CULINARY ART

Level I

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Introduction to the Module

This module describes the knowledge, skills and attitude required to clean and maintain kitchens, and food preparation and storage areas in commercial cookery or catering operations. It requires the ability to set up cleaning equipment and to safely clean premises and equipment using resources efficiently to reduce negative environmental impacts.

This module is designed to meet the industry requirement under the culinary Art production occupational standard.

This module covers the units: -

- workplace procedures for health, safety and security
- procedures for emergency situations
- hygiene procedures and identify hygiene hazards
- Prevent food and other items from any cross-contamination
- Clean and sanitize premise and equipment
- Reduce negative environmental impacts
- Report any personal health issues

Training Objective of the Module:-

- Follow workplace procedures for health, safety and security
- Follow procedures for emergency situations
- Follow hygiene procedures and identify hygiene hazards
- Prevent food and other items from any cross-contamination
- Clean and sanitize premise and equipment
- Reduce negative environmental impacts
- Report any personal health issues

Module Instruction

For effective use this modules trainees are expected to follow the following module instruction:

1. Read the information written in each unit
2. Accomplish the Self-checks at the end of each unit
3. Perform Operation Sheets which were provided at the end of units
4. Do the “LAP test” giver at the end of each unit and
5. Read the identified reference book for Examples and exercise

UNIT ONE	Work Place Procedures for Health, Safety and Security

Instruction sheet

This learning guide is describes knowledge, skills and attitude required for food sanitation and safety in a commercial kitchen or catering operation.

- Organizational health, safety and security procedures
- Safe and unsafe work practices
- Using personal protective equipment
- Reporting Hazards and any suspicious behavior or unusual occurrences

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Understand and maintain Organizational health, safety and security procedures
- Identify safe and unsafe work practices
- Use personal protective equipment's
- Report for Hazards
- Identify suspicious behavior or unusual occurrence

1.1 Organizational health, safety and security procedures

Safety and security is the major concern among all the living creature of this universe. It is also described by Maslow through his Need and Hierarchy Theory. The safety and security does not confined to life only but it also emphasizes on job, health and environment. When we think for safety and security especially in hotels, automatically it comes on the part of tourists. As we know tourism is a recreational activity in which a tourist leaves his/her home to a distant place and safety and security is a major challenge for him/her. At this (new and unfamiliar) place he/she has to stay somewhere so that he/she can feel safe.

Thus, some short of means of shelter is required to keep himself/herself safe from unforeseen circumstances. The moto of hospitality industry emphasizes that Guest is God and the God should be provided safety and security. The guests coming to the hotel must be given safe and secure environment so that their stay must be comfortable and enjoyable and over all the hotels are gaining monetary benefit from those guests. It is the moral and ethical responsibility of the hotels to protect guests from any mishap leading to their death and loss of baggage. The hotels are also aware that if they fail in providing safety and security to guests, the bad reputation tag will be tagged and it will affect their business in many folds.

It has also been seen that hotel keeps on hiding the information of some eminent person/ VVIP/ celebrities movement in their premises because it will create chaos and hamper the smooth functioning of the hotel. It is a good practice to not disclose the identity of such persons and hotels are doing just to provide such guests an environment where such persons can feel safe and secure.

All food handling premises are entitled to implement policies and procedures which exceed minimum legal requirements.

A business may also require staff to wash their hands in the wash hand basin in the toilet after using the toilet, and then wash their hands again when they re-enter the kitchen area.

Where the workplace has hand washing requirements exceeding the mandatory minimum requirements, always adhere to these workplace practices.

The organizational programs that promote and protect the health conditions and initiate measures that would render a significant contribution in the prevention of diseases, and accidents have the potential to reach all the members of the organization. The programs make provision of adequate information to the individuals.

It is essential on the part of the individuals to acquire an appropriate understanding of it and put it into practice in an effectual manner. In India, individuals, who are engaged in full time jobs, normally spend six days a week and ten to twelve hours per day towards their job duties. In some cases, as their job duties permit, they are required to go to the field as well. Hence, job duties are challenging. The employers are vested with the responsibility of creating a safe and an amiable working environment. They also are required to look after the health and well-being of the employees and promoting a healthy environment (Workplace Health Promotion, 2015).

Efficient organizational programs and policies are the ones that can promote policies and cause reduction in risks and hazards. The more the workforce is healthier; it can mean lower direct costs, such as insurance premiums and the compensation claims of the workers.

It can also transform to lower indirect costs, if the workers miss less work, due to illnesses and health problems and are more productive. As more employers recognize these benefits, the more they are providing wellness programs to the employees. One wellness program is considered as the part of the health benefits (Workplace Health Promotion, 2015). In India, there are number of individuals, who are engaged in hazardous jobs, hence, health benefits are important for the individuals. These individuals get exposed to even chemicals and harmful substances, which affects their health conditions

The word safety and security are used together but it has literary differences too. Safety has been defined as a condition in which a person is being protected from harm caused by unintentional failure while security is defined as a condition in which a person is being protected from harms caused due to intentional human behaviour or actions. So, in the present unit we will be discussing about the relevance of safety and security in the hotel industry along with the case studies of various hotel chains.

1.2 Safe and unsafe work practices

1.2.1 Safe work practices

Definition

Safe work practices are generally written methods outlining how to perform a task with minimum risk to people, equipment, materials, environment, and processes.

Safe job procedures are a series of specific steps that guide a worker through a task from start to finish in a chronological order. Safe job procedures are designed to reduce the risk by minimizing potential exposure.

A. Safe job procedures

- **Development**

Safe work practices should be developed as a result of completing a job safety analysis (JSA) or a hazard risk assessment (HRA) and should closely reflect the activities most common in the company's type or sector of construction.

Safe job procedures are usually developed by management and workers as a result of a JSA/HRA, accident or incident investigation, and/or as a supplement to a safe work practice.

- **Delivery**

All safe work practices should be kept in a location central to the work being performed and readily available to the workforce. Some safe work practices will require specific job procedures, which clearly set out in a chronological order each step in a process.

Safe work procedures should be included in the company's "Worker Orientation" program. All workers should be aware of the fact that safe job procedures have been established, are in effect, are written down, and must be followed.

IHSA suggests that you build your collection of safe practices/procedures incrementally—start with a few major items and add to them as needed. Avoid simply repeating clear regulatory requirements. Rather, if needed, provide direction on how your company will implement/apply those requirements

To ensure a healthy working environment there must be monitoring at the workplace. This involves systematic surveillance of the factors in the working environment and working practices which may affect workers' health, including sanitary installations, canteens and housing, where these facilities are provided by the employer, as well as ensuring the working environment complies with safety and health standards.

Everyone associated with the workplace – from the most junior worker right through to the employer – should be actively involved in the surveillance of the working environment. Basic surveillance is carried out by simple observation, and every worker, from shop floor to senior

administration, should be trained to identify those factors (potential or actual) which may affect workers' health. Such training is necessary to enable the worker to report immediately to his or her direct supervisor any situation which can reasonably be thought to present an imminent and serious danger to life or health. In such a situation, the employer cannot require the worker to return to work until any necessary remedial action is taken

Simple observation (a walk-through survey) of work processes and the working environment is the first step in any surveillance. Such observation may be sufficient in some cases to detect a lack of adequate control measures and exposure of workers to risk. An evaluation based on this type of observation may justify the recommendation of control measures without the need for any more sophisticated determination of the level of exposure.

Repeat visits to the workplace and walk-through observation are also necessary to provide an assurance that no deterioration has occurred at workplaces initially evaluated as satisfactory.

1.2.2 Unsafe work practice

A busy kitchen can be a dangerous place indeed, with many hazards, including sharp edges, heat and open flames, oils and acids, and a fast paced working environment. Therefore, you must maintain a high degree of hazard awareness, adherence to safety procedures, cooperation and communication with your fellow workers in order to prevent injuries.



Figure 1.1 pan fire

Don't:

- Do not use kitchen equipment until you have been trained on its use.
- Do not wear loose-fitting clothing as it may get caught in equipment, causing injury.
- Never leave cooking equipment unattended. If you must perform other tasks, use timers to remind you of the equipment in use.

- Do not store flammable items like pan re-lease spray near heat-producing equipment or open flames
- Don't overfill pans, pots and kettles as product may spill causing burns.
- Never carry or move oil containers when the oil is hot or is on fire
- Never throw water on a grease fire; it makes it worse.
- Never use an extension cord for a cooking appliance, as it can overload the circuit and cause a fire.

1.3 Using personal protective Equipment

We imagine that the kitchen involves cooking and cleaning so not much danger is expected but that is not the case. A lot of contamination can take place in the kitchen, which is bad for our health. Accidents, which will require immediate medical attention, may also occur.

It is important to keep ourselves safe in the kitchen because that will save you from spending money seeking treatment. Because safety in the kitchen is vital, a number of protective tools have been invented. Below we look at examples of personal protective equipment in the kitchen;

1. Oven gloves

Using an oven glove is a perfect way to protect our hands from burns and bruises. Oven gloves are made of thick material that is not prone to tear or burn. As the name **suggests** they were specifically designed for **the** oven but can be used when handling any equipment that conducts heat like cooking pots.



Figure 1.2 oven glove

2. Apron

Wearing an apron when cooking will protect your clothes from stains that would otherwise make you look untidy.

They were made in such a manner that the cook will be able to move his/her arms freely not restricting their movements. Although most of the time neglected, aprons are just as important as the other protective tools.



Figure 1.3 Aprons

3. Hairnet

Our hair contains staph bacteria which can cause stomach problems like diarrhea. When handling food substances ensure that your hair is not exposed. Not just the hair on your head but also beards should be covered up.



Figure 1.4 Hairnets

4. Plastic gloves

Plastic gloves come in handy during cleaning as they prevent bacteria from accessing our hands. Being made of plastic, they can be used in water and are very easy to clean. Ensure to wash your hands after using these gloves just as an extra protective measure. Do not use them on hot equipment and keep away from fire.



