Occupational health and safety procedures for food handlers

* Practice good hygiene.
* Keep equipment clean and sanitized.
* Ensure staff wears safety equipment.
* Risk assessment matrix.
* Prevent cross-contamination.
* Provide training to your food handlers.
* Install fire safety equipment.
* Choose foods processed for safety. ...
* Cook food thoroughly. ...
* Eat cooked foods immediately. ...
* Store cooked foods carefully. ...
* Reheat cooked foods thoroughly. ...
* Avoid contact between raw foods and cooked foods. ...
* Wash hands repeatedly. ...
* Keep all kitchen surfaces meticulously clean.
* **What is the meaning of HACCP?**
* Hazard Analysis Critical Control Points
* Introduction. **Hazard Analysis Critical Control Points** (HACCP) is a system which provides the framework for monitoring the total food system, from harvesting to consumption, to reduce the risk of foodborne illness. The system is designed to identify and control potential problems before they occur.

**Food Handling**

Learn the safe food handling practices for each food type and get answers to frequently asked questions about food handling

**What is Food Handling?**

Food handling is the process of preparing food that is safe for public consumption. Essential to implementing safe food handling is that food handlers receive training on personal hygiene and sanitation, cooking and storing food at appropriate temperatures, and other safe food handling practices. An integral part of food safety, food handling should always be a priority.

**Why is Food Handling Important?**

Food handling is important because unsafe food handling can lead to outbreaks of foodborne illnesses (commonly known as food poisoning). According to the [World Health Organization](https://www.who.int/news-room/fact-sheets/detail/food-safety) (WHO), foodborne illnesses can cause long-lasting disability and even death.

As a possible threat to public health and safety, food handling is closely monitored by government agencies across the world. Failing to pass routine inspections and not complying with regulations can result in [involuntary shutdowns](http://ocal10.com/food/dirty-dining/2021/06/21/restaurant-ordered-shut-tells-customers-they-were-closed-for-renovations-and-ac-repair/) of businesses.

On the other hand, food service businesses that are consistent in following safe food handling practices may actively prevent cases of foodborne illness and gain the trust of their customers as a result. Additionally, these businesses avoid the chance of non-compliance with regulations and form better relationships with the local authorities and business partners in their areas of operation.

**Food Handling Regulations**

In the United States, under the Food and Drug Administration (FDA) [Food Code 2017](https://www.fda.gov/media/110822/download), permit holders or those who [operate food establishments](https://safetyculture.com/checklists/kitchen-operations/) must assign someone or take responsibility as the person in charge. The person in charge has to ensure that employees are maintaining the correct temperatures during cooking, cooling, and holding.

In Australia, under the [Food Standards Code](https://www.legislation.gov.au/Details/F2014C01204), food businesses are responsible for ensuring that food handlers have both the skills in and knowledge of food safety and [food hygiene](https://safetyculture.com/topics/food-hygiene-rating/) matters. Food businesses must also take the necessary steps to prevent the likelihood of food being contaminated.

**Consequences of Bad Food Handling**

On June 9, 2021, it was [reported](https://kingcounty.gov/depts/health/communicable-diseases/disease-control/outbreak/mazatlan.aspx) by the public health department of King County in Washington that 13 people who dined at a certain [restaurant](https://safetyculture.com/checklists/restaurant-cleaning/) were sick with norovirus, a kind of foodborne illness. According to [Medical News Today](https://www.medicalnewstoday.com/articles/179107#what-is-norovirus), norovirus infections are caused by touching a contaminated surface or by consuming contaminated food.

The last inspection of the restaurant before investigation showed that it had [failed](https://www.foodsafetynews.com/2021/06/thirteen-sickened-with-norovirus-after-eating-at-same-restaurant/) to observe several safe food handling practices which could have prevented the outbreak, such as:

* Maintaining proper barriers to prevent bare hand contact with ready-to-eat food
* Keeping nonfood contact surfaces maintained and clean
* Properly using, storing, and sanitizing wiping cloths

Aside from putting the lives of people at risk, bad food handling also has long-term legal implications, as seen with Blue Bell Creameries. In 2015, a [deadly Listeria outbreak](https://www.cdc.gov/listeria/pdf/bluebell-listeria-outbreak-infographic-508c.pdf) was traced back to the company’s ice cream. As a result, Blue Bell had to settle its criminal liability with the [Department of Justice](https://www.justice.gov/opa/pr/blue-bell-creameries-agrees-plead-guilty-and-pay-1935-million-ice-cream-listeria) in payments of $19.35 million.

In 2017, the company was [sued by shareholders](https://www.natlawreview.com/article/not-so-sweet-failure-to-timely-recall-contaminated-ice-cream-results-major) for misconduct leading to the recall of its products and reached a $60 million settlement with them in 2020. In 2021, Blue Bell is facing a [lawsuit filed by its insurance carriers](https://www.foodsafetynews.com/2021/06/blue-bells-insurance-carriers-sue-ice-cream-maker-and-its-officers-and-directors/) for failing to maintain standards and controls for sanitary and safe production.

**Create Your Own Food Handling Checklist**

Eliminate manual tasks and streamline your operations.

[Get started for free](https://app.safetyculture.com/sign-up?utm_source=safetyculture&utm_medium=article&utm_campaign=SEO_CTA&utm_content=sign_up)

**What are Safe Food Handling Practices?**

Often referred to as the 4 steps to food safety, the core safe food handling practices are clean, separate, cook, and chill. Each safe food handling practice will be discussed in detail below for dairy, meat and fish, eggs, fruit and vegetables, frozen goods, and dried goods.

1. **Clean**

Food handlers must always wash their hands before they begin food preparation. The key tip for handwashing is to use warm water and regular soap. Handwashing should last for at least 20 seconds. Aside from keeping their hands and arms clean, food handlers must also ensure that the tools they’ll be using for food preparation, such as cutting boards, knives, pans, and spatulas, are clean and dry.

1. **Separate**

Raw meat, poultry, seafood, and eggs should always be kept separate from other ingredients. Don’t use containers, plates, or cutting boards that have held raw meat, poultry, seafood, or eggs for other ingredients, unless they have been washed in hot soapy water. The same rule applies to utensils.

1. **Cook**

Once they have finished cooking a dish, food handlers are required to check its internal temperature by using a food thermometer. There are specific internal temperature ranges for each food type. Food handlers must not send food out for serving if it is not within the required temperature range. This is to ensure that all harmful microorganisms are killed before the plate reaches the customer.

