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Sanitation and food safety for cheesemakers

Introduction

"The Food Safety, Sanitation and Personal Hygiene Training Program" for small-scale cheese producing establishments was developed by The Pennsylvania State University, Department of Food Science to provide an educational tool for the training of cheesemakers. This training program contains strategies that take into account specific characteristics of the small and very small dairy farm.

The training program includes two lessons or modules designed to provide workers in dairy farms with the knowledge, skills, and a comprehensive explanation of the food safety rules that they need to follow at work.

How to use the "The Food Safety, Sanitation and Personal Hygiene Training Program "

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

Each page contains an illustration that corresponds to the text on the following page. This text 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 one.

It is not necessary for the instructor to memorize all of the text. However, to make the training session more effective, it is advisable for him/her to become familiar with it and thoroughly understand it.

There also is information for the instructor (within brackets) that is intended to improve the learning experience and it should not be read to participants.

Each text page contains a small box with a visual aid showing the picture that is on the other side of the page.

Tips for improving your food safety training session

The training session has been designed not to last more than 40 minutes.

Do not train more than 10-12 employees at a time. Everyone in the session needs to be able to see the flipchart.

Tips for improving your food safety training session (cont.)

Do not rush the training session. Speak clearly and slowly while looking at the audience. Obtain the audience reactions and engage them by asking them for examples of things that happen at your company.

Become familiar with the farm's food safety rules and convey this consistent message during training.

During training, ask participants if they have any questions or comments. Go back to anything that is not clear to them, If necessary, retrain.

If applicable, food safety training must be followed by supervisory enforcement of food safety rules. It is recommended that supervisors focus on several food safety behaviors for one week following the training session.

Documenting Food Safety Training

If your training is not documented, it never happened. Your auditors and customers want to see evidence that every employee in the plant has received food safety training. Create an attendance sheet with the topic and date, have every participant sign it, then keep it in a safe place. Before adjourning, ask everyone if they have signed the attendance list.

Sanitation and Food Safety for cheesemakers

During this lesson, the instructor will describe the four steps for cleaning and sanitizing, the four elements (T.A.C.T.) to be considered during cleaning and sanitizing, and the basics of cross-contamination.

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

- List the four steps for cleaning and sanitizing, in order.
- List the four elements T.A.C.T.
- Understand how cross-contamination happens and how to avoid it.

Personal hygiene and handwashing

During this lesson, the instructor will describe the importance of good personal hygiene practices. The correct procedure for handwashing, the correct use of gloves, and other personal habits to avoid will be described.

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

- Describe how hands can become contaminated with microbes and transmit them to food.
- List the situations when handwashing is required.
- Demonstrate appropriate handwashing techniques.

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Why food safety?

Notes

Welcome to the Cheesemaking Food Safety Training!

This training will cover some important points about cleaning and sanitizing in a cheesemaking facility. It will also review best practices of personal hygiene.

Proper sanitation, food safety, and personal hygiene practices are important for dairy farms since they can protect consumers from becoming ill and protect the cheesemakers' business.

This training tool can be printed and used in a counter-top flip-chart format where the person giving the training sits on one side of a table, facing the text portion that he/she will read, while the trainees sit on the other side and are presented with the pictures.



Why food safety?



Before cleaning

Notes

On any food processing facility, we find multiple food contact surfaces. A food contact surface is any surface that may enter into direct contact with the food. Examples are tables, shelves, scales, cutting boards, and utensils such as shovels, knives, etc.

Before you start cleaning and sanitizing, you must remove any solids, dry or wet, present on the food contact surface.

As an example, after a cheesemaking production run, all remaining curd pieces must be scraped off the vat, or otherwise removed, before you start the cleaning steps.

Remember: it is easier to remove any solids before they dry out.



Before cleaning



Cleaning and sanitizing steps

Notes

Do you know how many steps are needed to clean and sanitize a food contact surface properly ? What are they?
[Let participants answer]

There are four steps in proper cleaning and sanitizing:

- 1** - Pre-rinse
- 2** - Wash
- 3** - Rinse
- 4** - Sanitize

Before we describe each step, let's review the differences between cleaning and sanitizing.

Cleaning involves the use of soap or detergent and warm water to remove all visible soil from the surface.

Sanitizing involves the use of a sanitizer to reduce microbes to a safe level on an already cleaned surface.

Cleaning and sanitizing compounds should not be used interchangeably and should be used in the correct order: clean first and then sanitize.



Cleaning and sanitizing steps



Step one: pre-rinse

Notes

Now let's go through the steps together.

The first step is to **pre-rinse**.

In this step, you will wet the surface that is being cleaned to help loosen any soil or milk residue that might be present on the surface, which was left after the initial step of removing the residual solids. This picture is a good example of how a food contact surface is properly pre-rinsed.



Step one: pre-rinse



Step two: washing

Notes

Washing is the second step in the process.

This step is performed with soap or detergent, warm water and some form of mechanical action, usually provided by brush, to remove food or soil that is on the surface.

This picture demonstrates a cheesemaker properly washing a food contact surface.



Step two: washing



Step three: rinse

Notes

The third step is to **rinse** the food contact surface.

This step washes off all the soap, as well as any remaining food particles, from the surface.

After rinsing, the food contact surface should appear completely clean to the naked eye.