Figure 1.5 plastic glove

5. Chef shoes

When cooking, sometimes water accidentally pours on the floor, therefore, making it slippery. This is dangerous because slipping and falling become inevitable. It may seem minor but you could break a limb there or suffer fatal head injuries.
A good chef shoe should have a rough sole to decrease friction and ensure maximum stability. Wearing closed shoes is not advised because it gets hot in the kitchen so your feet will literally soak in sweat. The goal is to ensure your safety at the same time making the cooking process comfortable.



Figure 1.6 Chef Shoes

1.3.1 The Role of PPE in Food Safety

The Occupational Safety and Health Administration (OSHA) recommend using personal protective equipment (PPE) to enhance the safety of the food, workers, and customers.

- **Protecting the Food**

Using appropriate PPE during food preparation and handling helps minimize the risk of cross contamination and unnecessary food spoilage. By providing their employees with high-quality PPE, food companies are less likely to experience contamination in their products through parasites, bacteria, dust, mould, and other human-related debris.

Contaminated food is a common source of severe illness, such as salmonella, E. coli, and Hepatitis A, making it a serious public health concern.

Common PPE worn to protect food includes gloves, safety glasses, masks, face shields, and hairnets.

- **Protecting the Workers**

Employees in the food service industry are at risk of exposure to harmful chemicals and toxic materials. Ammonia from cooling systems, disinfectants and other chemicals found throughout food manufacturing plants pose health risks to anyone who comes in contact with them. Workers at risk of contamination should wear protective clothing, such as gloves, safety glasses, face shields, masks, or overalls.

Restaurants and kitchens also contain potential hazards for workers. Employees can easily sustain an injury from sharp knives or hot dishes if they don't have the right PPE. Gloves, oven mitts, aprons, anti-slip footwear, slip-resistant floor mats, and wet floor signs are all examples of PPE found in restaurants, cafes, and bars.



Picture 1.7 PPE

- **Protecting the Customers**

If a restaurant or food service provider is found to be negligent regarding the safe preparation and provision of food to their customers, they can face penalties that may ultimately result in the closure of the premises.

Business owners or managers must provide staff with adequate PPE to prevent contamination and the spread of foodborne illnesses.

1.3 Reporting Hazards and Any Suspicious Behavior or Unusual Occurrence

1.3.1 Hazard

A hazard is anything that has the potential to harm or injure people, property, or equipment; a hazard report is an account of any potential risk to the health or safety of any person, property or equipment in the workplace.

The consequences of the Coronavirus on the hospitality industry have been particularly hard-hitting. Now lockdown restrictions are easing, many food businesses and hotels have reopened in line with the government roadmap and are beginning to serve customers so they can be up and running for the summer months ahead. Having no doubt spent a long time meticulously planning a reopening (again!), including Covid-19 risk assessments and creating new Covid-secure policies, it is important not to overlook the other common safety hazards that must be taken into account, alongside the management of Covid-19 risks.

Even before the pandemic hotels, pubs and restaurants were familiar with managing the common everyday health and safety risks to their employees and customers. Controlling these risks is part of working within this industry. We take a brief look at some of the most common safety hazards for those that work in the hospitality industry.

1.3.2 Types of Hazards in the Workplace

Hazards are dangers to not only the people in the company but also to the company's reputation in the industry and its relationship with clients. Aside from negatively impacting the lives of workers and their families, injuries caused by unreported hazards also cost the company time and money through a reduced workforce and long-term medical expenses.

Hazards can come in many forms, but they generally fall under the following categories:

- **Safety Hazards**

Safety hazards are mostly general hazards that can be found in any workplace, even in plush corporate offices. These can be something as simple as wet floors or something deadly like malfunctioning equipment

While the kind of safety hazard to look out for will depend on the nature of the work and the specific location of the workplace, safety hazards in specific industries such as construction should never be overlooked.

- **Chemical Hazards**

Unlike safety hazards, chemical hazards are usually only found in chemical manufacturing and import facilities. For workplaces involved in the handling of hazardous substances, employers are required to label the chemicals, use Safety Data Sheets (SDS), and properly train their employees.

Common chemical hazards include corrosive substances such as strong acids and oxidizers as well as flammable and/or toxic gases, liquids, and solids. Safety measures regarding these chemical hazards must be effectively communicated in the workplace, as part of an employer's hazard communication (HazCom) program.

Other places which may require the implementation of a HazCom program are science laboratories in academic institutions. Elementary and secondary schools are especially prone to situations in which an untrained student mishandles a chemical and inadvertently causes a fire.

- **Physical Hazards**

While a safety hazard can also be classified as a physical hazard, the main difference between them is that physical hazards are always present and are not necessarily caused by an incident or a mistake on the part of the employee.

One profession that is exposed to many physical hazards is a flight attendant. Flight attendants constantly experience poor cabin air quality, lowered barometric pressure, hypoxia (reduced oxygen levels), low humidity, and cosmic ionizing radiation.

- **Psychosocial Hazards**

Aside from physical hazards, flight attendants are also vulnerable to sexual harassment and verbal abuse, which are psychosocial hazards. Surveys show that as many as 65% of flight attendants experience sexual harassment, with 1 in 3 having experienced physical sexual harassment from passengers.

Other psychosocial hazards include bullying and unfair treatment or discrimination.

- **Biological Hazards**

These hazards adversely affect one's health and can cause serious, long-term health conditions. Biological hazards include mold, dust, insects, bacteria, and viruses.

While biological hazards can be found in any workplace, the management of these hazards in the food industry is critical. One way to do so is to follow HACCP, a food monitoring system endorsed by the FDA and recognized internationally.

Write a Hazard Report

To write a hazard report, it is ideal that you use a hazard report form so you are guided in doing the following steps:

- Describe the hazard identified using text, images, and annotations, and provide brief but detailed information
- Determine the (possible) seriousness of the injury and the medical attention required
- Indicate the corrective action needed to control the hazard

Submit the hazard report and record the control measures done for accident prevention.

How to Encourage Workers to Report

Safety managers have to actively promote hazard reporting among employees if they want to reduce their TRIR, a metric used by OSHA (Occupational Safety and Health Administration) to evaluate working conditions. Though this can be challenging, here are three tips on how to encourage people to report hazards:

- ✓ **Build Trust**

Employees won't report hazards if they don't believe in the organization's commitment to safety. While building trust will look differently for each organization, one way to do it is to foster engagement between field workers and safety managers.

Safety managers have to show field workers that their feedback is crucial for the organization to improve its safety and overall processes.

- ✓ **Keep Promises**

Aside from creating a culture of open communication between employees and leaders, one of the most effective ways to encourage people to report hazards is to take action, fix what needs fixing, and do what's needed to eliminate hazards.

Listen to field workers when they flag an issue or raise a concern. If necessary, visit the site to inspect the hazard or seek assistance from an executive to solve the problem.

Don't Use Paper Hazard Report Forms

Filling out a paper hazard report form can make hazard reporting a hassle for employees and takes up too much of their valuable working time. Even if the employee succeeds in accomplishing the hazard report form, getting that piece of paper to the safety manager is a struggle in itself.

Once that paper form finally reaches the safety manager's desk, days might have passed since the incident took place and the investigation is prolonged.

✓ ***Advantages of Digitalizing Hazard Report Forms***

Unlike paper, digital hazard report forms make hazard reporting easy for field workers and safety managers. With a digital hazard report form, a field worker can take photos and make annotations to provide a detailed explanation of what happened.

A digital hazard report form also allows the safety manager to get information instantly, despite being miles away from the site. This can lead to the investigation being completed within hours of the incident, instead of days or even weeks.

Hazard Report Form

DATE_____ LOCATION_____REPORTED BY_____

NATURE OF HAZARD AND POTENTIAL RISKS IF LEFT UNTREATED

Chemical hazard……

RECOMMENDATIONS / CONTROLS

Using Fresh water .....

ACTION TAKEN **Date.....**

Hazard Report Form

MANAGERS COMMENTS ON CORRECTIVE ACTION

SIGNED BY: _____POSITION:_____DATE:_____

Person reporting the hazard

SIGNED BY: _____POSITION:_____DATE:_____

Management

Additional sign offs as required to show consultation with all parties affected by the hazard and recommended controls

Self-Check 1	WRITTEN TEST

Directions

Answer all the questions listed below

1. How do you write a hazard report?
2. What is the importance of using PPE in the kitchen?

Choose the best answer of the following

1. What is a hazard?

A. Something that can cause harm or injury to a person/people
B. A purposeful assessment of the environment
C. Something that requires control measure
D. None of the above

2. What is the purpose of a risk assessment?

A. They can help you eliminate risks and input control measures
B. Enable you to create a learning environment
C. Allow you to create safety rules and routines
D. None of the above

3. From the following options, what is the best way to control hazards in the workplace?

A. Replace the hazard for a less risky option
B. Eliminate the hazard completely from the workplace
C. Use personal protective equipment (PPE)

UNIT TWO	Procedures for Emergency Situations

Instruction sheet

This learning guide is describes knowledge, skills and attitude required for food sanitation and safety in a commercial kitchen or catering operation.

- Identifying potential Emergency Situations
- Organizing Emergency Procedures
- Requesting Assistance

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Identify potential emergency situations
- Understand Organizational emergency procedures
- Report emergency situations
- Maintain and understand how to Request Assistance

2.1 Identifying potential Emergency Situations

In emergency situations, difficult conditions can be made even worse in the event of foodborne disease outbreak. Provision of food is often carried out under crude conditions and the people available to organize and implement feeding operations may not have the necessary experience to manage food safety effectively.

This guidance document is intended to assist those responsible for planning and overseeing food operations to recognise aspects of their function that influence food safety and to guide them in minimising risk of foodborne illness.

In view of the fact that the infrastructure on the ground may be completely destroyed in many types of emergency situation, this document highlights the most critical requirements. The document also directs users to useful information sources that provide a more complete outline of food hygiene requirements, to guide operations in cases where there has been less disruption and higher standards of hygiene are feasible as well on guidance on related activities e.g. waste management.



