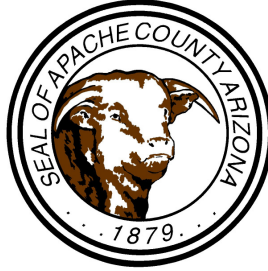


FOOD SAFETY TECHNIQUES FOR THE FOOD SERVICE WORKER



APACHE COUNTY COMMUNITY DEVELOPMENT ENVIRONMENTAL HEALTH SERVICES DIVISION

P.O. Box 238
St. Johns, AZ 85936
(928) 337-7527
Fax (928) 337-7633

INTRODUCTION

There are 200 known diseases transmitted through food. Agents that cause disease can include viruses, bacteria, parasites, toxins, metals, and prions. The Center for Disease Control and Prevention reported 76 million illnesses in 1999. Most cases go unreported because they occur in healthy people who recover from the "24 hour bug" or flu. All food service workers are responsible for making sure that the foods they serve are safe and wholesome. This study guide is designed to give you a basic understanding of how you can store, prepare, and serve food safely. Almost all food borne illnesses can be prevented by following the procedures outlined in this guide. Please take what you learn here and use it in your workplace.

Part A of this guide examines how to prevent bacteria, viruses, toxins, and chemical poisons from **transferring into** food while it is under your control. Part B examines ways you can **control the growth** of harmful bacteria and viruses *that may already be present* in the foods you prepare.

PART A: Keeping the Contamination Out

Personal Cleanliness

Washing your hands thoroughly and frequently is the most important thing you can do to keep harmful germs out of the foods you prepare. Most of us first learned how to wash our hands as small children. Unfortunately, many food service workers fail to put what they've learned into effective practice.

Teach yourself to be aware of what your hands are in contact with at all times. Avoid bad habits like touching your hair or face, picking your nose, or wiping your hands on your clothes or apron. When you wash your hands, wash them thoroughly. Use hot water and soap, and scrub vigorously for at least 20 seconds, including forearms and under the nails. Use a paper towel or an air dryer to dry your hands.

WHEN:

- when you first arrive at work, and when you return to work after breaks
- before you touch clean utensils or work surfaces
- after you touch your face or mouth, after sneezing or coughing
- after you touch raw eggs, meat, fish, or poultry
- after you touch dirty dishes, garbage, or any other unclean surface
- after you use the toilet or urinal
- after you smoke

Direct hand contact is not allowed for ready to eat foods. Ready to eat foods are most often foods that will not receive further washing or cooking prior to consumption (examples: salads, sandwich ingredients, cut or sliced fruit). Use gloves, deli papers or utensils when you work with these foods. Gloves must be worn if you wear nail polish, fake nails, or have sores, bumps or cuts on your hands. No Jewelry is allowed on hands or arms, except a plain wedding band. Please be aware that neither gloves nor hand sanitizers are a substitute for proper hand washing. When you use gloves, you must still wash your hands in all the same situations you would if you were not using gloves, and you must switch to clean gloves whenever they become soiled.

Smoking, eating or drinking in food preparation, service or storage areas is prohibited. If you are ill, you should not go to work. You may pose a danger of infecting others through the foods you prepare, especially if you are sick with vomiting, fever, or diarrhea.

Cleaning and Sanitizing

Keeping kitchens and equipment clean is important for food safety. A clean kitchen will discourage unwanted pests like cockroaches and mice. Even surfaces that look clean may still have harmful germs on them that you can't see. Sanitizing removes these germs.

Improper use of sanitizers is dangerous, so make sure you know how and when to use them. Bleach is the most common kitchen sanitizer. If you use other types of sanitizers, you must follow the directions for safe use noted on the label. When washing dishes by hand, use the following procedure:

- pre-scrape or pre-rinse dishes
- wash thoroughly in hot soapy water
- rinse thoroughly in hot water
- immerse in sanitizing solution for 30 seconds
- air dry
- store dry dishes in clean protected place

You must be careful to use the right concentration of sanitizer. If you are using bleach, use a paper test strip to verify 50 to 100 parts per million. The strip will turn a medium blue. If you are using a different type of sanitizer (such as iodine or quaternary ammonium), use the test strips supplied by the product vendor, **even if** the system mixes the solution automatically.

Work surfaces that come into direct contact with foods must also be sanitized. Bacteria grow very quickly in damp cloths. When you use a cloth to wipe down work surfaces, set up a large container of sanitizing solution just as you would at the dish wash sink. Rinse and return all idle cloths to the solution between uses. Change the solution frequently; food debris uses up the sanitizer quickly.