Step three: rinse



Step four: sanitize

Notes

The final step is to **sanitize** the cleaned food contact surface. This step reduces the number of microbes to safe levels.

It is important that all the soil and soap or detergent have been rinsed away. A sanitizer may not work as well if applied to a dirty or soapy surface. Some common chlorine-based sanitizers, like bleach, are inactivated by organic compounds like proteins and fats that are present in milk and curds.

Remember, you must first clean and then sanitize!



Step four: sanitize



Notes

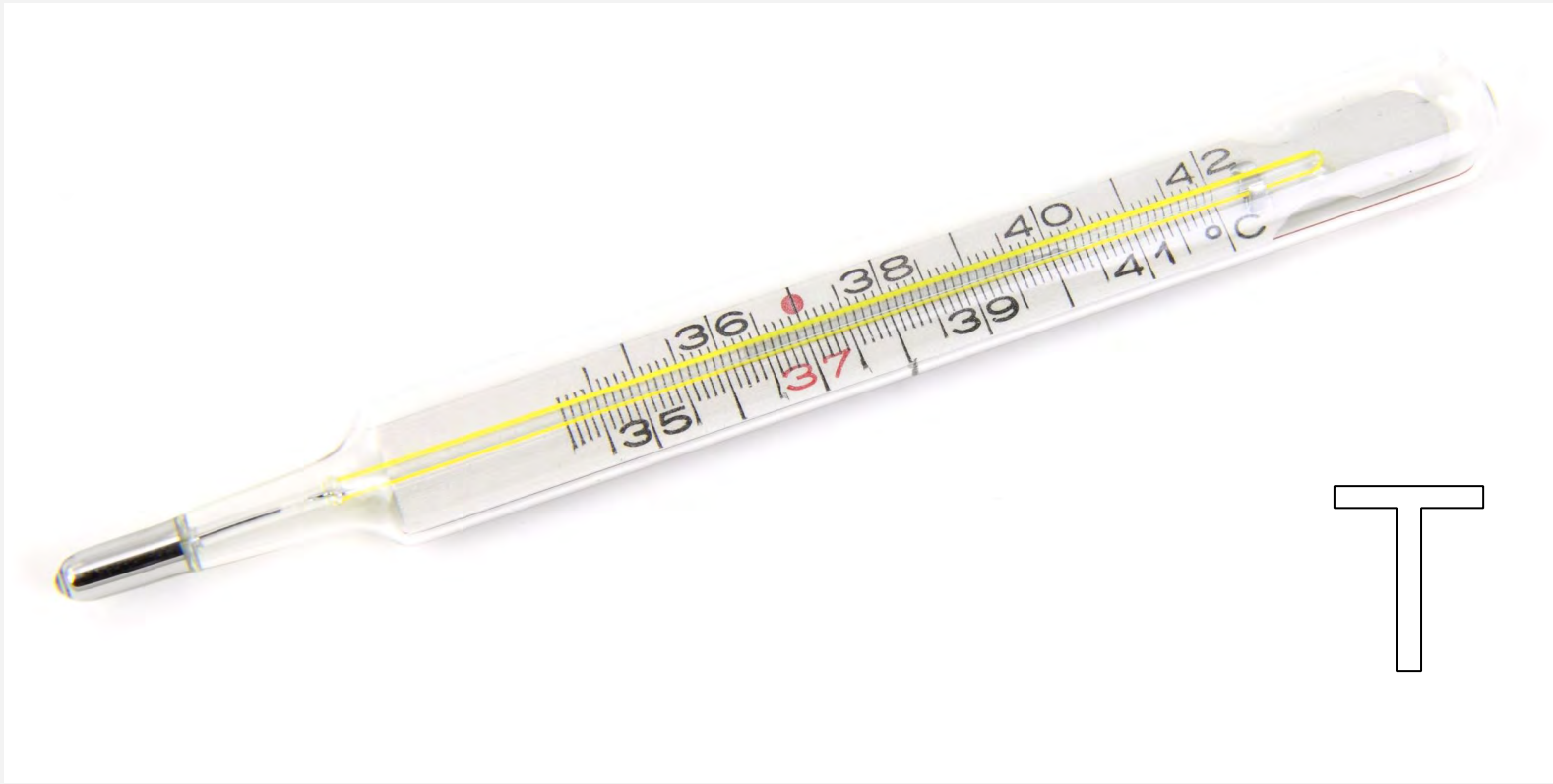
Now that you know the four steps for cleaning and sanitizing:

- 1** - Pre-rinse
- 2** - Wash
- 3** - Rinse
- 4** - Sanitize

Why is it important to have all four steps, and perform them in the proper order? [Let participants answer.]

Remember, it is NOT possible to properly sanitize if the surface is not cleaned first. It also is important to rinse the soap off the surface because soap or detergent can interfere with the efficacy of the sanitizer.

When it comes to the cleaning and sanitizing process, there are four elements that should be considered. These elements can be summarized by the acronym "**TACT**." The first **T** stands for "**T**emperature," the **A** for "**A**ction," the **C** for "**C**oncentration," and the second **T** for "**T**ime."



T



A

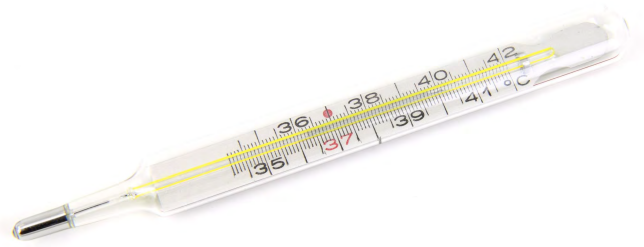


C



T

T.A.C.T.