Figure 2.1 fire

2.2 Organizational Emergency Procedures

2.1.1 Introduction

Nobody expects an emergency or disaster -- especially one that affects them, their employees, and their business personally. Yet the simple truth is that emergencies and disasters can strike anyone, anytime, and anywhere. You and your employees could be forced to evacuate your company when you least expect it.

- **workplace emergency**

A workplace emergency is an unforeseen situation that threatens your employees, customers, or the public; disrupts or shuts down your operations; or causes physical or environmental damage. Emergencies may be natural or manmade and include the following:

- ✓ Floods,
- ✓ Hurricanes,
- ✓ Tornadoes,
- ✓ Fires,
- ✓ Toxic gas releases,
- ✓ Chemical spills,
- ✓ Radiological accidents,
- ✓ Explosions,
- ✓ Civil disturbances, and
- ✓ Workplace violence resulting in bodily harm and trauma.

- **How do you protect yourself, your employees, and your business?**

The best way is to prepare to respond to an emergency before it happens. Few people can think clearly and logically in a crisis, so it is important to do so in advance, when you have time to be thorough.

Brainstorm the worst-case scenarios. Ask yourself what you would do if the worst happened. What if a fire broke out in your boiler room? Or a hurricane hit your building head-on? Or a train carrying hazardous waste derailed while passing your loading dock? Once you have identified potential emergencies, consider how they would affect you and your workers and how you would respond.

- **Emergency Action Plan**

An emergency action plan covers designated actions employers and employees must take to ensure employee safety from fire and other emergencies. Not all employers are required to establish an emergency action plan. See the flowchart on page 17 to determine if you are. Even if you are not specifically required to do so, compiling an emergency action plan is a good way to protect yourself, your employees, and your business during an emergency.

Putting together a comprehensive emergency action plan that deals with all types of issues specific to your worksite is not difficult.

You may find it beneficial to include your management team and employees in the process. Explain your goal of protecting lives and property in the event of an emergency, and ask for their help in establishing and implementing your emergency action plan. Their commitment and support are critical to the plan's success.

- **What should your emergency action plan include?**

When developing your emergency action plan, it's a good idea to look at a wide variety of potential emergencies that could occur in your workplace. It should be tailored to your worksite and include information about all potential sources of emergencies. Developing an emergency action plan means you should do a hazard assessment to determine what, if any, physical or chemical hazards in your workplaces could cause an emergency. If you have more than one worksite, each site should have an emergency action plan.

At a minimum, your emergency action plan must include the following:

- ✓ A preferred method for reporting fires and other emergencies;*f*
- ✓ An evacuation policy and procedure;
- ✓ Emergency escape procedures and route assignments, such as floor plans, workplace maps, and safe or refuge areas;
- ✓ Names, titles, departments, and telephone numbers of individuals both within and outside your company to contact for additional information or explanation of duties and responsibilities under the emergency plan;
- ✓ Procedures for employees who remain to perform or shut down critical plant operations, operate fire extinguishers, or perform other essential services that cannot be shut down for every emergency alarm before evacuating; and
- ✓ Rescue and medical duties for any workers designated to perform them.

You also may want to consider designating an assembly location and procedures to account for all employees after an evacuation.

2.3. Requesting Assistance

- **Alert Employees To An Emergency**

Your plan must include a way to alert employees, including disabled workers, to evacuate or take other action, and how to report emergencies, as required. Among the steps you must take are the following:

- ✓ Make sure alarms are distinctive and recognized by all employees as a signal to evacuate the work area or perform actions identified in your plan;

- ✓ Make available an emergency communications system such as a public address system, portable radio unit, or other means to notify employees of the emergency and to contact local law enforcement, the fire department, and others; and*f*
- ✓ Stipulate that alarms must be able to be heard, seen, or otherwise perceived by everyone in the workplace. You might want to consider providing an auxiliary power supply in the event that electricity is shut off.
- ✓ Using tactile devices to alert employees who would not otherwise be able to recognize an audible or visual alarm *f*
- ✓ Providing an updated list of key personnel such as the plant manager or physician, in order of priority, to notify in the event of an emergency during off-duty hours.

- **Develop An Evacuation Policy and Procedures**

A disorganized evacuation can result in confusion, injury, and property damage. That is why when developing your emergency action plan it is important to determine the following:

- ✓ Conditions under which an evacuation would be necessary;
- ✓ A clear chain of command and designation of the person in your business authorized to order an evacuation or shutdown. You may want to designate an "evacuation warden" to assist others in an evacuation and to account for personnel;
- ✓ Specific evacuation procedures, including routes and exits. Post these procedures where they are easily accessible to all employees;
- ✓ Procedures for assisting people with disabilities or who do not speak English;*f*
- ✓ Designation of what, if any, employees will continue or shut down critical operations during an evacuation. These people must be capable of recognizing when to abandon the operation and evacuate themselves; and*f*
- ✓ A system for accounting for personnel following an evacuation. Consider employees' transportation needs for community-wide evacuations.

- **Medical Assistance Should You Provide During An Emergency**

If your company does not have a formal medical program, you may want to investigate ways to provide medical and first-aid services. If medical facilities are available near your worksite, you can make arrangements for them to handle emergency cases. Provide your employees with a written emergency medical procedure to minimize confusion during an emergency.

If an infirmary, clinic, or hospital is not close to your workplace, ensure that onsite person(s) have adequate training in first aid. The American Red Cross, some insurance providers, local safety councils, fire departments, or other resources may be able to provide this training. Treatment of a serious injury should begin within 3 to 4 minutes of the accident.

Consult with a physician to order appropriate first-aid supplies for emergencies. Medical personnel must be accessible to provide advice and consultation in resolving health problems that occur in the workplace. Establish a relationship with a local ambulance service so transportation is readily available for emergencies.

- **Role of Employees To play in Emergency Action Plan**

The best emergency action plans include employees in the planning process, specify what employees should do during an emergency, and ensure that employees receive proper training for emergencies. When you include your employees in your planning, encourage them to offer suggestions about potential hazards, worst-case scenarios, and proper emergency responses. After you develop the plan, review it with your employees to make sure everyone knows what to do before, during and after an emergency.

Keep a copy of your emergency action plan in a convenient location where employees can get to it, or provide all employees a copy. If you have 10 or fewer employees, you may communicate your plan orally.

- **Employee information should your plan include**

In the event of an emergency, it could be important to have ready access to important personal information about your employees. This includes their home telephone numbers, the names and telephone numbers of their next of kin, and medical information.

- **Type of training your employees need**

Educate your employees about the types of emergencies that may occur and train them in the proper course of action. The size of your workplace and workforce, processes used, materials handled, and the availability of onsite or outside resources will determine your training requirements. Be sure all your employees understand the function and elements of your emergency action plan, including types of potential emergencies, reporting procedures, alarm systems, evacuation plans, and shutdown procedures. Discuss any special hazards you may have onsite such as flammable materials, toxic chemicals, radioactive sources, or water-

reactive substances. Clearly communicate to your employees who will be in charge during an emergency to minimize confusion.

General training for your employees should address the following:

- ✓ Individual roles and responsibilities;
- ✓ Threats, hazards, and protective actions;
- ✓ Notification, warning, and communications procedures;
- ✓ Means for locating family members in an emergency;
- ✓ Emergency response procedures;
- ✓ Evacuation, shelter, and accountability procedures
- ✓ Location and use of common emergency equipment; and
- ✓ Emergency shutdown procedures.

You also may wish to train your employees in first-aid procedures, including protection against blood borne pathogens; respiratory protection, including use of an escape-only respirator; and methods for preventing unauthorized access to the site.

Once you have reviewed your emergency action plan with your employees and everyone has had the proper training, it is a good idea to hold practice drills as often as necessary to keep employees prepared. Include outside resources such as fire and police departments when possible. After each drill, gather management and employees to evaluate the effectiveness of the drill. Identify the strengths and weaknesses of your plan and work to improve it.

- **How often do you need to train your employees?**

Review your plan with all your employees and consider requiring annual training in the plan. Also offer training when you do the following:

- ✓ Develop your initial plan;
- ✓ Hire new employees;
- ✓ Introduce new equipment, materials, or processes into the workplace that affect evacuation routes;
- ✓ Change the layout or design of the facility; and
- ✓ Revise or update your emergency procedures.

➢ **What does your plan need to include about hazardous substances?**

No matter what kind of business you run, you could potentially face emergency involving hazardous materials such as flammable, explosive, toxic, noxious, corrosive, biological, oxidizable, or radioactive substances.

The source of the hazardous substances could be external, such as a local chemical plant that catches on fire or an oil truck that overturns on a nearby freeway. The source may be within your physical plant. Regardless of the source, these events could have a direct impact on your employees and your business and should be addressed by your emergency action plan.
If you use or store hazardous substances at your worksite, you face an increased risk of an emergency involving hazardous materials and should address this possibility in your emergency action plan. OSHA's Hazard Communication Standard requires employers who use hazardous chemicals to inventory them, keep the manufacturer-supplied Material Safety Data Sheets (MSDSs) for them in a place accessible to workers, label containers of these chemicals with their hazards, and train employees in ways to protect themselves against those hazards. A good way to start is to determine from your hazardous chemical inventory what hazardous chemicals you use and to gather the MSDSs for the chemicals. MSDSs describe the hazards that a chemical may present, list the precautions to take when handling, storing, or using the substance, and outline emergency and first-aid procedures.

- **Special Equipment for emergencies provide**

Your employees may need personal protective equipment to evacuate during an emergency. Personal protective equipment must be based on the potential hazards in the workplace. Assess your workplace to determine potential hazards and the appropriate controls and protective equipment for those hazards. Personal protective equipment may include items such as the following:

- ✓ Safety glasses, goggles, or face shields for eye protection;
- ✓ Hard hats and safety shoes for head and foot protection;
- ✓ Proper respirators;
- ✓ Chemical suits, gloves, hoods, and boots for body protection from chemicals;
- ✓ Special body protection for abnormal environmental conditions such as extreme temperatures; and
- ✓ Any other special equipment or warning devices necessary for hazards unique to your worksite.

