky as other types of contaminants, but it can be. Keep in mind that contaminants in leafy greens can cause loss of sales or worse, injury to a consumer. Some companies have lost accounts due to physical contaminants, which damage the quality of the product and even cause injuries. Always follow company rules and procedures to protect its reputation and consumers from harm caused by physical contamination from jewelry."

Activity #4- When Should We Wash our Hands?

Purpose:

This activity is intended to teach participants when they must wash their hands during the workday.

Materials:

Take pictures of different activities your employees do during their workday such as using the restroom or touching a dirty surface. You can also find slides with useful pictures in the Arizona LGMA training materials. Print these pictures or if you have a projector and a computer, tablet, or screen at hand, you may also display the pictures/slides on a wall or screen to show them to your audience.

Make sure to include several opportunities in which they should wash their hands before and after. For example, hands should be washed AFTER going to the bathroom, smoking, eating, touching the face or head, or touching soil; and BEFORE putting on gloves, grabbing product, or contacting a food contact surface.

You may ask the class to come up with other examples of times when they would need to wash their hands.

Introduction:

“Washing your hands is the best way to prevent the spread of illness-causing microorganisms. During the workday your hands come into contact with things that aren’t always clean and can become contaminated with microbes. These microbes can easily be transferred to the product being handled if hands are not washed properly.”

Procedure:

Explain the activity:

"I will show you several pictures of activities employees do in the field during the workday. For each situation, tell me whether the person in the picture should wash their hands BEFORE or AFTER completing the task shown in the picture."

Closing Remarks

"It is extremely important that you avoid contaminating the product you handle when working by washing your hands whenever they might have become contaminated."

Finish by reviewing when and how they should wash their hands, and make sure they understand that there are situations that can contaminate their hands without them realizing they are contaminated.

Activity #5- Cross-contamination of Hands and Proper Handwashing

Hands can easily become contaminated without you noticing it. This activity will help illustrate how easy it is for hands to become contaminated and cross-contaminate anything that they touch. It will also teach participants what happens when they wash their hands following the appropriate handwashing procedure. Keep in mind that we can only reduce the risk of spreading harmful bacteria with our hands when we wash them correctly.

Purpose:

To teach participants the concept of cross-contamination caused by their hands and the impact of handwashing on reducing the spread of potential contaminants.

Materials:

- GloGerm™ or GlitterBug® lotion.
- Ultraviolet light lamp.

You can order the GloGerm™ or GlitterBug® kit at:

GloGerm™ Company www.glogerm.com 800-842-6622 GlitterBug® Brevis Co. www.glitterbug.com 801-466-6677

Procedure:

1. Apply GloGerm™ or GlitterBug® lotion to your hands just before students arrive to the class. You should feel that it is fresh and not completely absorbed into your skin, but it should not be obvious that you have it on your hands.

2. As the participants arrive to the training session, greet a couple of them with a handshake. You can also select a few items (i.e. training manual or a head of lettuce) and touch them to spread the lotion.

Before running the activity, make sure that the lotion is adequately transferred from your skin to the items that you touch so it is visible when you place your hands or the object under the UV light on it.

3. Brief participants on the importance of handwashing and the concept of cross-contamination.

4. When you are ready to conduct the rest of the activity, explain to participants that your hands were contaminated and that this contamination was transferred to everything (and everyone) you touched because you did not wash your hands.

5. Use the ultraviolet light to illuminate your hands, the participants' hands that you shook, and all the objects/materials that you touched to show how hands that look clean may actually be dirty and contaminate the work utensils and product we handle.

6. Have participants wash their hands. Have some of them wash them poorly (e.g.: without soap, too fast) and others follow the appropriate six-step hand washing procedure.

7. Use the UV light to look at their hands again. The glow should have disappeared. Compare the hands of those who washed them poorly with the hands that were washed well.

8. Have a discussion to reaffirm the importance of proper hand washing.

Closing Remarks:

"This activity demonstrated that hands and surfaces that look clean may actually be soiled and possibly contaminated. It is important to wash your hands when required, and whenever they may have become contaminated. A small action like washing hands goes a long way in protecting the product and the health of our consumers."