T = Temperature

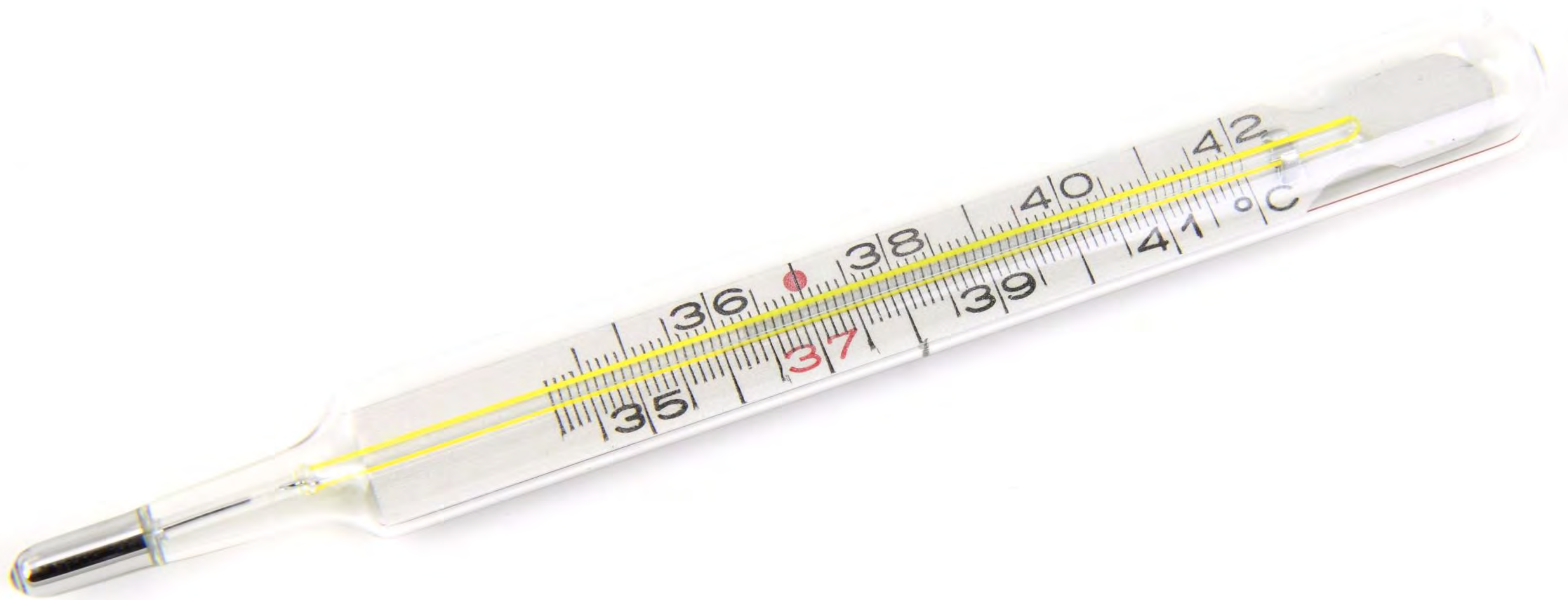
Notes

T is for temperature. Temperature is an important factor in the efficacy of cleaning and sanitizing. For example, if you use cold water in the pre-rinse step, it might be harder to clean because some compounds will solidify. If the water is too hot, other compounds might "cook" and attach to the surface you are cleaning, also becoming harder to clean.

Temperature also affects sanitizer efficacy. Bleach works well in the temperature range of 75 °F to 120 °F.

If you mix or use bleach at higher temperatures, the bleach will leave the solution as a gas, making the solution less effective against microbes. So, mixing bleach with cold or warm tap water is recommended.

If you are using another sanitizer, always read the label for proper instructions.



T = Temperature



A = Action

Notes

A is for action. Action is the **mechanical force** you apply to clean the surfaces. One example of action is scrubbing. The action you apply during cleaning helps to physically remove food and bacteria that might be attached to the surfaces.



A = Action



C = Concentration

Notes

C is for concentration. Using an accurate concentration of soap or detergent and sanitizer is extremely important. If the concentration is too low, then it is not effective. However, if the concentration is too high, it violates federal regulations, can be wasteful and expensive and can harm people.

Some soaps and detergents can be applied directly to the surface to be cleaned. If you prepare your soap or detergent, always read the label for instructions and follow them.

The proper concentration of bleach for sanitizing surfaces is one tablespoon of bleach to one gallon of water to obtain a final concentration of 200 ppm. Remember to mix thoroughly before using.

If you use another sanitizer, always read the label for instructions and follow them.



C = Concentration



T = Time

Notes

Finally, **T** is for time.

The amount of time that a surface is exposed to the sanitizing solution is very important for effective sanitation. Most sanitizers for food contact surfaces need a minimum of 1 minute contact time to kill the remaining microbes.

Also, sanitizer solutions lose their efficacy over time. It is important to make a fresh solution of bleach, at the correct concentration, at least once per day.



$T = \text{Time}$



Precautions

Notes

When working with sanitizers, remember that they are chemicals and can be dangerous if not handled properly.