Self-Check -2	Written Test

Directions: Answer all the questions listed below

1. What are the procedures for dealing with an emergency?
2. What is means by emergency procedure?

Fill the blank of the following questions

1. ……. Are you doing before starting cooking?
2. …….. Use to take something out of a hot oven?

Choose the following of answer

1. If you are using a saucepan, where should the handle be facing?
   A. Out
   B. Over the edge of the stove
   C. Inwards
   D. Over another hotplate/jet
2. Where or on what do you put something that you have just taken out of the oven?
   A. On the bench top
   B. On a wooden board
   C. On the stovetop (if it's not turned on)
   D. Both B & C
3. What can be dangerous?
   A. Heating the food again
   B. Cutting vegetables with washed hands
   C. Keeping gas stove on even when cooking is done.
   D. None of these

UNIT THREE	Hygiene Procedures and Hygiene hazards

Instruction sheet

This learning guide is describes knowledge, skills and attitude required for food sanitation and safety in a commercial kitchen or catering operation.

- Hygiene Procedures and Policies
- Poor Organizational Hygiene Practices
- Types of Hygiene Hazards

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Follow Hygiene procedures and policies
- Identify and Report Poor organizational hygiene practices
- Identify Types of hygiene hazards

3.1 Hygiene procedures and policies

3.1.1 Kitchen Hygiene

Introduction

It goes without saying that cleaning in kitchens needs to be approached in a way that not only ensures the highest standards of cleanliness but also minimises the risk of spreading harmful bacteria. To do this you will need to thoroughly examine all of the processes undertaken within the kitchen environment and carefully consider how they could contribute to their handling of foods from harvest to slaughter through to human consumption provides many opportunities for the food to become contaminated with micro-organisms.

It is often either poor hygiene practices by food handlers or unhygienic working conditions that can sometimes lead to the contamination of foods with pathogens. Any lapse in hygiene standards in the food chain, or indeed improper food storage and preparation procedures, can have serious consequences for both the customers and the future success of a business.

As you are responsible for hygiene standards in kitchens, this guide aims to build your understanding of the importance of hygiene and provide you with the knowledge required to develop the high standards of hygiene inherent in a successful catering business.

The importance of hygiene to both humans and the business cannot be over emphasised. The effective cleaning of commercial kitchens is not only important from the aspect of safety. This amendment places greater emphasis on Hazard Analysis and Critical Control Points (HACCP) as a method for ensuring hygiene standards. This will be covered in more detail later in the Guide.

In broad terms, the regulations impose a duty on the owner or occupier to keep the premises, equipment, containers and all utensils used in the preparation of food, clean. Individual food handlers have duties in respect of personal hygiene standards and managers have a legal duty to ensure that all staff complies with the regulations at all times. Your Local Authority is responsible for monitoring compliance and enforcing the regulations usually via Environmental Health Officers.

Aspects of Kitchen Safety

Before carrying out your cleaning duties within the kitchen environment, operatives and managers must consider the aspects of the job that present risks to the person carrying out the

individual task. These are matters not dealt with specifically under any set of regulations but which must be considered when various cleaning operations are undertaken.

A. Handling Knives and Other Sharp Implements

- When handling single knives, hold them by the handle with the blade pointing downwards.
- Hold the knife with your arm straight and close to the body.
- When moving multiple knives, they should be placed in a deep tray or basket and transported in a trolley if there is significant weight.
- All sharp items should be separated away from other utensils and cleaned separately, one at a time.
- Wherever soaking is required, all sharp items should be placed in clearly identifiable containers and not left in dishwashing water with other utensils.
- If facilities are available, all sharp items should be cleaned in isolation from other utensils in a designated, clearly marked area of the kitchen.
- All staff should be trained in the safe processes for cleaning sharp items that reduces the risk of injuries to the hand being sustained.

B. Handling, Storing and Disposing of Refuse

- Make sure that all refuse is removed from site as soon as possible.
- Do not place broken glass or other sharp items with normal refuse.They must be segregated and placed in rigid-walled containers i.e. cardboard boxes and clearly marked as to their content.
- Never attempt to burn refuse unless you have access to an incinerator specifically designed for the purpose.
- If an incinerator is used, make sure that the refuse does not contain any flammable chemicals, solvents or pressurised containers.
- Never dispose of any food materials that may be considered infected or unsafe. Refer these to the relevant local authority for advice on safe disposal.

C. Cleaning Glassware

The same procedures as outlined for cleaning knives and other sharp items apply.

In addition, the following points would apply:

- Whenever a glass item breaks during manual washing, the container used must be drained of all liquid and the broken glass removed. The container must then be thoroughly cleaned.
- When handling broken glass, the use of a dust pan and brush is preferred. Where they are unavailable staff should be issued with heavy duty PVC or canvas gloves.

D. Electrical Wiring and Safety

- All electrical fittings and associated wiring must only be repaired and maintained by qualified and competent electricians.
- Before commencing any cleaning task, all operatives should visually check that there is no obvious damage to the machine being used and that the electrical parts are in good condition.
- If any faults are detected by the operative, the machine should be marked as "Out of
- Order" and placed in a secure area whilst awaiting repair.
- All items that are not in use or left unattended for any period should be disconnected from the mains, removed from the work area and their cables mounted correctly.
- If the operative notices a significant change in the performance of any piece of electrical equipment, or notices a burning or "fishy" smell during use, they should treat it as a fault and decommission the machine immediately.
- Make sure that all machine wires are kept clear of the work area at all times and are not allowed to become taut and raised above floor level.

E. Gas Supplies and Appliances

- Staff should always ensure that gas taps are switched off during cleaning.
- Care should be taken when cleaning around gas ovens that gas taps are not accidentally switched on.
- If a machine being cleaned has recently been disconnected from the gas main or had parts replaced, make sure that it is safe to use.
- If, when cleaning, operatives detect a smell of gas, where the source cannot be accounted for, raise the alarm immediately and leave the building.

F. Cleaning of Stairs, Raised Platforms and Floor Openings

- Make sure that banisters and handrails near areas being cleaned are in good repair.
- Never attempt to climb on or stretch over banisters or handrails.

- Ensure that any equipment placed on stairs is kept to minimum and never left unattended.
- Always restrict access to areas being cleaned.
- If there is an unguarded opening to a floor, i.e. drainage cover, man-hole, take extra care when cleaning and close off using cleaning warning barriers for extra safety.
- Always work from the top to the bottom of stairs.

G. Lifting, Carrying and Reaching

- All staff should be trained in the safe Manual Handling techniques specific to the tasks they are required to perform.
- Lifting and carrying should be avoided in preference to safer alternatives such as trolleys.
- Where a load is being moved in a fashion that it restricts the view of the carrier, another operative should guide him/her in safe passage.
- Operatives should never over-stretch, especially from ladders or over hot surfaces

Cleaning within the Kitchen Environment

As food is handled and prepared in a kitchen, it is inevitable that surfaces and equipment will become soiled from a variety of sources. External soil can be carried in on staff shoes or clothing, food residues can be left on chopping boards and equipment, grease can accumulate on walls and ceilings. If left to accumulate, these soils would prove a serious risk not just to food contamination but to the health and safety of the staff and customers. Although a legal requirement, an effective cleaning regime should be seen in terms of the genuine benefits it will bring to the business:

- Reduce risk of food spoilage or food poisoning – less waste and more satisfied customers, less risk of business closure or failure
- Promote effective working practices – faster delivery of food to customer.
- Reduce favourable environment for pests – less risk of food contamination
- Help prompt discovery of pest infestation – can eradicate quickly
- Provide safe and pleasant working environment for staff and encourage morale – less injuries and absenteeism. Slips and trips are the biggest cause of accidents in kitchens.
- Promote positive customer perception – leads to more return business and word of mouth recommendation.

- Prolong life of equipment and premises – higher return on investment.
- Less risk of fire from grease build up in ventilation unit.

Ultimately if a kitchen is not kept clean then it could be closed down by the Environmental Health Authorities, suffer serious loss of business or those responsible may find themselves in court liable for a serious food poisoning outbreak.

Within the kitchen there are several distinct areas that each has their own specific cleaning requirements.

Food Contact Surfaces - Areas in the kitchen that come into contact with food can present a particularly high level of risk if food residues are not removed and any bacteria present destroyed, as residues will attract pests and encourage further bacterial growth. These surfaces not only include work surfaces used for food preparation and equipment such as mincers and slicers but also any equipment touched by the food handler such as refrigerator door handles.

Floors and walls do not need to be sanitised necessarily, but they do need to be cleaned with an all-purpose detergent on a regular basis to prevent the build-up of grease, dirt and food residues, which would otherwise provide the bacteria with an environment in which to thrive and multiply. Oven residues can be quite difficult to remove and traditionally the job has been viewed as one requiring fairly strong chemicals to remove the residues from the oven's inner surfaces. Manual dishwashing can provide satisfactory cleaning and disinfection of crockery, cutlery and utensils, if carried out correctly.

Oven residues can be quite difficult to remove and traditionally the job has been viewed as one requiring fairly strong chemicals to remove the residues from the oven's inner surfaces.

Manual dishwashing can provide satisfactory cleaning and disinfection of crockery, cutlery and utensils, if carried out correctly.

Automatic dishwashing can achieve a much higher temperature on the rinse cycle and therefore offer a much higher level of disinfection than manual dishwashing. This can prove particularly useful with smaller high risk items such as equipment parts and chopping boards.

3.1.2 Maintaining Hygiene Standards

Food Contact Surfaces

These are areas where cross contamination can easily occur if hygiene standards are not maintained.

An important differentiation to make at this stage is between disinfectants and sanitisers, which are often mistakenly interchanged terms.



Figure 3.1 Sanitizing

Following the key principles of manual washing up will ensure a high level of hygiene within your unit:

- Using water of 50ºC, make up a solution of diluted washing up liquid in the washing up sink following the manufacturer's instructions.
- Scrape off any loose debris into the bin.
- Place articles to be cleaned in the sink and scrub with a clean brush, cloth or scouring pad depending on the item. Change water regularly.
- Using a second sink (where available), rinse clean articles with hand hot water.
- Allow to air dry on a clean sanitised surface, or dry with disposable paper towels.