Cross-Contamination and Food Storage

When storing or preparing raw foods be aware that bacteria and viruses can easily transfer into foods that may not be cooked or reheated. This accidental transfer is called cross-contamination. You must avoid it by properly sanitizing all utensils, cutting boards, and work surfaces after handling raw foods, especially raw meats. Use the methods outlined above for sanitizing, and make sure you also carefully wash your hands after handling raw foods.

The same accidental transfer can occur if raw foods are improperly stored. Never store raw meat, poultry or eggs over ready-to-eat foods. Reserve the lowest shelves for storing raw meat and eggs.

All foods must be stored at least six inches off the floor. Stored foods should always be kept covered. The only exception is foods that are cooling, which should be left uncovered in the refrigerator until cooled.

Food Storage Limits

Foods should always be used in the order they were received. All arriving foods should be marked with a date so that you know which inventory to use first. In addition, any ready-to-eat potentially hazardous food* must be marked with a discard date at the time of opening or preparation. The discard date depends on the temperature at which the food is held: not more than four days if refrigerated between 41 and 45 degrees F; not more than seven days if refrigerated at 41 degrees F or less.

** Hazardous foods are moist, protein-rich foods that support the rapid growth of harmful bacteria. These include meat, fish, poultry, eggs, and dairy products. But the term also includes many other cooked foods such as rice, refried beans, soups, gravies, sprouts, cut melons, garlic in oil mixtures, and potatoes. To keep these foods safe they must be held at the right temperature.*

Unacceptable Foods

Any foods served in your workplace or at a special event must come from an approved source. It is illegal to serve foods prepared at home or from any unlicensed kitchen. Packaged food must carry a label indicating where it came from.

Meat, poultry and dairy products must come from facilities regularly inspected by health authorities. All foods arriving at your workplace must be free of spoilage. Canned foods must have an intact seal and be discarded if swollen. Potentially hazardous foods should be rejected if they arrive at an unsafe temperature. Packaged foods should be rejected or discarded if they arrive damaged.

Shellfish like raw clams, oysters, scallops or mussels must come from legal sources and carry a tag that says where it came from. These tags must be saved and kept for at least 90 days after the product is sold or eaten. Vacuum packed foods must be held at a safe temperature and consumed by the date indicated on the package.

Toxic Chemicals and Pest Control

Accidental poisonings from careless use of chemicals in food operations happen frequently. All items such as lotions, medicines, soaps, detergents, sanitizers and other chemicals must be stored separately from food, utensils and food work areas. If the chemical is not necessary to the functioning of the food business, it should not be kept there at all. Any container used for chemicals must be labeled. If the chemical is transferred into another container, such as a spray bottle, this container must be labeled too.

Pesticide use in food facilities is very restricted. **No pesticide may be applied except by a licensed pesticide applicator.** Any pesticide the licensed applicator uses must be specifically approved for food service use. No pesticides or pesticide equipment can be stored at the food business. **The best way to control cockroaches, mice, flies and other pests is to keep the establishment and garbage areas clean, and to eliminate hiding places and routes of entry.**

This is what can happen when a fly lands on your food:

- Flies can't eat solid food, so to soften it up they vomit on it.
- Then they stamp the vomit in until it's a liquid, usually stamping in a few germs for good measure.
- Then when it's good and runny, they suck it all back again, probably dropping some excrement at the same time.
- And then when they've finished eating, it's your turn!

Key Methods of Preventing Food Contamination

- Eat, smoke, and drink in designated areas. Do not put dirty dishes in hand wash sink.
- Do not wash produce / food in 3 compartment sink or hand wash sink.
- Do not wash hands in food prep sink or 3 compartment sink.
- Sanitize food and non-food contact surfaces adequately. Clean to touch and sight.
- Separate raw animal meats from ready-to-eat food.

Compliance: Person in Charge

There must always be a person in charge at the establishment. This person is required to:

- Have at least a current food handler card or the equivalent formal food safety training.
- Restricts access of kitchen area to employees.
- Ensures compliance of food safety practices.
- Ensures employees are trained properly for their assigned duties.

Part B: Food Temperatures

The first part of this study guide covers ways to keep food clean and free of contamination. But food that arrives at your workplace may sometimes already be contaminated with germs or parasites. So Part B of this booklet focuses on how to kill or prevent the growth of these harmful organisms.