Be careful when mixing bleach or any other chemical at your establishment. For instance, when chlorine is mixed accidentally with acid solutions, chlorine gas can be generated, which is not only corrosive but can cause respiratory irritation to you or your workers. Also, do not mix ammonia solutions with bleach.

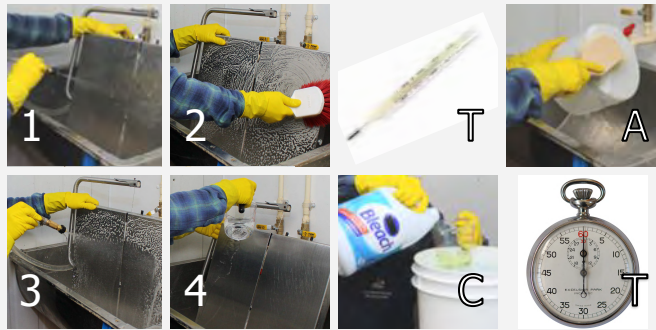
ALWAYS use the proper concentration of chemicals—since "more" is not necessarily better, and "less" is almost certainly less effective!

Finally, be sure to label all chemicals clearly and properly, and do not store them in food containers.



Precautions

Review



Notes

To quickly review:

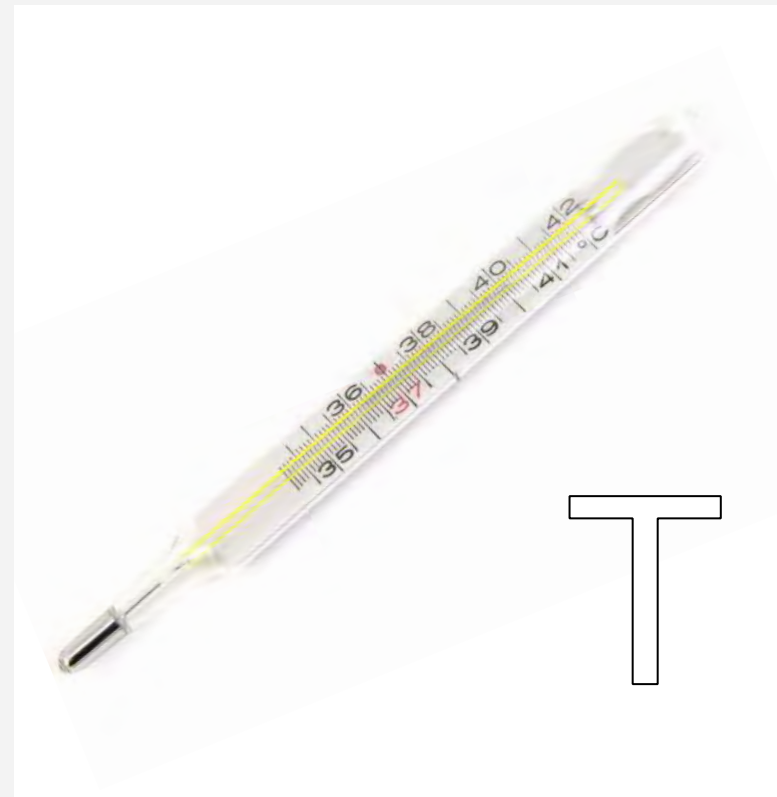
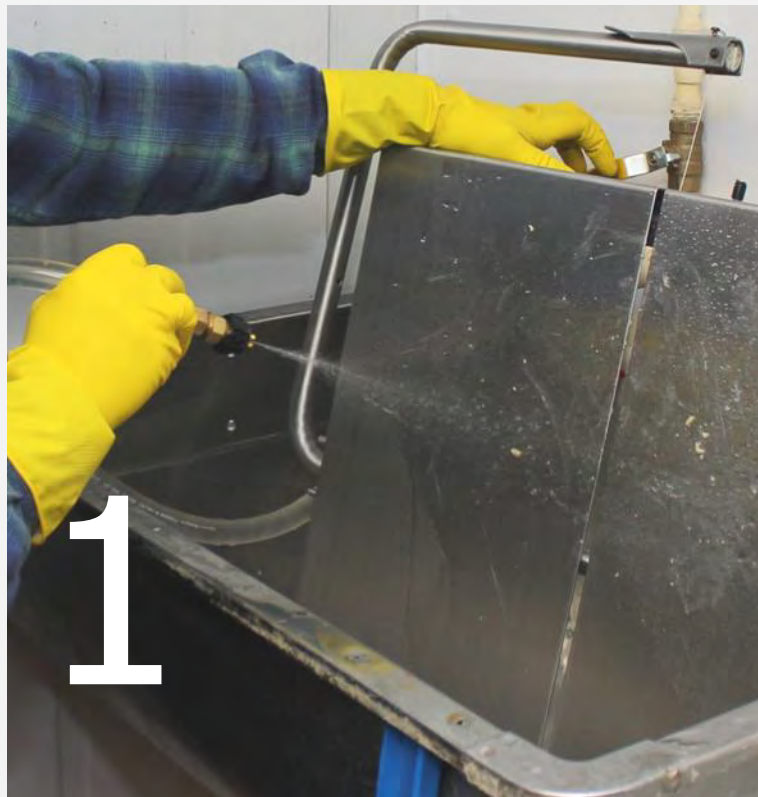
There are four steps in cleaning and sanitizing:

- 1** - Pre-rinse
- 2** - Wash
- 3** - Rinse
- 4** - Sanitize

What does TACT stand for? [Let participants answer.]