Floors and walls

Regular cleaning is needed to prevent the build-up of grease, dirt and food residues, which would otherwise provide the bacteria with an environment in which to thrive and multiply.

When cleaning walls you should always work from top down to avoid contamination of clean areas, and with floors, particular attention should be paid to corners and areas around the edges of equipment.

Manual Washing Up

Typically, manual washing up has been characterised by short contact times, high soil loads and low detergent levels and, although there are many manual washing up liquids containing bactericides, these should not be relied upon solely to provide the high bactericidal effect needed

A. Automatic Dishwashing

Commercial dishwashers generally fall into one of three main categories depending on the volume of washing up required by the end user.

- Where the volume requirements are relatively low, such as in small cafes, bars and guest houses, a front loading machine with integral or manual dosing would be sufficient.
- Where the volume of dishwashing is higher, you will need to consider single tank pass through machines.
- For extremely large and busy catering operations such as large hotels and in-flight catering continuous conveyor or ‘flight’ machines are used. These are multi tank machines where the dishes travel continuously through the machine, emerging clean and dry on exit.

Loading the dishwasher correctly will also help get the best results and avoid having to spend additional time re-cleaning crockery and utensils.

Washing items as soon as possible after soiling is also highly recommended.

1. Pre-soak cutlery
2. Remove food scraps from plates and dishes into bin
3. Pour tea and coffee residues down sink/drain
4. Correctly rack all plates neatly and according to size

5. Rack all cups neatly and inverted over a sink or drainer

6. Stack knives, forks and spoons in the correct baskets. Mix cutlery in each basket, handles down.

7. Change water regularly and after each section

8. Wash glassware when water is fresh.

3.1.3 Hazard Analysis Critical Control Point /HACCP

No Guide to Kitchen Hygiene would be complete without mentioning HACCP. HACCP stands for Hazard Analysis Critical

Control Points and is a Food Safety methodology that relies on the identification of Critical Control Points (CCP's) in food production and preparation processes. The CCPs are the closely monitored in order to ensure that food is safe for consumption. Although it sounds complicated, it is not, and really just requires a large measure of common sense.

The key is firstly to identify any potential hazards in the kitchen, which is something that may do somebody harm; secondly you need to identify the risks i.e. where there is a possibility of the hazard actually harming someone.

Once the risk has been identified, measures need to be put in place that will control the risk so that it does not become harmful to human health. As an example, salmonella, which often occurs naturally on raw chicken would be a hazard and, if the chicken is undercooked or stored incorrectly, would allow the bacteria to multiply and increase the risk of somebody becoming ill. To control the risk you must therefore store at the right temperature and cook thoroughly.

Hazards fall into three main categories:

- ***Chemical***, such as cleaning materials can present a hazard and should be stored out of food preparation areas and away from food altogether. Surfaces should be rinsed off after chemicals have been used.
- ***Physical*** contamination can occur from items such as broken glass, hair and jewellery, and care should be taken to:
    - ✓ Ensure pests are excluded (e.g. mice, rats, cockroaches, flies)
    - ✓ Keep your food areas clean
    - ✓ Keep food covered and ensure packaging is intact

- ✓ Keep rubbish in closed bins
- ✓ Ensure that food handlers do not wear jewellery (or watches)

- **Bacteria/Biological** are the third type of hazard and need to be either stopped from growing in numbers or killed, through cooking and storing at the right temperatures. Bacteria can double their numbers every 20 minutes and can grow from one to 16 million in eight hours overnight.

A. Importance of Personal Hygiene

One of the greatest potential sources of food contamination in a kitchen comes from the kitchen staff themselves, or indeed anyone who visits the kitchen environment, including managing staff, delivery staff and visitors.

Even as healthy humans we will often be carrying a number of pathogens e.g. Staphylococcus aurous, on our skin, in our nose, throat and mouth, and these pathogens can easily be transferred to food through lack of thought or understanding of good personal hygiene.

When we are ill or have cuts and wounds, we carry potentially millions of pathogens and in these circumstances are often required to temporarily cease working in an open food environment.

The contamination of food by the transfer of pathogens from humans is well understood, and in fact the procedures for minimising the risk are relatively simple in theory. In practice, however, it requires staff to be constantly aware of the threat they pose to contaminating the food and for them to potentially change their habits. What starts as a normal reaction, scratching an itchy nose for example, could end in a food poisoning outbreak affecting both customers and staff.

Hand Washing

The regular washing of hands is probably the single most important aspect of personal hygiene as it is our hands that are in actual contact with the food, and therefore the most likely source of pathogens if they are not clean.

It is crucial that all staff get into the habit of washing their hands regularly and thoroughly, particularly at these critical risk points:

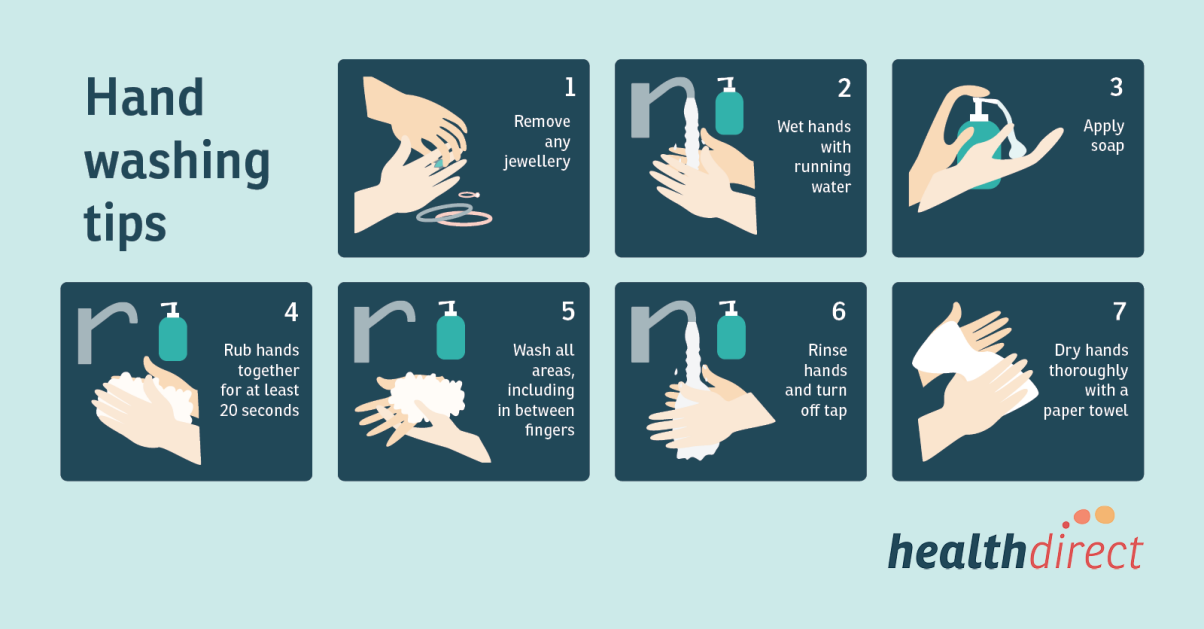


Figure 3.1 hand washing

Before

Entering the open food area at the beginning of a shift

After

- Visiting the toilet
- Handling raw meat, poultry or eggs
- Taking a break
- Handling waste
- Smoking
- Blowing their nose

Hair often carries pathogens that can be transferred to food in two ways. Firstly the handlers may touch their hair, often an unconscious reaction, transferring the pathogen to their hands. Secondly, and more importantly is loose strands of hair or dandruff can fall out on to food and contaminate it directly.

Regular hand washing will help minimise the risks from touching hair, and regular hair washing combined with the use of hairnets and hats will help prevent loose hair and dandruff from contaminating food.

Food handlers should only groom their hair in the cloakrooms and never in the kitchen.

Jewellery worn by food handlers can pose a problem by either falling onto food and being partially or completely ingested, or by harbouring pathogens on the skin under the jewellery that can be transferred through hand contact.

Generally only plain wedding rings are permitted to be worn in the kitchen.

Food handlers should be encouraged to avoid using excessive make-up and strong smelling personal toiletries as these can taint or contaminate the food.

Protective clothing is designed for either protecting the wearer from some type of personal injury such as a burn or knife cut, or more commonly to protect food from contamination from handlers' general clothing, which will often be contaminated with staphylococci. Protective clothing is not, as many food handlers believe, to protect their own clothing.

Protective clothing should completely cover a handler's personal clothing and should always be clean. The use of a light colour is advised as this shows up dirt and spoilage easily and encourages cleaning and replacement.

Gloves should be worn for handling chemicals and washed regularly if used in food areas.

Eye or face protection is necessary for oven cleaning because of the caustic nature of the chemicals involved.

Smoking is not allowed in the kitchen or food preparation areas, as there is a risk of physical contamination of ash and cigarette ends along with an increased risk of bacterial infection from saliva on cigarette ends and fingers.

Smoking can also encourage coughing which can release infected saliva and mucus onto hands, food surfaces and food itself.



Figure 3.2 no smoking

Food Handlers Health

It is an offence for people to be working in a kitchen or any other food handling area if they are suffering from, suspected to be suffering from, or carrying a disease that could be transmitted through food. This also applies to boils and septic cuts as they can contain Staphylococcus aurous.

The food handler has a legal as well as a moral obligation to inform the catering management of any symptoms of food poisoning eg diarrhoea or vomiting, or any suspicion they may have that they are carrying any food poisoning organisms.



Figure 3.3 sick person

Environment

Ultimately it is the individuals who are responsible for their personal hygiene habits, but a lot can be done to influence those habits by providing an environment that encourages good hygiene practice.

Training – Ensure staff are adequately trained in the essentials of food hygiene.

Clean Premises – Providing a clean and tidy environment in which to work will encourage staff to adopt clean and tidy practices.