Activity #6-Teaching the Handwashing Procedure with a Poster

Purpose:

Teach your audience the proper hand washing procedure.

Materials:

- Several copies of the 11 X 17 hand washing poster from the Arizona LGMA Food Safety Training Kit. You can find the poster in the additional resources section.
- A fully stocked and functional hand washing station.

Variation:

If training indoors with a projector/screen at hand, you can display the poster on a wall or screen instead of printing copies of the poster.

Introduction:

"Hand washing is the single most effective way to prevent the contamination of leafy greens. It is your responsibility to follow the proper hand washing procedure when working with leafy greens. Proper hand washing helps to reduce the risk of leafy greens contamination."

Procedure:

1. Give a copy of the poster to each member of the class, or project it where everyone can see it.

2. Brief participants on the importance of proper hand washing and following the proper procedure.

3. Ask a participant to explain the six hand washing steps or review them yourself for the group.

4. After reviewing the hand washing procedure, ask for a volunteer to come up to the sink and wash their hands following the 6 steps. Make sure the person completes each step correctly. For a variation you can ask the volunteer to deliberately skip a step to see if any of the students mentions that a step was missed.

5. Ask the rest of the group how well the volunteer washed his/her hands. If the volunteer skipped a step, ask the group which step was skipped.

6. Now have the rest of the students practice washing their hands. Make sure each person follows the appropriate hand washing procedure. If you see someone who needs help, provide reinforcement on the procedure.

7. You may want to ask one participant to explain the six steps or ask six participants to each explain a different step.

8. To end the activity, ask your students to raise their hands if they will make an effort to wash their hands following this procedure. Remind them that it is extremely important that they wash their hands when required and whenever they might have become contaminated and always follow the correct procedure.

9. Document the training.

Activity #7-Using the AZ LGMA Food Safety Training App

Materials:

- An iPad, tablet or phone with the Arizona LGMA Food Safety Training App installed. You can use more than one device if you want to train multiple students at the same time.
- Headphones for the trainee to listen to the training (though not mandatory, they are encouraged. Using headphones will help the student focus on the lesson and will reduce distracting noises in the environment.)

Introduction/Background:

Let's learn about why are we here today. We are going to talk about food safety.

As you may know, our company has implemented a Good Agricultural Practices Program that follows the LGMA Metrics. Each of us plays an important role in this program. Furthermore, our customers and the food safety standards that our company follows require ALL employees working in the leafy greens production, packing, and/or field areas receive food safety training. This food safety training App will teach you the 15 basic food areas and rules that help minimize the risk of contaminating leafy greens.

Instructions:

1. Before holding the training install the APP on the tablet or mobile device and make sure it is working properly.
2. Make sure the battery is fully charged before starting the training.
3. Show the trainee how to use the device.
4. Inform the trainee that at the end of the training there is a test; ask him/her to report to you once he/ she has finished so you can record the score.
5. Start the training application and hand the device to the trainee.
6. When the trainee is finished, record his/her quiz score. You may want to verbally ask trainees a few open-ended questions to make sure they understood the content of the Arizona LGMA Food Safety Training App.

Here are some sample questions:

- What are the six handwashing steps that you learned in the APP?
- Can you please explain the 3 general food safety rules?
- Can you please tell the audience what you need to do when you find leafy greens that are visibly contaminated with feces?
- Please tell us what you need to do when you cut yourself?

7. Once the training is finished, document it in the training log.

Variation of the Activity:

If you have an adapter for an LCD projector, or a device that allows you to project the training from your mobile device on to a screen, the training can be presented to a group.

You can project the training on a wall, guide the group through each section of the training and allow the group to answer the questions out loud before selecting the correct answer. If you conduct the training this way, you may need a set of speakers to play the sound from your device.

Activity #8-Personal Hygiene Poster Group Activity

Purpose:

Learn the importance of proper personal hygiene practices and the handwashing procedure using the 11X17 posters included in the Arizona Leafy Greens Food Safety Training Kit.

Materials: The posters from the Arizona Leafy Greens Food Safety Training Kit. You can use the preprinted posters or project them on the wall using a computer and a projector.