TACT: temperature, action, concentration and time are important factors that need to be considered when cleaning and sanitizing a surface to achieve proper cleaning and sanitation.

Finally, sanitation chemicals can be dangerous, so use caution and handle them properly to protect yourself and others.



Review

Ready-to-eat foods / Cross-contamination



Notes

Now let's go over some important definitions related to food safety.

Ready-to-eat foods are usually products that are prepared (cooked, fermented, acidified) in advance and can be eaten as sold. In other words, they do not require any additional heating or preparation step and are eaten "as is." Examples of ready-to-eat foods include salads, deli meats, canned food, and of course, cheese.

The next definition is **cross-contamination**. Which is the transfer of harmful substances or microbes (also known as contaminants) from something DIRTY to something CLEAN.

On a dairy farm, we are concerned with the transfer of bacteria from unclean surfaces to food or food contact surfaces. One of the biggest concerns with cross-contamination occurs when contaminants from a source outside the cheesemaking room are transferred, via the cheesemaker or employees, to the cheese or food contact surfaces. Examples of cross-contamination include handling or touching animals, followed by handling cheese with the same, unclean, hands.



Ready-to-eat foods / Cross-contamination



Shoes or boots / Cross-contamination

Notes

The barn and other parts of a dairy farm are natural reservoirs of microbes. You should try to minimize the transfer of microbes from those areas to the cheesemaking room.

One way for microbes to enter your cheesemaking room is on your shoes. Just by walking into the barn or outside, you will gather billions of microbes on the sole of your shoes. You must have a measure in place to minimize the carriage of those microbes inside the cheesemaking room.



Shoes or boots / Cross-contamination



Shoes or boots / Cross-contamination

Notes

Here are some options:

- 1.** Use a boot bath with a sanitizer.
- 2.** Have shoes that are used exclusively inside the cheesemaking room.
- 3.** Wash and sanitize your boots every time you re-enter the cheesemaking room.

A practical solution is to add a boot bath by placing a tray with sanitizer at the entrance door. Sanitizer in the tray should be made fresh every cheesemaking session and changed when visually dirty.

Having these boot baths in place when visitors tour the cheesemaking room is a good idea since they might bring microbes from other places.

If you prefer to wash your boots when entering the cheesemaking room, the same principle applies, as with cleaning equipment: remove gross contamination, use mechanical action, THEN use a sanitizer.



Shoes or boots / Cross-contamination



Clothes / Cross-contamination

Notes

Just like with your shoes, your clothes can carry microbes from the barn, the milking parlor, or the outside to the cheesemaking room.

To minimize the cross-contamination from your “street or barn” clothes, have designated clothing, overalls, or aprons that are used exclusively inside the cheesemaking room. The best practice is to **always** change into clean clothes before entering the cheesemaking room for cheesemaking and also to use an apron.

You should avoid making cheese using the same clothes you used in the milking parlor. That is because animal's excrement, and microbes from other sources, can be carried unnoticed on your clothes.



Clothes / Cross-contamination

Cutting and packing / Cross-contamination



Notes

When cutting cheese for packing, special care must be taken to avoid cross-contamination. The inner portions of the cheese that are isolated from the environment by the rind are exposed when cut. At this point, you are dealing with your final product, which is a ready-to-eat product. Any contamination transferred to the cheese at this step will likely reach your consumers.

Proper cleaning and sanitizing all food-contact surfaces and utensils will reduce the risk of cross-contamination.

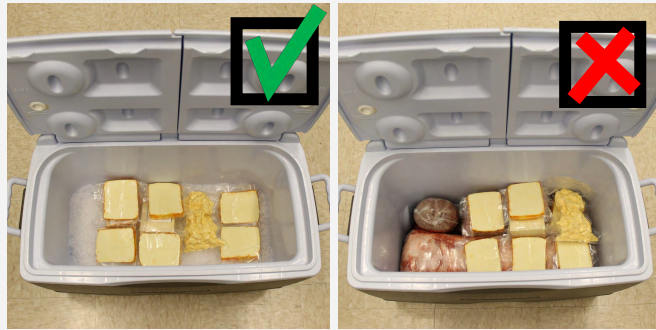
Food contact surfaces include but are not limited to: scales; knives; cutting boards; cutting wires; vacuum packaging machine; etc.

Remember it is important to use the 4 steps of cleaning and sanitizing for these food contact surfaces (pre-rinse > wash > rinse > sanitize).

You should also be wearing CLEAN, UNTORN gloves at this step to minimize contamination of the cheese.



Cutting and packing / Cross-contamination



Transporting / Cross-contamination

Notes

Transporting the cheese to sales locations offers another opportunity for cross-contamination.

Containers used for transportation, if not clean, can contaminate the cheese.

Another chance for contamination occurs when the same container is used for both cheese and raw products, such as meats or produce. Even frozen meat can still be a source of contamination. Therefore, fresh or frozen meat **should not** be placed in the same cooler as cheese.

The ice used in the coolers should be made from potable water and frozen meat or other foods should not be used in place of ice.



Transporting / Cross-contamination

Cleaning and sanitizing the cheese vat



Notes

At this time, we will demonstrate the proper way to clean the vat using the four steps of cleaning and sanitizing.