Facilities – Make sure facilities needed for good hygiene practices are available and convenient e.g. hand wash basins near key risk points with plenty of liquid soap and hand drying facilities.

Uniforms – Clothing and apparel supplied should be clean and light coloured to show up spoilage. Encourage the use of clean garments.

B. Cleaning Process

Let's first look at the Cleaning Process. Cleaning requires two key elements, namely energy and time.

Energy can be supplied in three different forms:

- Chemical – supplied by detergents
- Physical or Mechanical – supplied by scrubbing or sweeping, and by machines such as dishwashers and floor scrubbers.
- Heat – Supplied by hot water or steam.

There are two elements to time in this instance; the time it takes to complete the task and the contact time needed for any chemicals, or indeed hot water, to affect the desired results.

The Items to be cleaned

Within a commercial kitchen environment you will find food preparation areas, toilets, offices, storerooms, cold rooms etc. Within these areas, normal cleaning procedures found in other Jangro Guides apply. However, in kitchen-specific areas, cleaning of the following items needs to be carefully considered:

Small items – kitchen utensils, crockery, pots and pans

Kitchen Appliances – cookers, fridges, hot cupboards, freezers and canopies.

Cleaning Products Used

- ***Detergents***

Within the kitchen environment, degreasing agents and oven cleaning detergents are used extensively.

- ***Sanitizers***

Sanitising solutions have been developed for use within the kitchen environment and are suitable for use on all surfaces.

- ✓ ***Note***: sanitizers do not necessarily disinfect. They will kill virtually all of the harmful bacteria known to breed within kitchens and are critical in ensuring that exacting hygiene standards are achieved and maintained.

Washing up Liquid

Washing up liquid is provided for hand dishwashing. It can be added to water manually by the operative or by means of a dosing system connected to a large container.

Washing up liquid can incorporate an anti-bacterial ingredient to provide germ-killing properties and all types are generally neutral.

- ➢ **The Systematic Approach to Cleaning Kitchen Equipment**

The type of task will determine the amounts of the various types of energy needed as well as the correct time, and total time required to complete the task.

We have seen when looking at the difference between manual washing up and machine dishwashing how the different elements change.

Any cleaning task can generally be broken down into six common steps, which if followed, should ensure effective results and minimise the risks of food contamination.

1. Remove loose debris – This tends to be a manual operation whether it is sweeping a floor, wiping a surface with a cloth, rinsing or scraping plates prior to putting in the dishwasher. An important step as it makes subsequent steps easier.

2. Apply a detergent solution – The main job of the detergent is to loosen any remaining soil from the soiled surface and stop soil re-depositing. To ensure the most effective results always dose detergents according to manufacturers' instructions.

3. Rinse – Removes the remaining dirty detergent solution and avoids detergent de-activating the subsequent disinfectant.

4. Apply disinfectant and contact time – Disinfecting will reduce the bacteria to a level which is safe for human health. It should be noted that disinfectant will require a level of contact time to work effectively. Always follow manufacturers' instructions for concentration and contact time, typically 30 seconds to 15 minutes.

5. Rinse – Removes disinfectant.

6. Dry – Should be either through air drying, using disposable paper towels, or a clean, dry cloth to avoid contaminating the surface.

The Cleaning Programme

Having considered the cleaning requirements, we can now look at frequencies and methods to be adopted which will make up the overall cleaning programme.

Cleaning tasks will essentially fall into one of four categories in terms of the frequency they are carried out:

- After each use
- Daily
- Weekly
- Monthly

Frequencies will depend on the operation but the following can be used as a guide for kitchen tasks. While there is some scope in the frequency of the weekly and monthly cleans, these should be at a frequency adequate to control the level of soil and micro-organisms to an acceptable level and would be dependent on the size of the kitchen.

Some surfaces will need to be cleaned at all four frequencies and possibly utilising different products at each frequency, for example, bain-marie may be cleaned both after use and then descaled monthly.

Table 3.1 Cleaning Programme

Task	Frequency	Cleaning Method
Chopping boards and food Preparation surfaces	**After each use**	• Make a solution of cleaner sanitizer • Brush off and remove debris • Load a clean cloth with clean, warm water and wipe the surface • Load a clean cloth with cleaning solution and liberally wet the surface • Allow time for the solution to act on the surface • Wipe the surface clean, rinse well with clean water and allow to air dry.
Manual Dishwashing	**After each use**	• Prepare a solution of hot water and concentrated washing-up liquid • Scrape off any waste foodstuffs into a waste food bin • Place dishes in the solution and allow to soak • Remove residual waste using a clean scrubbing brush or abrasive pad • Rinse with clean hot water and allow to air dry
Food Processing Machinery - Slicers, mincers, mixers, peelers and can openers	**After each use or maintenance procedure**	• Switch off power and remove the plug from electrical supply • Protect electrical parts using a waterproofing kit • Prepare a solution of hot water and cleaner/sanitizer • Place any removable parts in the solution or spray and allow to soak • Clean all parts by brushing or wiping • Rinse well with clean water and allow to air dry and reassemble
Fryers (always refer to manufacturer's cleaning guidelines)	**Weekly**	• Switch off power and remove plug from the electrical supply • Drain fat into a waste container and wipe away any residual grease with disposable paper tissue • Fill fryer with a solution of water and cleaner/degreaser • Submerge all baskets and utensils in the solution • Switch on and boil • Check on progress of cleaning and switch off when satisfied • Remove any film of deposits from the inside of the fryer with a brush or spatula and deposit in a

		waste food bin • Empty the fryer and rinse thoroughly with clean hot water • Allow to air dry
Dishwashers (always refer to manufacturer's cleaning guidelines)	**Daily (if not self-cleaning)**	• Switch off power and remove the plug from the electrical supply • Drain machine of any residual waste water • Remove spray arms and check holes are not blocked • Remove filters and empty out any debris into a waste bin • Prepare solution of hot water and degreaser in a bucket or bowl • Clean filters with solution and rinse well with clean hot water • Clean interior then exterior with solution using a clean cloth • Rinse all surfaces with clean, hot water • Replace all removable parts and allow to air dry
Refrigerators, freezers and cold rooms	**Weekly (or more frequently if required)**	• Prepare a solution of hot water and cleaner/sanitizer in a bucket or bowl • Switch of power and remove the plug from the electrical supply • Transfer food to alternative cool storage • Remove racks and soak in solution • Clean all surfaces, handles and seals with the solution using a clean cloth • Rinse well with clean, hot water and allow to air dry • Reconnect appliance and allow it to reach correct temperature before replacing food
Shelves, drawers and food storage racks	**Weekly**	• Prepare a solution of hot water and cleaner/sanitizer in a bucket or bowl • Remove contents of drawers or shelves • Brush/wipe off all loose debris • Clean all surfaces with solution using a clean cloth • Rinse with clean, hot water and replace all contents
Bains Maries, hot cupboards, refrigerated display	**Daily**	• Prepare solution of hot water and cleaner/sanitizer in a bucket or bowl • Brush up and remove all loose debris

cabinets and hot/cold serveries		• Clean all surfaces with solution using a clean cloth • Rinse thoroughly and allow to air dry
Microwave/ Combi-ovens	**After each use**	• Switch off power and remove plug from electrical supply • Prepare solution of hot water and cleaner/degreaser in a bucket or bowl • Prepare a solution of hot water and washing-up liquid in a kitchen sink and rinse with clean, hot water • Take all removable parts and place and clean in solution in sink • Clean all interior then exterior surfaces with the cleaner/degreaser solution using a clean cloth • Replace all removable parts • Rinse all surfaces using clean, hot water and allow to air dry
Ovens/Grills	**After each use**	• Spray surfaces with Oven Cleaner or Liquid Griddle Cleaner (supplied ready-to-use) • Allow adequate contact time • For stubborn deposits use an abrasive cleaning pad • Rinse thoroughly using clean, hot water and allow to air dry
Floors	**Daily**	• Place warning signs at the extremes of the work area • Prepare a solution of hot water and cleaner/degreaser in a mop bucket • Apply solution to the floor using a clean mop • Rinse the floor using clean, hot water with a clean mop • Allow to air dry before removing warning signs
Canopies, ventilation ducting and pipe work	**Spot clean as required, full clean monthly**	• Assess work area for the use of appropriate access equipment (ladders, extension poles) • Place warning signs at the extremes of the work area • Remove any build ups of dust from high levels using a cobweb duster and wash down using damp cloth soaked in warm water • Prepare a solution of hot water and cleaner/degreaser in a bucket or bowl • Clean all surfaces with solution using a clean

		cloth • Allow all areas to air dry before removing warning signs
Walls and paintwork	**Spot clean as required, full clean monthly**	• Assess work area for the use of appropriate access equipment (ladders, extension poles) • Place warning signs at the extremes of the work area • Remove all items from walls and protect all electrical sockets and other fittings • Remove any build ups of dust from high levels using a cobweb duster and wash down using damp cloth soaked in warm water • Prepare a solution of hot water and cleaner/degreaser in a bucket or bowl • Clean all surfaces with solution using a clean cloth making sure you clean from bottom to top • Rinse all surfaces with clean, hot water making sure you do so from top to bottom • Allow all areas to air dry before removing warning Signs
Drains and gullies	**Weekly**	• Place warning signs at extremes of work area • Remove all drain/gully covers from areas to be cleaned • Remove all excess debris and place in waste bin • Prepare a solution of hot water and cleaner/sanitizer in a bucket or bowl • Clean all surfaces and covers with solution using a clean cloth • Replace all covers and allow to air dry before removing warning signs.

C. Monitoring Standards

As we mentioned at the start of this section, hygiene standards throughout the kitchen should be maintained at all times. Commercial kitchens are subject to regular inspections by Environmental

Health Officers, who, in addition to checking that kitchen operators are meeting their legal obligations, will rigorously check the effectiveness of the cleaning regime.

Therefore, it is a good idea to adopt a monitoring programme that checks the levels of cleanliness within the kitchen against an agreed standard. We have already identified that certain items need to be cleaned periodically to prevent the build-up of dirt and grease and these should also be monitored separately upon completion as part of the overall planned monitoring programme.