1. **Chill**

Keep the temperature within the refrigerator below 40°F (4°C). To avoid having to manually check the temperature using an appliance thermometer several times throughout the day, consider setting up [temperature sensors](https://safetyculture.com/monitoring/) for ease of mind. These sensors can also alert food handlers when fridge temperature reaches or starts to go above 40°F (4°C). For freezers, the recommended temperature is 0°F (-17°C).

**Food Handling Practices for Dairy**

* Do not purchase, use, or serve dairy products containing unpasteurized milk, except for hard cheeses that have been aged 60 days.
* Do not return milk and other dairy products to their original containers once taken out.
* In general, milk, cream, yogurt, and cheese should be kept chilled in the refrigerator at a temperature below 40°F (4°C).
* Unopened shelf-stable milk, such as evaporated, condensed, and Ultra-High Temperature (UHT) milk, can be stored at room temperature. However, once opened, shelf-stable milk should be kept chilled in the refrigerator at a temperature below 40°F (4°C).
* Butter can be kept in the refrigerator at a temperature below 40°F (4°C) for a maximum of 2 weeks. Past 2 weeks, it must be wrapped in packaging, then kept in a freezer at or below 0°F (-17°C). For use in dessert batters, butter must be at room temperature or approximately 71°F (22°C).
* Ice cream should be kept in a freezer at or below 0°F (-17°C).
* Do not freeze yogurt, cream, or milk except for fresh whole or skimmed milk.
* If mold is visible on hard cheese, cut out the part with mold and the area surrounding it. Examples of hard cheeses are cheddar, Swiss, Gouda, and Parmesan.
* If mold is visible on soft cheese (excluding blue cheese), discard the cheese. Examples of soft cheeses are Brie, feta, ricotta, and cottage cheese.

**Food Handling Practices for Meat and Fish**

* Don’t wash [meat, poultry, or seafood](https://www.foodsafety.gov/keep-food-safe/4-steps-to-food-safety).
* If meat or poultry will be defrosted using a microwave, cook immediately after defrosting.
* Keep the original packaging of meat and poultry or seal it in an airtight, leak-proof bag before thawing in [cold](https://safetyculture.com/topics/cold-chain-management/food-cold-chain/) water. Change the cold water every 30 minutes.
* Do not use a slow cooker to cook frozen meat or poultry.
* Only marinate meat in the refrigerator.
* Ground meat should be cooked at 160°F (72°C) or higher.
* Beef, pork (including uncooked ham, both fresh and smoked), veal, and lamb should be cooked at 145°F (63°C) or higher and should be left to rest for 3 minutes before serving.
* Poultry (whether whole, in parts, or ground, and including stuffing) should be cooked at 165°F (74°C) or higher.
* Fish should be cooked at 145°F (63°C) or higher. Another way to determine if fish has been sufficiently cooked is to check if the flesh is opaque and separates easily when using a fork.
* Shrimp, lobster, and crabs are sufficiently cooked when their flesh is pearly and opaque.
* Scallops are sufficiently cooked when their flesh is milky white or opaque and firm.
* Clams, oysters, and mussels are sufficiently cooked when their shells open.

**Food Handling Practices for Eggs**

* Don’t wash eggs.
* Separate raw (unpasteurized) eggs from pasteurized eggs.
* Damaged eggs should be discarded.
* Eggs should be kept in the refrigerator at a temperature below 40°F (4°C).
* Before use in dessert batters, eggs should be at room temperature.
* Eggs should be cooked until the yolk and white are firm. The recommended cooking temperature is 250°F (121°C).
* Dishes containing eggs should have an internal temperature of 160°F (72°C) or higher.

**Food Handling Practices for Fruit and Vegetables**

* Cut away damaged or bruised areas.
* Rinse fruits and vegetables under running water before preparation even if there is an outer peel that will be discarded. Don’t use soap or any other cleansing agent.
* Do not wash fruits and vegetables that have been labeled as pre-washed by the manufacturer.

**Food Handling Practices for Frozen Goods**

* Discard the parts of food that have freezer burn.
* Don’t leave frozen goods out to thaw. Only thaw in refrigerators, cold water, or through the use of a microwave.
* If food has not been thawed properly, do not refreeze it.
* Always thoroughly cook frozen food.
* Do not freeze canned food and eggs in shells.
* Avoid freezing mayonnaise, cream sauce, and lettuce.
* Avoid freezing items at the end of their shelf life. If possible, freeze food when it is at its highest quality.
* Before freezing, briefly place vegetables in boiling water and then put them in iced water or under cool running water to blanche.

**Food Handling Practices for Dried Goods**

* Check dried goods for insects and pests, especially weevils which can quickly cause a widespread infestation.
* Store dried goods at temperatures between 50°F to 70°F (10°C to 21°C) in a well-ventilated area away from sunlight.
* Do not use cardboard boxes to store dried goods. Use airtight containers.
* Keep dried goods at least 6 inches (15 centimetres) from the floor.
* Keep humidity levels as low as possible. Humidity levels should not exceed 55%. Use a [humidity sensor](https://safetyculture.com/monitoring/sensors-and-devices/) if needed.

**Other Food Handling Guidelines**

* When reheating food for hot holding, all parts of the food should reach a minimum internal temperature of at least 165°F (74°C).
* Cool cooked food within 2 hours from 135°F to 70°F (57°C to 21°C) or within 6 hours from 135°F to 41°F (57°C to 5°C).
* For hot holding, temperature should be maintained at 135°F (57°C) or above.
* For cold holding, temperature should be maintained at 41°F (5°C) or below.

**Food Handling FAQs**

Since food handling is such an important part of their job, food safety managers are looking to gain more knowledge on the risks involved and their responsibilities as food establishment operators. Below are answers to some of the frequently asked questions about food handling.

* **Which type of hazard is most commonly associated with food handling?**
  + The type of hazard most commonly associated with food handling is microbiological. Microbiological hazards are bacteria, viruses, parasites, and prions. The top 3 sources of microbiological hazards in food are raw (unpasteurized) milk, contaminated fruits and vegetables, and raw or undercooked meat and seafood. Use a [HACCP plan](https://safetyculture.com/checklists/haccp/) to efficiently identify and control microbiological hazards and prevent cases of foodborne illness.
* **Who is responsible for training food workers on safe food handling procedures?**
  + In the establishment, the person in charge, who may be the owner or someone designated by the owner, is responsible for training food handlers in safe food handling practices. To train food workers, persons in charge can use [Training](https://safetyculture.com/training/) by SafetyCulture (formerly iAuditor) to ensure that everyone in the establishment or organization is aware of all necessary food handling and safety practices.   
      