Disassemble any fittings, screens, etc. that are on the vat and take them to a sink to be cleaned later.

Remove any solids present and then follow the same cleaning and sanitizing steps discussed before:

- 1.** Rinse the interior and the outside walls with warm water.
- 2.** Thoroughly brush all the inner walls, bottom, ridges, and exterior walls with soap and warm water, being careful not to let the brush touch the floor.
- 3.** Rinse everything to remove the soap.
- 4.** Sanitize all areas that you brushed with a fresh, 200 ppm solution of bleach. This solution is prepared by adding one tablespoon of bleach to a gallon of water. If you use another sanitizer, please follow the preparation instructions listed on the container.

Follow the same steps for the fittings, screens, etc., using appropriately-sized brushes to clean all interior and exterior surfaces prior to sanitizing them. Reassemble as necessary.

Your vat is clean, sanitized and ready for use.



Cleaning and sanitizing the cheese vat



Frequency

Notes

All equipment, utensils, and food contact surfaces must be often cleaned. Some items require cleaning and sanitizing more frequently than others.

Here are some things you must clean and sanitize every time you make cheese:

- The vat;
- Any utensils you will use;
- Knives and wire knives;
- Hoops and hoops' lids or covers;
- Cheesecloths;
- Any other food-contact surface that will be used;
- Other equipment that has direct contact with the milk or curds, like pasteurizers, milk cans, agitation blades, etc.

If utensils cannot be stored in a way that avoids cross-contamination from non-food-contact surfaces, they need to be cleaned and sanitized before they come in contact with the milk or curds **every time**. Some examples are:

- Thermometers;
- Knives or another utensil to check for coagulation;
- pH meters;

Non-food-contact surfaces should receive regular cleaning, depending on use. You should develop a schedule for cleaning each of the following items:

- Floors;
- Walls;
- Shelves;
- Sinks;
- Other non-food-contact surfaces you might have.

Do NOT use the same brushes to clean the floors, walls, etc., for cleaning the food contact surfaces.



Frequency



Flash review

Notes

Maintaining sanitary conditions in your cheesemaking room is the best way to keep both your customers and your business healthy.

Remember the 4 steps for cleaning and sanitizing: pre-rinse > wash > rinse > sanitize.

Remember the 4 elements when cleaning and sanitizing: **TACT**: Temperature, Action, Concentration, and Time.

This is the end of the first part about cleaning and sanitizing. Are there any questions?

Thanks.



Flash review



Break

Notes

[illegible]

The next module is about handwashing and personal hygiene.

We can take a 5 minute break now if you want, or continue.



Break

2

Personal hygiene and handwashing



Personal hygiene

Notes

In the previous module, you learned how to properly clean and sanitize equipment, utensils and food contact surfaces in your establishment.

You also learned about cross contamination, which is the transfer of harmful substances or microbes (contaminants) from something DIRTY to something CLEAN.

Now it is time to learn how and why it is important to practice proper personal hygiene when working with food. In lesson 2, we will talk about the elements of personal hygiene, including hand washing.

The person you see in the picture is demonstrating good personal hygiene. He is using clean clothes that were put on just for cheesemaking, and he is wearing hair and beard protection.



Personal hygiene



Handwashing

Notes

First, can you tell me what personal hygiene is and why it is important?
[Let participants answer]

Personal hygiene refers to our habits of cleanliness. Our clothes, hair, hands - everything! One of the most important personal hygiene practices is hand washing.

Can you tell me what the basic steps for handwashing are? [Let participants answer]
There is a method for appropriate handwashing.

Step 1: Wet your hands and arms with warm water.

Step 2: Apply soap.

Step 3: Lather and scrub your hands and arms for about 10-15 seconds. Do not forget the areas under your nails and between your fingers, and use a small brush as necessary.

Step 4: Rinse thoroughly with warm water.

Step 5: Dry your hands using a clean paper towel or an approved drying method.

Step 6: When handling any ready to eat food, including the packing of cheese, be sure to wear gloves.



Handwashing

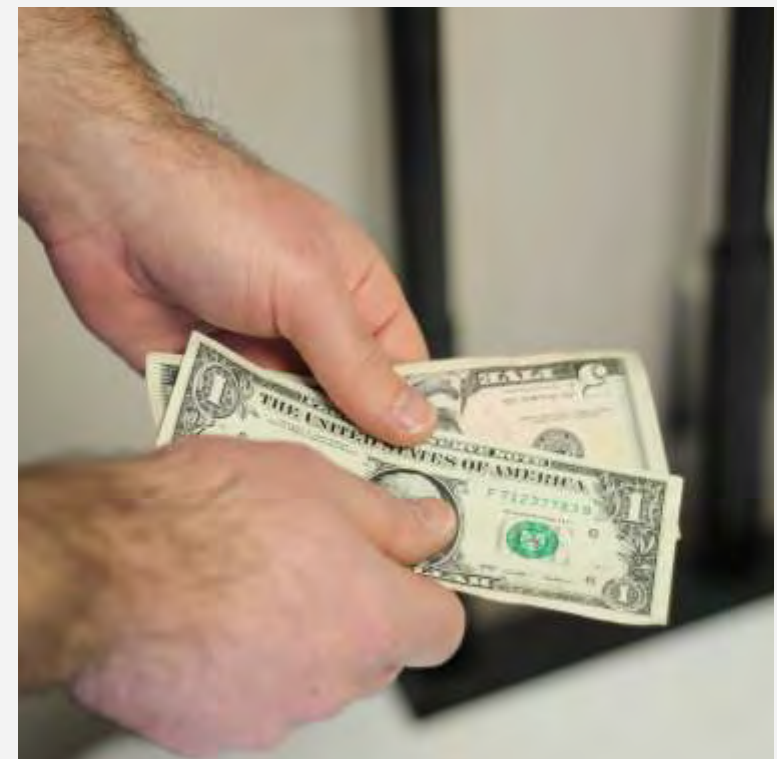
When should I wash my hands?