Procedure:

1. Before the class, print a set of the 6-11x17" posters found in the Arizona Leafy Greens Food Safety Training Kit Additional Resources Section.
2. The six 11x17" posters are:
    a) Proper handwashing procedure
    b) Handwashing reminder
    c) Hairnet and beard net usage
    d) Toilet paper disposal
    e) Handwashing opportunities
    f) Suspicious activity
        - You can choose to run the activity by lecturing or by letting employees go over the materials as a team.

Option A–Lecture given by the instructor

1. Welcome participants and, if appropriate, consider running an ice breaker activity.
2. Present a 2 to 3 minutes briefing with general information about the importance of personal hygiene and handwashing.
3. Stand in front of the group holding one of the posters and explain the contents of that poster to the class.
    - You may want to ask a volunteer to hold the poster for you.

- You may want to bring a few extra printed copies of the posters and distribute them among participants to make sure everyone gets to see the picture on the poster.

4. Ask an open-ended question after explaining the content on each poster. You could ask things like:
    - Why is this practice important while harvesting and handling product?
    - What are some challenges that make it difficult to comply with this practice?
    - What should be done when employees do not follow this practice?
5. Review each of the posters.
6. Document the training.

Option B–Presentation given by employees

1. Welcome participants and if appropriate consider an ice breaker activity.
2. Present a 2 to 3 minute briefing with general information about the importance of personal hygiene and handwashing.
3. Form groups of 4-6 people and hand one poster to each team.
4. Ask the teams to discuss the topic among themselves. Let them know that each team will later present the poster to the rest of the group and lead a discussion on the topic of their poster. Each team will need a spokesperson, and each team member will need to speak about the topic.
5. Have each team stand in front of the group with its poster and review the contents of that poster.
6. Ask each group to ask an open-ended question after explaining the content on each poster. This will help reinforce the information learned. Some ideas for questions are:
    - Why is this practice important while harvesting and handling product?
    - What are some challenges to comply with this practice?
    - What should be done when employees do not follow this practice?
7. Have the team spokesperson give a few closing remarks before moving on to the next team and topic.
8. Document the training.

Activity #9-Food Safety Quiz Group Activity

Purpose:

Reinforce proper food safety and personal hygiene practices using a group quiz activity.

Materials:

A printout of the following pool of personal hygiene and hand washing questions, a bucket, cap, or container in which to place a number that matches each question, and 20 small pieces of paper—each with a number from 1 to 20 written on it.

Procedure:

1. Start the activity by pulling out a question from the container. Read the question and the answer choices out loud to the group. You may also have a volunteer help you.
2. Ask participants to choose an answer that they consider the correct one.
3. If participants give the correct answer, have them elaborate on it. If they give an incorrect answer, try to guide them toward the correct one without telling them outright that they are wrong and without answering the question for them.
4. To get participants to elaborate on their responses, ask follow-up questions like:
    - Why is this important in your job?
    - How does it apply to us at work?
5. Finish each question by providing participants background information related to each topic.
6. Move on to next question and repeat the procedure until you finish the questions, or the time allotted for the training session runs out.

You can get the questions for this activity from the printable test on the additional resources section of this kit (page 244), or you can write your own questions based on the lesson you are teaching and your company´s policies.

Activity #10-Arizona LGMA Training DVD/USB

Purpose:

The objective of this activity is to use the DVD/USB flash drive to teach employees in the leafy greens industry the personal hygiene and handwashing practices that they need to follow at work. This is designed to train employees indoors.

Background Information for Instructors

The Arizona LGMA has released a series of training DVDs as part of its Food Safety Training Kit. DVD Module 2—Personal Hygiene—reviews the different practices employees need to follow when working with leafy greens.

Materials:

- A DVD player connected to a TV, or a computer connected to an LCD projector. The size of the group that can be trained may vary depending on the screen size.
- A set of speakers.
- The Arizona Leafy Greens Food Safety Training Kit DVD Module 2-Personal Hygiene and Hand Washing. The program is available as a DVD or on a USB flash drive.

Introduction for Participants:

"Let's learn about the different hygiene practices you can follow to decrease the risk of contamination when working with leafy greens. In this video we will learn about the importance of personal hygiene and go over the some of the things you do in your everyday activities that can help prevent the leafy greens from becoming contaminated."