They're Alive

Parasites are tiny worms or bugs that live in fish and meat. They can be killed if frozen long enough or cooked long enough. If your workplace serves raw or undercooked fish like sushi, sashimi, or ceviche, the fish or shellfish must be frozen first to kill of any parasites. If you prepare any of these menu items, records must be kept for at least 90 days documenting freezing.

Unlike parasites, freezing does not always kill bacteria and viruses. They will survive and start growing again under the right conditions. Not all bacteria and viruses are the same. Some make you sick by growing inside your body. Others make you sick by producing poisons in food if the food is not kept at the right temperature. The bacteria that cause spoilage are not the same as the

ones that cause food borne illnesses. **It is important to understand that when a food is contaminated with germs, the food will usually look, smell and taste fine.**

Germs are alive and need different conditions to survive and thrive. But in general they need the following conditions to grow: **food, moisture, temperature and time.** As discussed in Part A, foods that are moist and high in protein support very rapid bacterial growth. For this reason, they are potentially hazardous foods. Germs may still be present in or on dry foods like tortilla chips, breads or cereals, but they are unlikely to grow there.

Cooking Temperatures

Cooking foods to the right temperature is the best way to destroy any harmful germs that may be present in foods. Most types of germs are killed through cooking. The chart below shows safe cooking temperatures for many common foods.

FOOD	TEMPERATURE*	EXAMPLES
<i>Poultry</i>	165	<i>chicken, turkey, chicken patties</i>
<i>Meats, ground</i>	165	<i>hamburger, meat loaf, sausage, hot dogs, gyros</i>
<i>Meats, not ground</i>	145	<i>steaks, roasts, pork chops, corned beef</i>
<i>Eggs, not eaten right away</i>	155	<i>custard, scrambled eggs on buffet line</i>
<i>Eggs, eaten right away</i>	145	<i>eggs over easy, scrambled eggs to order</i>
<i>Seafood</i>	145	<i>fish filet, shrimp, mussels</i>

**degrees Fahrenheit*

Any food cooked in a microwave oven must be cooked to 165 degrees, stirred at least once during cooking, and then left to stand covered for a minimum of two minutes prior to serving.

The Temperature Danger Zone

Many of the foods you serve are uncooked when you serve them. Others like cold cuts are already cooked when they arrive at your workplace. It is important to guard these foods against contamination because they will not be cooked to remove germs. It is also important to prevent the growth of the germs that may already be there by holding foods at a safe temperature.

Most germs do not grow well at cold temperatures. This is why we refrigerate foods. To be safe, **cold foods must be held at 41 degrees or less.** Most germs do not grow well at hot temperatures either. **Hot cooked foods must be held at 135 degrees** to keep germs from growing. The range of temperature between 41 degrees and 135 degrees is called the temperature danger zone. Germs grow very quickly in this temperature range. Whenever possible, you must avoid having foods in the danger zone. If you are cooling or heating foods they must pass through the danger zone quickly.

Reheating Foods

Foods reheated for immediate consumption can be reheated to any temperature, but if you intend to hold a reheated food for any length of time prior to serving, it must be reheated to at least 165°F, regardless of the original cooking temperature.

Reheating must be rapid. Do not place cold foods into a steam table or crock pot. They will not reheat quickly enough. Instead use a microwave, stovetop, or oven to heat the food before placing it in the steam table. A food should only be reheated once.

Cooling Foods

Cooling is usually the riskiest step in food preparation. Germs can grow very quickly in cooling foods. It is very difficult to cool foods fast enough to keep them safe, especially in Arizona. Most refrigeration equipment is not capable of rapidly cooling large volumes of food.

The best approach to cooling is to avoid it whenever possible. Many popular menu items such as chicken wings, deep fried tacos, and egg rolls are often cooked in separate steps. But, these foods are much safer if the steps are combined into just one longer cooking step.

Smart businesses plan and prepare all their menu items on a daily basis, discarding any leftovers. Rather than cooking enough of a particular food to last all week, they prepare only enough to last through that day, and hold it hot until served. They prepare the food as closely as possible to the time they serve it.

For some foods, cooling is unavoidable. Knowing ways to quickly cool these foods minimizes the risk. For large solid food like meat loaf or turkey, cut the food into smaller pieces and spread it out on a tray, placing the tray into the refrigerator with plenty of room for air circulation. For foods you can stir like gravy or refried beans, setting up an ice bath and placing the container of food into it will greatly speed up cooling. Splitting large containers of hot food into multiple small shallow containers allows for faster cooling too.

Foods should not be left out to cool at room temperature. As soon as they fall below 135 degrees they should be cooled on ice or in the refrigerator. If you are preparing a cold salad from hot ingredients like potato salad or egg salad, cool all the ingredients first, prior to mixing.