Notes

Now that you have learned how to wash your hands properly let's review when handwashing is necessary. You should wash your hands:

- After smoking.
- Before packing cheese.
- After using the restroom.
- After sneezing or blowing your nose.
- Every time you return to the cheesemaking room, even if you were only talking on the phone or talking to a customer.
- Before cutting cheese to serve as samples at a farmers' market.
- After handling money.
- After picking something up off the floor.



When should I wash my hands?



Hands and arms sanitizing

Notes

Sanitizing your hands and arms, after washing them, is as important as sanitizing any other food contact surface or utensils. After all, your hands are your main "utensils."

To sanitize your hands and arms, you should dip them up to your elbows in the same sanitizing solution you use to sanitize food contact surfaces and utensils.

For this reason, you should have a sink or other container with enough sanitizer to dip your hands and arms during the cheesemaking session.

You should sanitize your hands and arms EVERY TIME, before touching the milk, the curds or any food contact surfaces, like the hoops. The same care should be taken when flipping or otherwise handling pressed cheeses.



Hands and arms sanitizing



Handwashing: Activity

Notes

Activity:

Now it is your turn to wash your hands following the guidelines that were just provided. [Watch participants wash their hands and remind them as they do it.]

Step 1: Wet your hands and arms with warm water.

Step 2: Apply soap or detergent.

Step 3: Lather and scrub your hands and arms for about 10-15 seconds. Do not forget the areas under your nails and between your fingers, and use a small brush as necessary.

Step 4: Rinse thoroughly with warm water.

Step 5: Dry your hands using a clean paper towel or an approved drying method.

Step 6: When packing cheese, be sure to wear gloves.



Handwashing: Activity

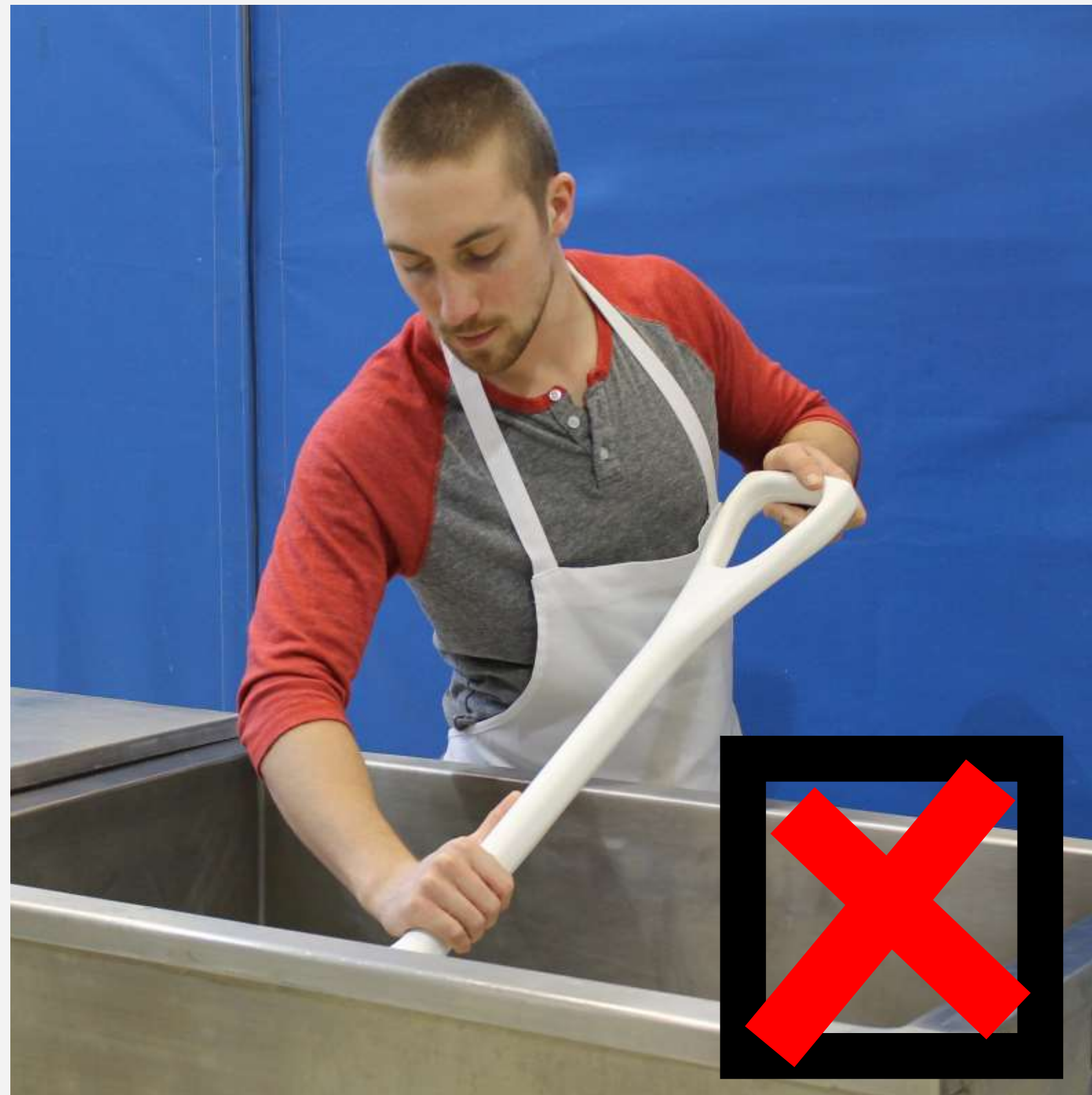
Hairnet and beard net: Incorrect / Correct