Procedure:

1. Before holding the training, play the video on the device you will be using to make sure everything works properly. Make sure the battery is full or that you have access to an electrical outlet before starting the training.
2. Instruct the participants on the activity and let them know that there will be a series of questions during and after the video.

3. Start the training video; make sure that the video is visible to all participants and that they can hear the material clearly. Watch them to make sure the audience is paying attention to the training.
4. Guide the group through each section of the training video and pause the video between sections to ask the group questions. Allow the group to answer the questions out loud and encourage discussion on the subject before continuing with the next section of the video.

   The following are questions that you may use to generate group discussions. You can also come up with different questions specific to your company's policies.

   - What is personal hygiene?
   - What clothing is acceptable when working with leafy greens?
   - Where can we eat or drink?
   - When do we have to wash our hands?
   - What is the correct thing to do with soiled toilet paper?
   - What do you need to do with personal items?
   - What kinds of jewelry are allowed when working with leafy greens?
   - What do you need to do with your protective garments when leaving the work area?
   - What do you have to do if you need to sneeze, cough, or blow your nose?
   - What do you have to do when you are feeling sick or have an injury?

5. Once the video is finished, ask participants to help you summarize the content of the video or continue with the training as normal.
6. Before participants leave, make sure they sign the attendance list.

Variation of the Activity:

If you have a smaller screen, laptop, or tablet and a set of earphones, the training can be delivered individually for new employees or when re-training an existing employee.

Activity #11-Ideas for Ending a Training Session

Purpose:

The objective of this activity is to review the topics you have discussed during your training session. This will help the audience retain what they have learned and allow you to revisit any topic that was not understood completely.

Materials:

Write down 6 to 10 open-ended questions related to the topics reviewed in your training session. Be creative when developing your list of questions and use open-ended questions. You do not need a question for every participant; you may ask a predetermined number of questions to a group.

Instructions:

1. Briefly review the material covered in the training.
2. Ask a question about the program and whoever answers it correctly is free to go after they have signed the attendance sheet. Alternately, you may choose to give a prize (i.e. candy) to people who answer questions correctly instead of letting them go.

Variation:

Depending on the subject of your training (all personal hygiene areas or one specific area) and the number of people in your audience, you may decide to do more or fewer questions.

Closing Remarks:

“Thank you for taking this training session on personal hygiene. Personal hygiene is very important in keeping leafy greens safe for consumption. Please remember to sign the attendance sheet before leaving.”

Training Log

FOOD SAFETY TRAINING LOG
LISTA DE ASISTENCIA AL ENTRENAMIENTO

Harvesting Safe
Arizona Leafy Greens

DATE/FECHA	COMPANY-RANCH & ADDRESS/COMPAÑÍA-RANCHO Y DIRECCIÓN

NAME AND LOCATION OF TRAINING/LUGAR DEL ENTRENAMIENTO

TOPICS/TEMAS

- ☐ THE ABCS OF LEAFY GREENS SAFETY
- ☐ LEAFY GREENS CONTAMINATION AND CONTROLS
- ☐ PERSONAL HYGIENE PRACTICES IN THE FIELD
- ☐ HANDWASHING AND GLOVE USAGE
- ☐ CROSS-CONTAMINATION IN THE FIELD

TRAINER/INSTRUCTOR	REVIEW SIGNATURE/FIRMA DE LA REVISIÓN	REVIEW DATE/FECHA DE LA REVISIÓN

	SIGNATURE OF ATTENDEES/FIRMA DE LOS PARTICIPANTES	EMPLOYEE NUMBER (if applicable)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		

Arizona Leafy Greens Food Safety Training Kit Test

Instructions: Read each of the questions carefully and pick the best answer.

1. Is it possible to determine if a food is contaminated with microbes?
a. Yes, it will have an unusual appearance, taste and smell.
b. Yes, you will be able to see the microbes on the product.
c. No. Contaminated food may look and appear normal.
d. I don't know.

2. What is an employee's responsibility to ensure food safety?
a. To properly follow the company's policies and procedures.
b. To harvest as much leafy greens during the shift as possible.
c. To hide records from the inspectors.
d. I don't know.