    **To get started, Training offers the following food handling training courses**:
    - [Food Safety Hazards](https://www.edapp.com/course/food-safety-hazards-1/)
    - [Food Safety Standards](https://www.edapp.com/course/food-safety-standards/)
    - [Food Poisoning (Food-borne Illness)](https://www.edapp.com/course/food-poisoning-foodborne-illnesses/)
    - [Food Preparation](https://www.edapp.com/course/food-prep)
    - [Food Contamination](https://www.edapp.com/course/food-contamination-1/)
* **What nutrients in foods are most vulnerable to losses during food handling and preparation?**
  + The nutrients in foods that are most vulnerable to losses during food handling and preparation are water-soluble vitamins, which are B-complex vitamins and vitamin C. The B-complex vitamins most affected by food preparation are [folate and thiamine](https://www.betterhealth.vic.gov.au/health/HealthyLiving/food-processing-and-nutrition). As a folate-rich food, vegetables are the most vulnerable to nutrient losses during food handling.

**A New Way to Handle Food**

[SafetyCulture](https://sfty.io/M5OuFSKKIZ) is a digital operations platform that has helped food service businesses such as Marley Spoon, Snooze Eatery, The Dinner Ladies, and more in safe food handling.

Integrate with Sensors

Together with the mobile app, SafetyCulture sensors are powerful tools that bring ease of mind to food safety managers and food handlers. Receive an alert whenever sensors detect that temperature or other factors have gone out of acceptable range. SafetyCulture sensors also have no IT requirements and can be set up in minutes. [Simply unbox your sensors and stick them in the fridge.](https://safetyculture.com/customers/the-dinner-ladies/)

SafetyCulture can also connect to existing sensors, enabling you to take charge of your data and monitor conditions more seamlessly.

Gain 24/7 Real-Time Visibility

SafetyCulture enables food handlers at different locations to [capture data](https://safetyculture.com/customers/marley-spoon/) on the spot. By adding photos or notes of what needs to be fixed or of what can be improved, food handlers can document valuable information for food safety managers to see in real-time.

With food service, fast action is not just recommended, it’s required. Get better visibility of operations and automate notifications in order to resolve issues quickly regardless of location with SafetyCulture.

Feel the Power of Digitized Checks

Unlike paper-based processes which are inconsistent, vague, and difficult to organize, digitized checks [record every little detail](https://safetyculture.com/customers/snooze-eatery/), storing them in a single, secure location for you and your team to access at any time of the day. As those in the food service industry know, consistent quality is key to customer satisfaction.

**Deploy a Food Handling Course to Comply with Safety Standards**

Whether you’re a food supplier, manufacturer, or food business owner, protecting your customers from foodborne illnesses, allergies, and poisoning should always be the number one priority. Any food handling oversights or lack of preparation can result in huge business losses, which can come in the form of fines, lawsuits, rejected products, or business closure. Being able to implement food safety practices requires knowledge about food contaminants that can affect any part of the food supply chain. These contaminations are usually caused by biological, chemical, and physical hazards so it’s important to know proper food handling applications to avoid such incidents. Some of the most important food handling practices include maintaining proper [food hygiene](https://safetyculture.com/topics/food-hygiene/), segregating food to avoid cross-contamination, storing food at the correct refrigerator temperatures, and cooking at the right internal temperatures to prevent serving undercooked food.

As a business, one of the best ways you can promote these food safety practices is by distributing a comprehensive [food handling course](https://www.edapp.com/course-collection/10-food-hygiene-courses) to your employees. These courses typically cover topics such as food safety standards, delivery and storage processes, food prep, food contamination, and food-borne illnesses, all of which are vital for food handlers to understand.

**Featured Checklists**

[**Food Handling Checklist**](https://public-library.safetyculture.io/products/food-handling-checklist?amp_dev=a53d9b9f-975e-40ac-9034-ba2855a2ddcd&sid=1695606631471)

Food handlers and other food workers can use this food handling checklist as a guide in following the 4 steps to food safety. This digital checklist also has temperature fields which automatically determine if the temperature entered is considered safe for the specific type of food. Food safety managers can also use this food handling checklist to ensure compliance with core safe food handling practices such as:

* Wash hands with warm water and soap for at least 20 seconds
* Rinse fruit and vegetables under running water
* Thoroughly cook meat and fish to the right temperatures
* Keep refrigerator temperatures at or below 40°F (4°C)
* Keep freezer temperatures at or below 0°F (-17°C)

**11 Workplace Safety Procedures**

The most important concept to remember is that you are responsible for your own safety and the safety of others. Most safety practices are common sense. Unfortunately, they can be forgotten or overlooked unless you make safe practices a habit or an instinct.

**General Safety**

By doing things right, you and your co-workers will commit yourselves to safety on the job and everyone will benefit. Accidents occur in many ways but most often can be traced back to one of two basic factors: ignorance or carelessness. You must always be concerned with your own safety and with the safety of others around you.

The following is a general list of safety precautions you must observe in any work area:

* Don’t fool around. “Horseplay” is one of the biggest causes of injuries on the job and it may be grounds for dismissal.
* Never work while under the influence of drugs or alcohol, as you are a hazard to yourself and your co-workers.
* Pay particular attention to moving objects, such as equipment, dollies, mixers, and slicers.
* Walk, do not run, in the work areas.
* Stay completely alert on the job.
* Avoid back strain by lifting properly.

**Kitchen Accidents and Their Causes**

Over 90% of all accidents are preventable, and three basic rules of kitchen safety, if enforced, will significantly reduce the likelihood of kitchen mishaps.

1. Do not run: People who rush around in the kitchen tend to take chances that increase the likelihood of an accident.
2. Keep your mind on your work: People who let their attention wander are a hazard to themselves and others around them. Lack of interest, personal problems, and distraction by others can all lead to serious accidents in the kitchen.
3. Observe all the rules for operating kitchen equipment. Never operate kitchen equipment until instructed in the correct procedures.