Notes

It is important to wear a hair net or clean hat, and a beard net, when working with food to prevent cross contamination with hair, sweat, or dandruff.

The right photo demonstrates an incorrect practice. The left photo demonstrates a correct practice.



Hairnet and beard net: Correct / Incorrect



Eating

Notes

Always remember to eat in areas away from the food preparation area. Again, you can transmit bacteria from your saliva to your hands or fingers, and ultimately, to the food you are handling. **Always** remember to wash your hands before returning to work.

You should avoid eating curds in the cheesemaking room, but if you do, you should eat away from the food prep area and wash your hands afterward.

When you chew, you might spit, and you do not want to contaminate the curds with your saliva. That's why, in the pictures, the cheesemaker is tasting the curds **away** from the vat and then she washes her hands before returning to work.



Eating

Leaving the cheesemaking room



Notes

Each time you enter the cheesemaking room, there is a chance that you will carry contamination from the outside. You can minimize the risk of cross-contamination by:

- 1.** Not leaving the cheesemaking room during a cheesemaking session; if you must leave, minimize the number of times.
- 2.** Sanitizing your boots before reentering the cheesemaking room; or changing to a pair of shoes or boots designated for the preparation areas.
- 3.** Washing your hands before returning to work, and sanitizing your hands and arms when necessary.
- 4.** Leaving your apron in the work area. If you are going to re-use your apron, be sure that it does not become contaminated by falling on the floor, by touching 'dirty' surfaces, etc.



Leaving the cheesemaking room



Use of gloves

Notes

A recommendation in the FDA's Food Code is to wear gloves, in addition to hand-washing, in order to protect the food you are handling.

However, it is important to realize that gloves do NOT replace proper handwashing. It is also important to properly wash your hands before putting on gloves.

Also, make sure the gloves fit well. Gloves that are too big can tear easily or get caught in equipment.

Your hands must be clean in the case a glove rips, and your bare hands accidentally come in contact with the food or food contact surfaces to reduce the risk of contamination. So, wash your hands before putting on gloves.

This step also will prevent contamination of the gloves from your hands, when putting on the gloves.



Use of gloves

Gloves: Incorrect / Correct



Notes

Glove use is beneficial to protecting the safety of your food if used correctly.

First, it is important to know that gloves are used to protect food from contamination and not for protecting your hands.

You should wear gloves on both hands as demonstrated in the left photo. Do not wear only one glove, as demonstrated in the right photo.

You should use gloves when cutting and packing cheese and when cutting samples at a farmers' market or another retail setting.



Gloves: Correct / Incorrect



When to change gloves

Notes

Remember, gloves only remain clean until you touch a contaminated surface, including your hair or your face. If you touch your hair or face with your gloves on, the gloves need to be changed, especially before handling foods.

Also, if you happen to sneeze or cough into your glove, it is important to change gloves before continuing to work.

And, gloves are not to be worn when handling cash or shaking hands.



Changing gloves



Review: Steps for cleaning

Notes

Recap: Let's review the information one more time.

How many steps are needed to clean and sanitize a food contact surface properly?
[Let participants answer.]

There are four steps for cleaning and sanitizing food contact surfaces. Let's go through them together.

The first step is to pre-rinse. First, you wet the surface to help loosen the soil on the surface that is being cleaned.

Washing is the second step in the process. This step is performed with soap and warm water to remove food or soil from the surface.

The third step is to rinse the food contact surface. This step washes the soap from the surface as well as any remaining food particles.

At this point, the food surface should appear completely clean to the naked eye, as is demonstrated in the photograph.

The final step is sanitizing the food contact surface. It is important that this step is completed after all food is removed and the surface is clean. This step reduces the number of microbes present in a surface to safe levels.

The order is important! **Remember:** you must first clean and then sanitize.



Review: Steps for cleaning



Review: Handwashing

Notes

Let's go through the proper steps involved with handwashing, one last time.

Step 1: Wet your hands and arms with warm water.

Step 2: Apply soap or detergent.

Step 3: Lather and scrub your hands and arms for about 10-15 seconds. Do not forget the areas under your nails and between your fingers.

Step 4: Rinse thoroughly with warm water.

Step 5: Dry your hands using a clean paper towel or an approved drying method.

Step 6: When packing cheese, be sure to wear gloves.

Remember that you should always keep yourself clean.

This is the end of our discussion about food safety.
Do you have any questions?



Review: Handwashing



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