- **Cleaning Checklists**

These can be produced to cover individual areas, items, tasks etc. and usually take the form of a table which allows the inspector to decide whether or not the item is satisfactory or not. It should also allow the inspector to make comments and set deadlines for improvement or compliance. Finally, it should also allow for the inspector to check progress at subsequent visits. For example, the form could look something like this:

Table 3.2 Cleaning Checklists

Task/Item	Satisfactory	Details	Action Required
Floors	**No**	Build-up of dirt around edges of floor	Floor requires machine Scrubbing
Walls	**No**	Finger marks on tiles above worktops	Remove immediately
Appliance (outside surface)	**No**	Grease marks on side of main oven	Pull out oven and clean all exterior surfaces
Appliances (inside)	**No**	Build-up of burnt deposits on oven walls and base	Thoroughly clean using oven cleaner as per agreed procedures.

Inspected by:		
Date of Inspection:		
Date of Re-Inspection:		

All companies are different and, as such, there are no hard and fast rules governing the way in which work should be monitored. Suffice to say that as long as the monitoring checklist

covers all of the activities undertaken and is considered against a set of agreed cleaning standards, this should do the trick… but only if action is taken on the findings, quickly and efficiently.

Cleaning – General Rules

Given the variety of equipment and surfaces within the kitchen, it is not feasible to discuss the detailed cleaning methods for each task. However, there are a number of general rules which can be applied to all items and surfaces.

The degree to which these rules are followed will depend on the frequency of the clean ie daily clean or a deep monthly clean. Although the following list may seem lengthy; failure to follow these rules, at least at the monthly deep clean, could result in pest infestation and food poisoning.

You will find a 'clean as you go' policy will make best use of effort and yield the highest standard of hygiene.

❖ General Rules

- For deep clean, work in the direction from the ceiling to the floor.
- Clean from clean to dirty e.g. for preparation table, work from the top surface to the floor.
- Dismantle equipment as far as possible e.g. remove doors, trays/shelves, gas rings, cooker knobs, filters, mixing paddles, etc.
- Be aware of legislative requirements, such as age limits for handling meat slicers.
- Drain items such as deep fat fryers, ice-cream makers etc.
- If possible, pull out large items such as ovens and refrigerators and clean behind and under these items.
- Look for signs of infestation such as droppings and nests.
- Remove gross debris by hand, e.g. by brushing.
- Check that all electrical equipment functions prior to and after cleaning.
- Ensure that all electrical equipment is isolated during cleaning.
- Use products in accordance with manufacturers' directions.
- Take care with blades and sharp edges.
- If necessary, wear appropriate personal protective equipment.

- Use the correct dilution of the product to aid cleaning/achieve required sanitation.
- Ensure that sanitizer is in contact with surface for the required period to ensure sanitation standards. Typically this is 5 minutes; from 30 seconds for cleaned surfaces up to 15 minutes for a soak.
- Soak heavily soiled items to loosen dirt and aid cleaning.
- Pay particular attention to corners, ledges, rims, wheels, runners etc.
- Ensure that hidden surfaces, such as under preparation tables, oven doors and the seals of refrigerators and freezers are not overlooked and are cleaned/ sanitised
- Ensure that pilot lights, refrigerators etc. are re-lit/switched on after cleaning.
- Report and repair/replace damaged items/ surfaces.

As we have seen cleaning in kitchens needs to be approached in a way that not only ensures the highest standards of cleanliness but also minimises the risk of spreading harmful bacteria.

We now know that to do this you will need to thoroughly examine all of the processes undertaken within the kitchen environment and carefully consider how they could contribute to the spread of infection.

Self-Check -3	Written Test

Directions: Answer all the questions listed below

1. What are the hygiene procedures?
2. How do you identify and prevent hygiene risks?

Choose the correct answer of the following

1. What is a benefit of practicing good personal hygiene?

A. Improved self-esteem
B. Better health
C. Others will have a better perception of you
D. All of the answers are correct.

2. Which of the following is a true statement regarding good personal hygiene?

A. Maintaining good personal hygiene has personal benefits.
B. Maintaining good personal hygiene has social benefits.
C. Maintaining good personal hygiene is important.
D. All of the answers are correct.

UNIT FOUR	Prevent Food and Other Items from Any Cross-Contamination

Instruction sheet

This learning guide is describes knowledge, skills and attitude required for food sanitation and safety in a commercial kitchen or catering operation.

- Identifying Food borne illness, danger zone and potentially hazardous foods (PHFs)
- Maintaining clean clothes, bandages, dressings and wearing PPE
- Avoiding Bad Habits

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Identify Food borne illness, danger zone and potentially hazardous foods (PHFs)
- Maintain clean clothes, bandages, dressings and wearing PPE
- Avoid Bad Habits

4.1 Identifying Food borne illness, Danger zone and Potentially Hazardous Foods (PHFs)

4.1.1 Food Borne Illness

Foodborne illness, also called food poisoning, is an illness acquired from eating or drinking contaminated food or water.

- When food is contaminated by bacteria, viruses, parasites, or chemicals it can make you sick
- For each reported case of foodborne illness, it's estimated that hundreds of additional cases go unreported in the community each year

Most foodborne illnesses are acute, meaning they happen suddenly and last a short time, and most people recover on their own without treatment. Rarely, foodborne illnesses may lead to more serious complications.

Causes of foodborne illnesses

The majority of foodborne illnesses are caused by harmful bacteria and viruses.2 Some parasites and chemicals also cause foodborne illnesses.

- **Bacteria**

Bacteria are tiny organisms that can cause infections of the GI tract. Not all bacteria are harmful to humans.

Some harmful bacteria may already be present in foods when they are purchased. Raw foods including meat, poultry, fish and shellfish, eggs, unpasteurized milk and dairy products, and fresh produce often contain bacteria that cause foodborne illnesses. Bacteria can contaminate food—making it harmful to eat—at any time during growth, harvesting or slaughter, processing, storage, and shipping.

Foods may also be contaminated with bacteria during food preparation in a restaurant or home kitchen. If food preparers do not thoroughly wash their hands, kitchen utensils, cutting boards, and other kitchen surfaces that come into contact with raw foods, cross-contamination—the spread of bacteria from contaminated food to uncontaminated food—may occur.

If hot food is not kept hot enough or cold food is not kept cold enough, bacteria may multiply. Bacteria multiply quickly when the temperature of food is between 40 and 140

degrees. Cold food should be kept below 40 degrees and hot food should be kept above 140 degrees. Bacteria multiply more slowly when food is refrigerated, and freezing food can further slow or even stop. The spread of bacteria However, bacteria in refrigerated or frozen foods become active again when food is brought to room temperature. Thoroughly cooking food kills bacteria.

Many types of bacteria cause foodborne illnesses. Examples include

• ***Salmonella,*** a bacterium found in many foods, including raw and undercooked meat, poultry, dairy products, and seafood. Salmonella may also be present on egg shells and inside eggs.

• **Campylobacter jejuni (C. jejuni),** found in raw or undercooked chicken and unpasteurized milk.

• **Shigella**, a bacterium spread from person to person. These bacteria are present in the stools of people who are infected. If people who are infected do not wash their hands thoroughly after using the bathroom, they can contaminate food that they handle or prepare. Water contaminated with infected stools can also contaminate produce in the field.

• **Escherichia coli (E. coli)**, which includes several different strains, only a few of which cause illness in humans. E. coli O157:H7 is the strain that causes the most severe illness. Common sources of E. coli include raw or undercooked hamburger, unpasteurized fruit juices and milk, and fresh produce.

Factors affecting bacteria growth

Bacteria need a combination of factors to grow:

1. Food source high in protein
2. Acidity (pH)
3. Time
4. Temperature
5. Oxygen
6. Moisture (available water)

1. Food source high in protein

Pathogenic bacteria and spoilage bacteria grow best in high protein foods such as meat, seafood and dairy

2. Acidity (pH)

- Acid and base concentrations are measured on a pH scale that ranges from 0 (most acidic) to 14 (most basic)
- Pathogenic bacteria survive best in a neutral environment.
- Tap water has a pH of 7 (neutral), bleach has a pH of 13 (alkaline) and lemon has a pH of 3 (acidic)

3. Time

- Leaving food in the "danger zone" (4°C to 60°C) for more than two hours may be long enough for pathogenic bacteria to multiply and cause food poisoning
- By reducing the time food is kept in the danger zone, the amount of bacterial growth is limited

4. Temperature

- Most bacteria grow best in the temperature danger zone
- Temperatures below 4°C will not kill pathogenic bacteria but will slow down their growth
- At temperatures above 60°C, pathogenic bacteria will not grow.
- Cooking food to appropriate final internal cooking temperatures is the only way to ensure pathogenic bacteria are destroyed (refer to page 46 for cooking temperatures)

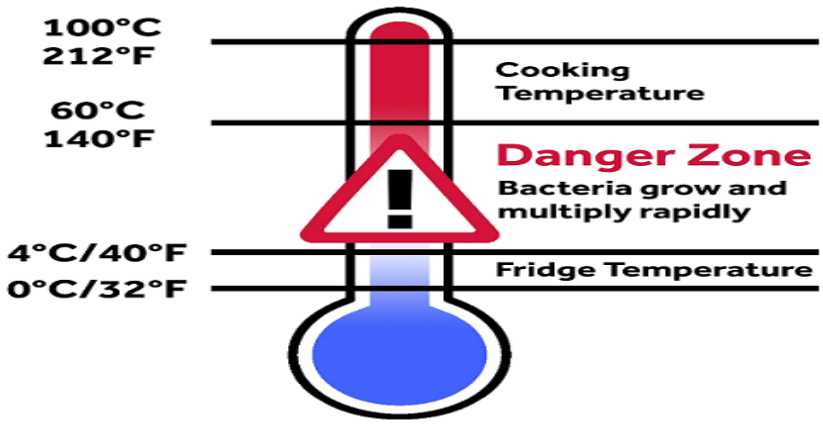


Figure 4.1 thermostat

5. Oxygen

- Most pathogenic bacteria can only grow where there is oxygen present while some can only grow where there is no oxygen

- For example, the pathogenic bacteria, Clostridium botulinum can grow in canned foods and in flavoured oils where there is no oxygen

6. Moisture (available water)

- Pathogenic bacteria need a water supply to survive
- The amount of water in food can be reduced by processes such as smoking, drying or adding salt or sugar

These six factors influence the growth of pathogenic bacteria. By sufficiently changing or eliminating one of the factors, bacterial growth and the risk of foodborne illness can be prevented. Time and temperature are the easiest factors for food handlers to control.