In a commercial kitchen, safety is everyone’s job. It is a responsibility that must be accepted throughout the working day. As stated many times before, accidents are caused — they do not just happen. They are the result of not knowing the proper way to do a task, carelessly performing an operation or job, or not being consciously aware during the performance of a task. It is wise to remember that careless workers not only jeopardize their own health and well-being, but also jeopardize those around them.

Cooking is considered a fairly safe occupation, but hazards certainly do exist, not only in food preparation but in other related tasks as well. The most common accidents in the kitchen are cuts, burns, falls, and strains. All of these accidents happen when extreme carelessness or general horseplay is present. Carelessness and horseplay can be neither justified nor allowed in the commercial kitchen.

**Cuts**

Cuts are all too common in commercial kitchens because knives and other cutting implements are constantly in use. These cuts, and the seriousness of the cuts, however, can be held to a minimum by using ordinary good sense, by paying attention to the proper safety rules, and by practising proper cutting procedures. Once the skill of using a knife is developed, accidental cuts should not occur very often. However, when and if they do occur, they should be treated properly and without delay. If infection sets in, it can result in more serious consequences and the loss of many working hours. Remember: preventive care is always cheaper than injury treatment!

**Burns**

Two types of burns occur in the commercial kitchen: minor and serious. Minor burns are usually a result of wet or damp towels used to handle hot pots and pans, or from bumping an exposed area of your arm against a hot surface like and oven rack. More serious burns occur when grease is splashed, when steam escapes or is released too quickly, or when gas is turned on or released unknowingly. Burns are generally more painful than cuts, and they certainly take more time to heal. If the burn is severe enough to cause a blister, it should be treated promptly by trained medical personnel.

**Falls**

Falls can cause some of the most serious injuries in the commercial kitchen. They may disable or incapacitate a person for life. Falls are caused by extreme carelessness, wet floors and aisles, spilled food or grease, and by torn mats or warped floor boards.

**Strains**

Strains may not be as serious as other types of injuries, but they are painful and can result in the loss of many working hours. They are caused by carrying loads that are too heavy and by improper lifting practices. Most strains do not require medical attention, but they do require time and care to heal properly.

**Safety Practices for the Kitchen**

A kitchen has many safety hazards. It contains hot stoves, electrical equipment, and sharp tools. These hazards, combined with the busy, often frantic pace in a kitchen, make it very important that you work carefully while giving constant attention to the safety practices described below.

**Lock-out procedures**

WorkSafeBC regulations require that all powered machinery or equipment shut down for maintenance or repair must be secured against the possibility of the equipment being accidentally turned on while being worked on. To safeguard the person working on such equipment, lock-out procedures must be posted near the equipment, and the procedures listed must be followed before repairs or maintenance can start.

Locking out a machine usually means the power feeding the machine is disconnected either by pulling a plug, placing a switch in the off position, or turning a circuit breaker to the off position. The disconnected circuit is then secured in the inoperative position by the use of a padlock. The person doing the maintenance or repair keeps the key to this lock until the work on the machine has been completed. The worker then removes the lock and the machine is again operable.

Depending on the situation, the lock might be used to secure the power switch of the machine or it might be used to lock shut the door to a circuit breaker panel where the thrown breaker is located.

If the machine is not wired into its own power circuit but simply plugs into the wall, the lock-out procedure may require that the machine be turned off with its power switch and unplugged from the power receptacle. The plug end of the machine must be kept in plain view of the repair person so no one can inadvertently restore power without the repair person’s knowledge.

Kitchen machines that must be locked out before repairs or maintenance can commence include, but are not limited to, meat saws, dough mixers, meat grinders, garbage disposal systems and meat slicers.

You must be aware of the lock-out procedures that are to be followed before repairing or cleaning any machine. Lock-out procedures must be clearly posted by management near each machine.

A sample lock-out procedure notice is shown in Figure 16. As has been stated, this notice would be posted near the machine that must be locked out.

|  |
| --- |
| **DOUGH MIXER LOCK-OUT PROCEDURE**   1. SHUT OFF MIXER AT STOP/START SWITCH. 2. SHUT OFF AT DISCONNECT BEHIND MIXER. 3. APPLY LOCK TO DISCONNECT. PUT KEY IN POCKET. DO NOT LEAVE KEY IN LOCK! 4. ATTEMPT TO START MIXER, RESET OR RETURN SWITCH TO “OFF” POSITION. 5. COMPLETE WORK ON MIXER. 6. ENSURE BOWL AND MIXER ARE CLEAR OF LOOSE PIECES, TOOLS, ETC 7. REMOVE LOCK. 8. RESTART MIXER AND RUN UP TO OPERATING SPEED. |

                                     Figure 16. Lock-out procedure notice

**Procedures for equipment**

1. Never use any machine you have not been trained to use.
2. Pull plug or throw switch to off position before cleaning or adjusting any machine. Keep fingers, hands, spoons, etc., away from moving parts. Wait until machine stops before moving food.
3. Check all switches to see that they are off before plugging into the outlet.
4. Particular care must be taken when cleaning the slicing machine.
   1. First pull the plug.
   2. Turn the gauge to zero in order to cover the edge of the blade
   3. Do not touch the edge of the blade
   4. Clean the blade from the centre out.
   5. Clean the inside edge of the blade with a stick that has a cloth wrapped around one end.
5. Do not start a mixer until the bowl is locked in place and the attachments are securely fastened.
6. When using a mixer, turn off motor before you scrape down the sides of the bowl.
7. Use a wooden or plastic plunger rather than your hands or spoons to push meat down into a meat grinder.
8. Keep your hands to the front of the revolving bowl when operating the food cutter. This is one of the most dangerous pieces of equipment in the commercial kitchen.
9. Never start a machine until you are sure all parts are in their proper places. If it is a machine that operates with gears, check the gear position.
10. You must be aware of the lock-out procedures that are to be followed before repairing or cleaning any machine. Lock-out procedures must be clearly posted by management near each machine.
11. When using electrical power equipment, always follow the manufacturer’s instructions and recommendations. Do not wear rings, a wristwatch, or a tie when operating electrical power equipment.