3. The three types of contaminants are biological, chemical, and _____.
a. Employees.
b. Physical.
c. Leaks and spills.
d. I don't know.

4. Which of the following is true about hair restraints?
a. Hair on the front of the head can hang down over the forehead.
b. Ponytails do not need to be covered.
c. All hair on the head and both ears should be covered.
d. I don't know.

5. Which of the following will increase the likelihood of leafy greens becoming contaminated?
a. Covering a sore on your hand with a bandage and a glove.
b. Forgetting to wash your hands before touching leafy greens.
c. Listening carefully to your supervisor's instructions.
d. I don't know.

6. What should you do immediately before returning to work after lunch?
a. Put your jewelry back on.
b. Take off your hairnet.
c. Wash your hands.
d. I don't know.

7. Which of the following practices may result in microbial contamination of leafy greens?
a. Remembering to clean and sanitize your harvesting equipment.
b. Getting unwashed hands on leafy greens after using the restroom.
c. Using cleansers and sanitizers incorrectly.
d. I don't know.

8. What is the minimum amount of time to scrub your hands after applying soap?
a. 5 seconds.
b. 20 seconds.
c. 35 seconds.
d. I don't know.

9. When does cross-contamination occur?
a. When a food contaminant is transferred from something dirty to a leafy green or a food contact surface that is clean.
b. When employees wash their hands with soap and warm water.
c. When employees remove their gloves before entering the restroom.
d. I don't know.

10. Why is it important to practice good hygiene when handling leafy greens?
a. So that employees don't become a source of cross contamination.
b. So that employees feel comfortable and look good.
c. To prevent employees' injuries.
d. I don't know.

11. Why is wearing company-issued gloves and protective garments such as aprons important?
a. To protect the employee from the leafy greens and the dirt.
b. To protect the leafy greens from cross-contamination by the employee.
c. To keep the employees dress clothes clean.
d. I don't know.

12. Which practice is likely to lead to cross contamination?
a. An employee sneezes into his/her gloves and then immediately washes his/her hands and changes his/her gloves.
b. An employee removes his/her protective garments when entering the restroom.
c. An employee with diarrhea continues to work but makes sure to wash his/her hands well.
d. I don't know.

13. Which of the following is true regarding handwashing?
a. You can touch your hair without washing your hands as long as your hair is clean.
b. It is only important to use hand soap when your hands are visibly soiled, otherwise, a hand sanitizer is fine.
c. You must scrub in between your fingers and on exposed parts of your arms.
d. I don't know.

14. Which of the following is true regarding harvesting containers?
a. They can't be a source of contamination.
b. Harvesting containers must be used to carry harvested product only.
c. They can be on the ground briefly while staging product.
d. I don't know.

15. All pieces of jewelry must be removed before going to work on the field because:
a. They can fall on the lettuce or leafy green vegetables and contaminate them.
b. They can be a hassle while using arm covers and hairnet.
c. They may shine too much.
d. They might get lost.

Answer key: Q1: c, Q2: a, Q3: b, Q4: c, Q5: b, Q6: c, Q7: b, Q8: b, Q9: a, Q10: a, Q11: b, Q12: c, Q13: c, Q14: b, Q15: a.

If you photocopy this test, be sure to block out the answers.

Certificate of Attendance

XXXXXX Leafy Greens Ranch
Your Logo

CERTIFICATE OF ATTENDANCE

for participation in the food safety training program

Harvesting Safe
Arizona Leafy Greens

This certificate of attendance signifies that the individual designated above has completed the Harvesting Safe Arizona Leafy Greens training program.

[Instructor's Name]
[Instructor]
[Company's Name]

[Location. Day, Month, Year.]

[Instructor's Name]
[Instructor]
[Company's Name]

Disclaimer

The AZ Leafy Greens Food Safety Training Kit content provides information to help minimize the risk of food contamination. By using this information, users should be aware that in no event shall the Arizona Leafy Green Products Shipper Marketing Agreement Food Safety Committee or Food Safety CTS, LLC be liable for any incidental or consequential damages resulting from use of this material.

www.arizonaleafygreens.org