Whatever the method used, the food must cool to 70 degrees within two hours and from 70 degrees down to 41 degrees within another four hours. Six hours may seem like a long time to cool foods, but most foods will not cool this quickly unless you're giving them some help. Use a stem thermometer to make sure the cooling methods you're using are adequate.

Thermometers

Any refrigeration equipment you use must be equipped with a thermometer that measures the internal temperature. It is a good idea to keep logs as a way of making sure that someone will actually be checking on the temperature regularly.

Use a metal stem thermometer to check foods you are cooking, holding hot or cold, or cooling. Keeping a log of these temperatures is also recommended.

Make sure the thermometer's range includes the temperature you are looking for. You cannot use a cooking thermometer for cold or cooling foods because the range does not go down to 41 degrees. Test the accuracy of your thermometer by placing it in a glass of ice water for a couple of minutes. If it does not give you a reading of 32 degrees, it needs to be adjusted.

Be aware that stem thermometers usually measure from a point halfway up the stem. To give an accurate reading, the stem must be pushed deep into the food. Thermometers must also be cleaned and sanitized between uses. You don't want a dirty thermometer to put germs into clean food.

The Importance of Time

Most (but not all) harmful germs need time to grow to dangerous levels. This is why holding foods at safe temperatures is important. This is also why cooling and reheating should happen as quickly as possible. In general, four hours is the longest possible time you want to have a potentially hazardous food in the temperature danger zone. Remember that this limit is additive. For example, if it takes three hours for the cooked potatoes in your potato salad recipe to cool down to 41 degrees, you do not want the potato salad to sit out above 41 degrees for more than one additional hour.

Many refrigeration units now in use cannot keep foods at 41 degrees (the code allows for 45 degrees F for refrigeration equipment purchased before October, 2001). This is particularly true of prep tables with trays of foods arranged in the top. Often these tables are on hot cook lines and the food in the trays will not stay cold enough. If this is true of your kitchen, make sure that all foods are pre-chilled before placing them into the prep table, and then remove all trays on a strict time schedule discarding the contents. **Do not hold any potentially hazardous food in the danger zone for more than 4 hours.** If you discover that a food has been held at an unsafe temperature, but you're not sure for how long, discard it. The rule is "When in doubt, throw it out!"

Thawing Foods

There is a right way and a wrong way to thaw foods. Improper thawing allows germs to grow in the outer layers when the core is still frozen. Do not thaw food at room temperature or in warm water. There are three acceptable ways to thaw foods, and they all require some advance planning:

1. Place it in the refrigerator. This method is the safest, but it will take longer (be sure to put raw meats in a container to prevent the juices from dripping into other foods).
2. Hold the food under cool running water.
3. Thaw it in a microwave, but only if the food will be cooked immediately.

Don't be tempted to cook a large roast or whole chicken or turkey when it is still partially frozen. The core will not reach a safe cooking temperature by the time the outer layer is done.

Emergencies

You should know how to respond to emergency situations at work. If a sewer or waste system backs up in the drains, or if the water supply is cut off or damaged, you should notify the manager and close the business right away. You should also close the business if there is an extended power or hot water outage.

If a piece of equipment fails that you rely on to keep foods hot or cold, you must think and act quickly. Shift food into an alternate refrigerator or warming unit if possible. If you are unsure how long a refrigerator or freezer has been malfunctioning, take the temperature of foods inside using a stem thermometer. If the food is above 45 degrees, discard it. If frozen food has thawed, do not refreeze it, and discard it if the temperature exceeds 45 degrees. If you are unsure how to respond to an emergency, you should call the health department for advice.

Summary

All of the information you have learned from this study guide will help you and your family stay healthy to. Take this time to review key ideas.

1. Wash your hands often, and wash them well.
2. Work only when you are healthy, not when you are sick.
3. Use only foods from approved sources.
4. Prevent food poisoning by keeping food out of the "danger zone" between 41 and 135 degrees F.
5. Cool and reheat foods quickly.
6. Cook foods to the proper temperature.
7. Keep food safe from cross contamination with careful storage and sanitizing.
8. Store chemicals away from food, utensils and equipment.
9. Keep your workplace clean and safe.

For the complete Food Code, see www.hs.state.az.us/edc/oeh/fc2000.pdf

Additional websites for food safety are:

www.cdc.gov/envsvc/ENVHLTH/fslinks.asp

www.cdc.gov/foodsafety