**Procedures for sharp utensils**

1. Use the right knife for the job.
2. Do not grab for falling knives. When a knife starts to fall, jump backward to get out of the way.
3. Always carry a knife with the tip pointing downward and with the cutting edge turned away from your body.
4. Never talk while holding a knife in your hand. Should you start to gesture with the knife, there could be serious consequences.
5. When cutting with any knife, always cut away from your body. This also applies to potato peelers or any implement with a cutting edge.
6. Never place a knife in hot water as it will cause cracks in the wooden handle. Never reach into soapy water in search of a knife.
7. Use a cutting board at all times. Never cut on metal.
8. Place knives in designated knife drawers. Preferably, knives should be placed in knife racks for proper storage.
9. When cleaning or wiping a knife, keep the sharp edge turned away from your body.
10. Always use a sharp knife; it is much safer than a dull one. Less pressure is required on a sharp knife, and the chances of a sharp knife slipping are much less.
11. Always cut with a back and forth sweeping motion, not with downward force.
12. Use knives for the purpose for which they are designed, not as levers or wedges or as bottle or can openers.
13. Pick up knives by the handle only.
14. Take a firm grip on a knife handle and always make sure the handle is free of grease or any other slippery substance.
15. When slicing round objects such as onions or carrots, cut a flat base so the object will sit firmly and not shift when being cut.
16. Never force a meat band saw; it may jump from the bone.
17. When using a cleaver, be sure the item to be chopped is sitting solidly. Note: *Avoid chopping large, hard, or brittle bones with a cleaver as the bones may splinter and become as dangerous as flying glass.*
18. When grating foods, never work the foods too close to the cutting surface.

**Avoid burns**

1. Use dry towels when handling hot skillets, pots, or roasting pans as wet cloth conducts heat more readily than dry cloth.
2. Avoid splashing grease on top of the range. Grease will ignite quickly, causing a fire. Do not throw water on a grease or fat fire: smother it. Use a foam extinguisher or a wet towel.
3. Remove the lids of pots slowly. Lift the side of the lid that is away from you so the steam does not rush out too quickly, causing burns to your hands or face.
4. Always give notice of “hot stuff” when moving a hot container from one place to the other.
5. Keep towels used for handling hot foods off the range. Too often, the end of the towel is dangled into or drawn across the fire.
6. Avoid overfilling hot food containers.
7. Never let the long handles of saucepans or skillets extend into aisles. If they are brushed, hit, or bumped the pot may fall off the range.
8. Never turn the handle of any pot over an open flame.
9. Place a lighted match to gas jets before turning on the gas. Ventilate gas ovens for a few minutes before lighting by leaving the oven door open so any gas pockets that might be present can escape.
10. Know the location of fire extinguishers; know how and when to operate them.When placing food in hot grease, always let the item slide away from you so the grease will not splash toward you and cause a serious burn.

**Keep floors safe**

1. Wet floors are dangerous. Keep them dry.
2. Pick up or wipe up any spilled item immediately, particularly water or other similar liquids.
3. When liquid or fat is spilled, have one person watch the area and warn others of the danger while another goes for a mop. Small areas may be sprinkled with salt to provide traction until the spill is cleaned up.
4. Walk. Do not run or slide across the floor.
5. Never leave utensils on the floor. Someone is sure to trip over them, and it may be you.
6. Keep all traffic areas clear of boxes, garbage cans, portable equipment, mops and brooms, etc.
7. When mopping kitchen floors, do only a small area at a time.
8. Using rubber mats behind the range is a good practice. However, mats must be kept in first-class condition by daily cleaning and by replacement when they begin to wear.

**Handle glassware and china safely**

1. Use care in handling glasses and dishes.
2. When carrying china and glassware from one place to another, be alert and move cautiously. Keep complete control of the load at all times.
3. Discard all glass or other china items that are chipped or cracked.
4. Keep glasses and china out of the pot sink.
5. Never place glassware in soapy water. Wash glassware in a dishwasher, using a compound recommended for glasses.
6. If you suspect there is broken glass in soapy water, drain the water, then remove the pieces carefully with a paper towel.
7. Never use glassware in forming or preparing food. For example, do not cut biscuits or ladle liquids with a glass item.
8. Do not use a glass as an ice-cream scoop. It may break in your hand.
9. Use a pan and broom to sweep up large pieces of broken glass or china. Use a dampened paper towel to pick up the slivers. Put broken glass in a special container. Do not place broken glass in wastebaskets.

**Store supplies safely**

1. When opening boxes, crates, etc. remove the nails. Do not bend them down.
2. Always store heavy materials on bottom shelves, medium-weight materials next, and light-weight items on top shelves.
3. Get rid of all dirt, grease, and trash promptly to reduce fire hazards and to eliminate breeding places for rats and cockroaches.
4. Be sure light bulbs are guarded. As a precaution against fire, do not store any materials within 45 cm (18 in.) of any bulb.
5. Use ladders, not boxes or chairs, to get things from high shelves. Always have three points of contact when moving up and down the ladder. Do not over reach, and never stand on the top two rungs of the ladder.

**Dispose of refuse properly**

1. Place food scraps in proper containers.
2. Do not allow containers to overflow. Empty them before they are completely full.
3. Do not stack full refuse containers.
4. Report broken or defective containers.
5. If wearing gloves while disposing of refuse, you should remove the soiled gloves once the job is done and, when returning to work, wash and sanitize hands properly
6. Push garbage down using a tamper or other tool. Do not push it down with your hand or foot!

**Lifting practices**

1. Keep your back straight, but not necessarily vertical. Have a sure grip on the object.
2. Keep the object close to your body.
3. Bend your knees before lifting.
4. Lift with your legs, not with your back.
5. Call for help to lift or move heavy pots or containers.

**Housekeeping**

Good housekeeping is an important part of safety and accident prevention. Many unsafe conditions can be corrected before they result in injury. Good housekeeping is a necessity for a safe and sanitary kitchen. A clean work environment leads to pride in workmanship and a safe operation.

Good housekeeping procedures include the following:

* Do not block exits.
* Change burned-out light fixtures in work areas, walkways, and exits.
* Keep floors and work areas clean, dry, and grease-free.
* Keep steps and ladders in serviceable condition.
* Keep emergency equipment clean and unobstructed.
* Ensure that all signs and caution labels are in good condition and visible.

**Personal Protective Equipment**

In addition to being aware of the mechanical hazards in the kitchen, it is important that you use the correct protective clothing and equipment. Wearing personal protective equipment (PPE) can prevent accidents from happening. As a worker, you are responsible for the following:

* Making sure your uniform is well fitted.
* Keeping all uniforms clean and in good condition, not frayed or badly worn.
* Making sure sleeves are kept buttoned at the wrist, cuffs on overalls and trousers are be eliminated, and trouser legs are long enough to hang outside boots.
* Wearing specific personal safety equipment such as goggles, hearing protection, gloves, and aprons when required.

To ensure that you are protecting yourself, your personal protective equipment (PPE) list should include the following items.

**Clothing**

This includes well-fitted pants and jackets with all buttons fastened. Sleeves should be close fitting because sleeves that are loose and flowing are potential fire hazards when working over open gas burners. Health regulations require that all food handlers wear hair nets or use other approved methods for keeping hair under control. Aprons should be made of non-combustible and flame-resistant materials that do not melt under heat.

**Footwear**

The OHS Regulation requires that approved footwear must be worn by employees in all industrial occupations. Ensure your footwear is sturdy and provides enough back support to not cause future back problems. Footwear suitable for commercial foodservice establishments must have a non-slip sole and a closed toe and closed back.

Your footwear should be sturdy and comfortable, and if the environment you work requires steeled toes, such footwear should be worn. High leather tops on shoes are a good idea as they will protect your feet from hot grease or liquids.

**Hand protection**

The most common type of gloves used in food service establishments are natural rubber latex gloves, synthetic rubber gloves, and vinyl gloves. As it is impossible to distinguish between natural and synthetic rubber gloves simply by looking at them, you should read the label on the box to determine what they are made of. Some people may have an allergic reaction (known as dermatitis) or a more serious reaction known as anaphylaxis to the natural latex glove, and for this reason natural latex gloves are not recommended for use when preparing food.

Mesh gloves should be used when cleaning the meat slicer. Thick plastic, gloves should be used when handling cleaning products.

**Eye protection**

Eye protection in the form of safety goggles or masks should be worn whenever there is a chance of eye injury. Particles flying through the air can easily land in your eye and possibly do permanent damage. Eye protection is important, for example, when working with the band saw cutting through bone or when working with corrosive cleansers that could splash into your face.

**Hearing protection**

Approved hearing protection must be worn when high-level noise conditions exist. These conditions are not common in commercial kitchens but may be present in food manufacturing operations.

**Respirators**

Respirators should be used to protect yourself from inhaling harmful fumes or vapours such as those that often come from concentrated kitchen cleaning liquids. The respirator unit should be properly fitted to provide the best protection. Check the components to ensure they are not broken, cracked, or torn and that they do not have holes. Replace faulty components before use. Each unit will have a filter that should be checked regularly and replaced before the expiration date.

**Equipment Safety**

Extreme care should be taken when operating equipment. Before you attempt to operate any tool or piece of equipment, you must be fully trained by an experienced operator. Make sure that all guards are in place and function properly and that all electrical connections are properly made. You should observe the following precautions when using equipment:

* Understand the correct operating procedures and safety precautions before operating a piece of equipment.
* Ensure that all guards are in place and functioning before any machine is started.
* Report defective or unsafe equipment to a responsible individual to prevent serious injury.
* Do not distract or interfere with the equipment operator.
* Make sure that the cords to electrically powered tools are in good condition, with no frayed parts or bare wires showing and make sure that the tools are properly grounded.
* Keep edge-cutting tools properly sharpened so that they do the job well and do not have to be forced because of dull edges.
* Use tools only for their intended use and make sure the size of the tool is right for the job.
* Report to your immediate supervisor any tool or piece of equipment that is broken or does not function properly.

**Ventilation systems**

The environment in which you work is very important. The air around you may be filled with smoke and steam.

Kitchens have some type of ventilation equipment usually housed in the same units as the fire suppression systems. Many other types of ventilation equipment may be found in workplaces. It is important, regardless of where you are working, to become familiar with the ventilation equipment or systems and use them.

**Emergency shutdown systems**

Many kitchens have emergency shutdown systems or “panic buttons.” These are installed so that only one switch has to be thrown to kill the power to a large amount of equipment. These systems are to be used when a person is being electrocuted or is caught in a piece of machinery. Under these circumstances, you do not have time to hunt for and throw the correct switch. Fast action is necessary. Hit the panic button.

When you enter a kitchen for the first time, locate and learn how to use the emergency shutdown.

**Guards and barriers**

Guards and barriers are used as safety devices on many pieces of equipment used in a modern kitchen. Always use them to ensure you are operating the machinery in the safest way possible. Never operate a piece of equipment unless all guards and barriers are in position.

**Utilities**

Each time you have a new work location, check the location of the shutoffs for all of the utilities. That way you will be prepared for an emergency.

**Electrical**

You should make yourself aware of the location of the main panel or sub-panels being used, and you should learn how to shut them off in case of an emergency. If you must shut the power off, notify your supervisor right away. Obtain permission from the electrician before using a new service.

Electrical extension cords, if they need to be used, should be orderly and not allowed to become tangled. Such cords should be taped to the floor whenever possible as this will reduce the chance of someone tripping over them

**Electrical safety**

Even though you may normally deal with low voltages and current, the values are never far away from lethal levels. You can receive a shock or burn from any common electrical circuit. The severity of the electrical shock depends on four factors:

* The amount of current that passes through the body
* The path that the current takes through the body
* The frequency of the current
* The length of time that the current flows within the body.

Normal household current (plugs and light circuits) is generally limited by a circuit breaker to a value of 15 amps. This device has been designed to trip and open a circuit if the 15 amp value is exceeded. It is possible to cause fatal injury with a current flow of only 50 milliamperes (mA). One milliampere (1 mA) is one one-thousandth of an amp.

It is easy to see that the body is sensitive to relatively small values of current. In comparison, a 100 watt light bulb draws approximately 0.85 amp (850 mA) of current when connected to a 120 volt source. Remember, there are 15 amps available in each standard house circuit. Industrial circuits may have a required flow of several hundred amps. In both cases, these are dangerous amounts!

In order for you to get an electrical shock, you must become part of the electrical circuit. You have to contact a live portion of a circuit while in contact with a lower potential such as a ground. Such an arrangement will complete an electrical circuit through your body to the ground, causing current to flow.

**Water supply**

Find out where the water shutoff is located in your kitchen. If a pipe breaks or bursts, the water may damage material, tools, and equipment or work already done. In addition, water may create an electrical hazard if it comes in contact with electrical panels or outlets. If you must shut the water off, notify your supervisor at once.

**Gas supply**

Locate the gas shutoff in the kitchen. Escaping gas can cause an explosion that could injure someone or do great damage. When the valve handle is running parallel with the gas line, the supply of gas is flowing and on. By turning the valve handle 90 degrees (that is, perpendicular to the gas line), you can shut off the gas supply. If you must shut off the gas, notify your supervisor immediately. Remember, you must have the gas flowing in order to light the pilot lights on equipment.

**Other services**

Other services, such as telephone, cable, and Internet, do not usually present any danger to people, and there is no way you can shut them off. If the lines for these services are broken or cut and if they must be located and repaired or moved, get in touch with the company that supplies the service.

People carry food poisoning bacteria in their ears, nose and throat, and on their skin and hands without knowing it.

If you do not have good personal hygiene, food may be contaminated by your body, clothing and hands.

Bacteria in food may make a customer ill.

**When you complete this topic you will be able to:**

**DESCRIBE**

* good personal hygiene practices

**EXPLAIN**

What harm can be caused by:

* smoking near food
* handling food when you are unwell
* not being clean
* not washing hands often and thoroughly
* wearing things which can contaminate food
* how gloves should be used when handling food
* the rules for defrosting frozen food
* the correct cooking temperatures
* the rules for cooling food
* how to reheat food safely

**DESCRIBE**

* how to check for correct food temperatures
* the correct use of pie warmers and bain-maries
* the three ways food can be contaminated
* the symptoms of food poisoning
* the role of bacterial contamination in food poisoning
* food spoilage
* the temperature danger zone
* different kinds of high-risk and low-risk foods
* the do’s and don’ts of cross-contamination

When you work in the food industry, apart from cooking and serving food, you may also be responsible for the delivery, storage and display of the food.

Food can easily get contaminated when doing these things.

**When you complete this topic you will be able to:**

**EXPLAIN**

* safe transport of  hot and cold foods
* the rules for self-service of food
* safe handling of ready-to-eat foods

Pests are unwanted creatures in food premises. Pests must be kept out of food preparation areas as they can spread germs and damage stored food and equipment. Common pests in food preparation areas include mice, flies, ants and cockroaches. Keeping food preparation areas clean helps to prevent pests.

**Chapter 15: Occupational Safety of Food Handlers**

**Introduction**

At present, India is the world’s second largest producer of food and have the potential of being the biggest. We are backed by a powerful and strong food and agricultural sector. The food processing industry is one of the largest industries in India. Globally it is ranked fifth in terms of production, consumption, export and expected growth. The total food production in India is likely to double in the next 10 years with the country’s domestic food market estimated to reach US$ 258 billion by 2015. Currently , the Indian food processing industry accounts for 32 per cent of the country’s total food market. Owing to lucrative opportunities and profits in this sector, the food industry in India has been attracting a investors. At the same time, the work force involved in this food industry has also been constantly on the rise. Like other professions, the workers employed in various sections of food industry namely production, storage, packaging, transport, retailers, and eating establishments are also exposed to certain hazards by virtue of their being in these jobs.

The job of a food handler is of low status and poorly paid which leads to poor motivation. Keeping occupational health of the these employees at high priority is the key to improve Manager and handler relationship. Looking after the health, welfare and safety of the his employees is of immense benefit to the employers/ managers of these food industries/ eating establishments. A satisfied and motivated food handler will give a high quality work. On the other hand, employees who feel unmotivated to work are likely to be casual in their approach regarding food safety practices like hand washing, personal hygiene etc.

As per .(ILO / WHO 1950) occupational health is the promotion and maintenance of the highest degree of physical, mental and social well-being of all kind of workers. It seeks to prevent departures from health among the workers as well as control of job related health risks. Adaptation of work to people, and people to their jobs is one of the main strategy of occupational health. A safe and healthy work environment is essential for control of risks arising from physical, chemical and other work place hazards.

The main focus in occupational health is on three different objectives:

(i) Maintenance and promotion of workers’ health and working capacity

(ii) Improvement of working environment

(iii) Optimizing the main work itself to make it conducive to safety and health of the worker

(iv) Through development of work organizations and working cultures in a direction which supports health and safety at work.

(v) Promotion of a positive social climate and smooth operation at work place

All these measures will and may enhance productivity of the undertakings- (Joint ILO/WHO Committee on Occupational Health)

**Classification of occupational hazards for food handlers**

Occupational hazards are present at all places where food handlers are deployed be it a food processing unit, eating establishment, *sabzi mandi*, food packaging industry, retailer shop etc. These hazards in food handlers can be classified as under:-

1. Physical 2. Chemical 3. Biological 4. Mechanical 5. Social

**Physical hazards**

*Temperature*

Food handlers often have to work in environment with high temperatures. This is especially when they are employed near a cooking range or tandoor. Lot of heat is generated in process like deep frying and cooking. The problem becomes worse in summer season. Often food handlers have to work in such areas for prolonged hours. Some eating establishments with star ratings do have a centralized cooling system to provide comfort to their workers from heat. However, such kitchens in any city are very few in number. In low budgeted food processing industries, eating establishments least importance is given to creating a comfortable working zone for the food handlers. Working for long hours in high temperature areas leads to lot of sweating. This can get not only dropped into the food from the handlers but also can lead to prickly heat, dehydration, heat exhaustion, heat cramps, heat stroke and burns in food handlers. For better productivity it is essential that temperature is maintained (corrected effective temperature 20-270C. High humidity along with temperature can make the working environment uncomfortable for workers.

*Lighting*

The workers may be exposed to the risk of low illumination or excessive brightness. This seen at work places where either the owner’s intentions are to save money by providing less number of lighting points or by not replacing the old one. Poor illumination can lead to eye strain, headache, eye pain, Iachrymal congestion and eye fatigue. There should be sufficient and suitable lighting, natural or artificial .wherever persons are working. Inadequate lighting can compromise food safety. See chapter on lighting in Eating Establishment.

*Noise*

Noise is also a health hazard in many food atindustries. An old advertisement on Doordarshan ‘Hawkins ki seeti baji, khushboo hi kushboo udi’ may not hold true for food handlers. I am reminded of an incident here. One day my 2 years old daughter was suddenly got up from her sleep and started crying. I rushed from kitchen where I was working, looked around to check for any reason for her sleep disturption. I put her back to sleep and came back to kitchen. But this was repeated. I realized it was the noise of my old mixer and grinder which was the culprit!!

*Equipment*

Various equipment in the kitchen produce noise like chimney exhaust, exhaust fan, *chapatti maker*, food processor etc. The effects of noise can be auditory or non auditory leading to nervousness, fatigue, decreased efficiency and annoyance. The degree of injury from exposure to noise depends upon a number of factors such as duration of exposure and frequency range along with individual susceptibility. Among food handlers annoyance due to noise can also affect food safety.

*Fire*

Fire hazards/ explosion of gas cylinders/ stoves / pressure cookers can also take place in the kitchen. These can lead to burns and may be fatal also.

*Lifting loads*

At times food handlers have to lift heavy loads in carrying raw food items like vegetables, fruits, grains etc. This can lead to musculoskeletal problems like back ache, sprain, strain and pain in limbs etc. They also have to stand for long hours and can develop varicose veins. Quite often ergonomics is not applied while designing the working shelves in the kitchens. Discordance between heights of food handlers and kitchen shelves may lead to low back pain and easy fatigability. This can also affect the working of food handler in a negative way as he may not be able to mop/ clean / cut as per required instructions of food safety.

**Chemical hazards**

The use of dishwashers for washing utensils is restricted to hifg budget eating establishments only. FBOs prefer to employ staff for cleaning of dirty utensils and use low cost detergents. In this way food handlers come in contact with chemicals in the form of detergents and disinfectants. Prolonged exposure or increased duration of exposure can cause allergic contact dermatitis especially in hands. Such hands can be super in infected with bacterial infections and jeopardize food safety.

**Biological hazards**

Food handlers come in contact with organisms like Salmonella while handling raw foods particularly of animal origin like eggs. Training and education on safe handling of raw foods can prevent infections in them. However, most of them do not get an opportunity or exposure to any kind of formal training on food safety issues. Most of the times they are not aware of simple steps like washing of hands thoroughly with soap and warm water while handling raw poultry and eggs. Apart from this persons handling plates and utensils that have been in contact with such foods are also at risk. These can be fatal in case of avian influenza.

Food handlers may be carrying pathogens in/ on their bodies and can be a source of infection to other coworkers in the same working area. Cases and carriers can also transfer pathogens to various foods compromise food safety.

They need to taste the food prepared by them before it is served to the clients. In case the food has become unsafe they themselves fall a prey to food borne illnesses. Most of the low budget eating establishments, messes, canteens provide food to its workers after the lunch or dinner timings are over. This makes them the last ones to eat the meal, which most often has been lying in temperature danger zone (5- 600 C) for more than 4 hours exposing them to risk of food borne illnesses.

**Mechanical hazards**

The commonest mechanical hazard is due to cuts with knives and other sharp equipment. Protruding parts of various machinery can also lead to injuries. It is known that 10 per cent of accidents in any industry are said to be due to mechanical causes**.**

**Psychosocial hazards**

Food handlers do face monotony in their work environment. Most of the times they continue to work at same level for years together. There is very little scope of career progression. These people are always behind the curtain do not get recognition and appreciation for good work very often. Even the lady of the house waits for an appreciation from the family members after cooking meals. However, times are changing. Various live TV shows hosted by famous chefs have given due recognition to the skills and progression. The emerging hotel management industry, catering industry, eating out culture in changing society, globalization has improved the social status of the occupation.

The food handlers are often exploited with low wages and restricted leave. Most of them work in the unorganized sector. At times they are paid less for the skill they possess.

Easy availability of food and alcohol, results in obesity and alcoholism. They work hard to earn their livelihood but the job does not require strenuous activity. Often they are required to stand for long hours. Access to tasty and rich food at all times makes consume more calories than required and hence risk of non-communicable diseases.

They also work under lot of stress as even ignorance on their part can dissatisfy the consumer/ client and harm the reputation of eating establishment.

**Prevention of Occupational hazards in food handlers**

**Engineering measures**

Measures for the prevention of occupational diseases need to be emphasized during designing the building. Once the building is constructed, it is extremely difficult to make alterations. Due care should be given to the ventilation and lighting area of work place. Principles of ergonomics should be applied while designing the height of working shelves and food flow. Good housekeeping of the building will help in controlling occupational hazards. .It also contributes to efficiency and morale of workers in industry. There should be good general ventilation. It has been recommended that in every room of a factory, ventilating openings shall be provided in the proportion of 5 sq. feet for each worker employed in such room, and the openings shall be such as to admit a continued supply of fresh air. Chimneys should be installed to prevent accumulation of fumes.

Trolleys with wheels (like those in super markets) should be available to carry heavy loads. Equipment should be regularly serviced as per manufacturer’s instructions.

The quality of chemicals used should be checked before exposing food handlers to them.

**Medical measures**

Regular medical examination of food handlers will ensure good health. In case a worker is unwell he should be given leave and rest. However, this is done as a lip service only because of work force constraints. In case complete leave is not possible then the manager should employ a sick workers in an alternate job not involving direct handling of food. In case a food handlers is suffering from jaundice, cough, fever, vomiting , or diarrhea he can not only transmit infection to others but also affect food safety negatively.

In case a food handler is returning to work on completion of sick leave the before returning medical examination of the employee should be do so that he is not a carrier for food borne illnesses. It should be ensured that a policy on this issue is made in the industry based on the kind of risk involved to the food .

It should be noted that negative stool samples, for employees recovering from gastro-enteritis, are not a necessary condition of their employment or return to work with the exceptions of Enteric fever and E Coli infection.

Periodical medical examinations fro early detection and treatment should be done.. Ordinarily the workers are examined once a year. A record of such examination needs to be maintained.

Health education about the processes, handling of raw material, correct use of gloves, aprons, caps has an impact on both safety of handler and food. It also includes guiding the worker about various legislations available and social security schemes for the benefit of the workers.

**Pre-employment screening of food handlers**

The most important infections attributed to transmission from infected food handlers are norovirus, Salmonella enteritidis and Salmonella typhimurium, which together account for the largest numbers of outbreaks and individual infections. The most common routes of transmission are faecal–oral, and via aerosol formation from vomit. Food handlers can be symptomatic or asymptomatic carriers of food-borne infections – both the transmission of norovirus and Salmonella enteritidis have been attributed to asymptomatic food handlers. All food handlers before given employment should undergo a medical examination by a registered doctor and a stool test. Only those found fit should be allowed to handle food. The format for medical examination certificate is given as annexure ‘A’.