- **Viruses**

Viruses are tiny capsules, much smaller than bacteria that contain genetic material.

Viruses cause infections that can lead to sickness. People can pass viruses to each other. Viruses are present in the stool or vomit of people who are infected.

People who are infected with a virus may contaminate food and drinks, especially if they do not wash their hands thoroughly after using the bathroom.

Common sources of foodborne viruses include

- Food prepared by a person infected with a virus
- Shellfish from contaminated water
- Produce irrigated with contaminated water

Common foodborne viruses include

- Nor virus, which causes inflammation of the stomach and intestines
- Hepatitis A, which causes inflammation of the liver

Parasites

Parasites are tiny organisms that live inside another organism. In developed countries such as the United States, parasitic infections are relatively rare.

Cryptosporidium parvum and Giardia intestinalis are parasites that are spread through water contaminated with the stools of people or animals that are infected. Foods that come into

contact with contaminated water during growth or preparation can become contaminated with these parasites. Food preparers who are infected with these parasites can also contaminate foods if they do not thoroughly wash their hands after using the bathroom and before handling food.

Trichinella spiralis is a type of roundworm parasite. People may be infected with this parasite by consuming raw or undercooked pork or wild game.

Chemicals

Harmful chemicals that cause illness may contaminate foods such as

- Fish or shellfish, which may feed on algae that produce toxins, leading to high concentrations of toxins in their bodies. Some types of fish, including tuna and mahi mahi, may be contaminated with bacteria that produce toxins if the fish are not properly refrigerated before they are cooked or served.
- Certain types of wild mushrooms.
- Unwashed fruits and vegetables that contain high concentrations of pesticides.

Who gets foodborne illnesses?

Anyone can get a foodborne illness. However, some people are more likely to develop foodborne illnesses than others, including

- Infants and children
- Pregnant women and their foetuses
- Older adults
- People with weak immune systems

These groups also have a greater risk of developing severe symptoms or complications of foodborne illnesses.

A. Symptoms of foodborne illnesses

Symptoms of foodborne illnesses depend on the cause. Common symptoms of many foodborne illnesses include.

- vomiting
- Diarrhoea or bloody diarrheal

- Abdominal pain
- Fever
- chills



Figure 4.2 symptoms of foodborne illnesses

Symptoms can range from mild to serious and can last from a few hours to several days. *botulinum* and some *chemicals* affect the nervous system, causing symptoms such as

- Headache
- Tingling or numbness of the skin
- blurred vision
- Weakness
- Dizziness
- Paralysis

B. Foodborne illnesses prevention

Foodborne illnesses can be prevented by properly ***storing***, ***cooking***, ***cleaning***, and ***handling foods.***

•***Raw and cooked perishable foods***— foods that can spoil—should be refrigerated or frozen promptly. If perishable foods stand at room temperature for more than 2 hours, they may not be safe to eat. Refrigerators should be set at 40 degrees or lower and freezers should be set at 0 degrees.

•***Foods should be cooked long enough*** and at a high enough temperature to kill the harmful bacteria that cause illnesses. A meat thermometer should be used to ensure foods are cooked to the appropriate internal temperature:

- ✓ 145 degrees for roasts, steaks, and chops of beef, veal, pork, and lamb, followed by 3 minutes of rest time after the meat is removed from the heat source
- ✓ 160 degrees for ground beef, veal, pork, and lamb
- ✓ 165 degrees for poultry

- ***Cold foods*** should be kept cold and hot foods should be kept hot.
- ***Fruits and vegetables*** should be washed under running water just before eating, cutting, or cooking. A produce brush can be used under running water to clean fruits and vegetables with firm skin.
- ***avoid cross-contamination /raw meat, poultry, seafood***, and their juices should be kept away from other foods.
- ***People should wash their hands*** for at least 20 seconds with warm, soapy water before and after handling raw meat, poultry, fish, shellfish, produce, or eggs. People should also wash their hands after using the bathroom, changing diapers, or touching animals.
- ***Utensils and surfaces should be washed*** with hot, soapy water before and after they are used to prepare food. Diluted bleach—1 teaspoon of bleach to 1 quart of hot water—can also be used to sanitize utensils and surfaces.

4.1.2 Danger Zone

Temperature

Danger zone is between 5°C and 60°C, when it is easiest for harmful bacteria to grow in food

Minimise the time that food spends at these temperatures in order to keep food safe

- Refrigerated food needs to be kept at 5°C or below
- Hot food needs to be kept at 60°C or above

4-hour/2-hour rule

If a refrigerated food (e.g. dairy, cut fruit, sandwiches, salad) or a hot food (eg casserole, pie, lasagne, and meatballs) has been in the temperature danger zone for a total time of:

✓ **0 to 2 hours**
Use immediately, or keep at or below 5°C, or at or above 60°C

✓ **2 to 4 hours**
Use immediately

✓ **More than 4 hours**
Throw away

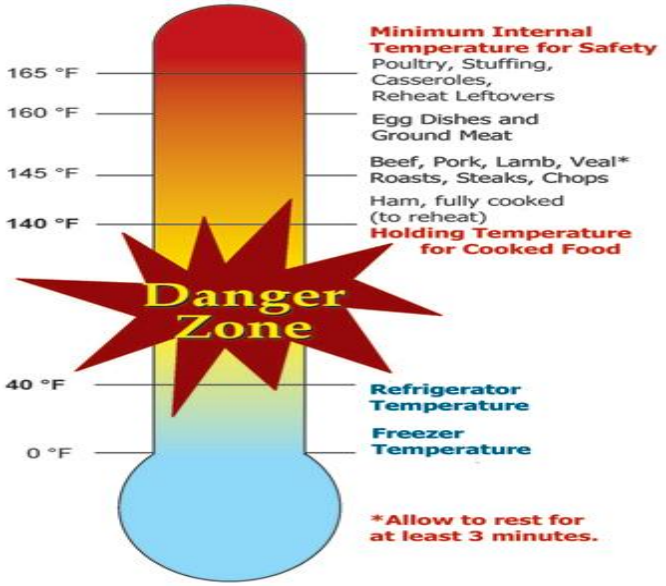


Figure 4.3 Danger zone

4.1.3 Potentially Hazardous Foods (PHFs)

A potentially hazardous food (PHF) is a food that is capable of supporting rapid growth of infectious or toxigenic microorganisms. PHFs can spoil easily and could cause foodborne illness if not handled properly.

Potentially hazardous food is any food or food ingredient, whether natural or synthetic, that is capable of supporting the rapid growth of microorganisms. A food is potentially hazardous if it is: of animal origin, e.g., meat, poultry, milk, fish, shellfish, crabs, and lobster.



Figure 4.4 Potentially Hazardous Foods

4.2 Maintaining clean clothes, bandages, dressings and wearing PPE

Cross-contamination is one of the most common causes of food poisoning. It happens when harmful bacteria are spread on food from other food, surfaces, hands or equipment. Contamination of food can also be physical or chemical.

1. Separation

Identification of separate work areas, surfaces and equipment for raw and ready-to-eat food

- Use of separate complex equipment, such as vacuum-packing machines, slicers, and mincers for raw and ready-to-eat food at all times.
- If possible, use separate fridges for raw and ready-to-eat food. If not, always store raw food below ready-to-eat food.
- Defrosting raw meat should be kept covered at the bottom of the fridge below ready to eat foods.

2. Cleaning Schedule

- Your cleaning schedule should be sufficient to recognise what needs to be cleaned to prevent cross contamination from surfaces and equipment. It should address how to effectively clean and disinfect by stating the cleaning product, cloth to use, method and frequency of cleaning.
- Cloths should either be disposable or reusable but washed on a hot cycle over 82°C and separate cloths used for separate areas i.e. raw and ready to eat preparation areas.
- Refer to fact sheet 'Cleaning and Disinfection'.

3. Personal Hygiene

- Hand washing should be carried out using a recognised technique. Anti-bacterial gels must not be used instead of thorough hand washing. Hot water, soap and disposable hand towels should be available at all hand wash sinks.
- Wash your hands before preparing food and after touching raw food.
- All staff should wear clean clothes when working with food which should be changed after handling raw food and before handling ready to eat food.

4. Chemical Contamination

- Clearly label cleaning chemicals and store them away from food.

- All food should be protected during cleaning or put away, the task should not be undertaken when the kitchen is operational.

5. Physical Contamination

- A pest's control policy should be in place, either with a pest control company or by introducing your own checks.
- Food handlers should have hair tied back, and should not wear jewellery or clothing which could fall out and contaminate food.
- Repair or replace equipment and utensils which are damaged and a no glass policy would be encouraged.

6. Food Safety Management

- Make sure staffs are aware they have a duty to inform you if they suffer from diarrhoea or vomiting, and implement a 48 hour symptom-free policy.
- Staff responsible for preparation of food should have adequate training i.e. a minimum of Level 2 in Food Safety in Catering. Staff should also be trained in your food safety management system e.g. Your SFBB pack on cross contamination (the red section.)

Potentially hazardous foods

- Foods that are able to support the growth of pathogenic bacteria and the production of toxins are considered hazardous
- However, any food can be the cause of food poisoning if it is not handled safely and becomes contaminated
- Foods that are considered most hazardous are those with a high protein and available water (moisture) content. Examples of these foods are:
    - ✓ Poultry
    - ✓ Beef/veal
    - ✓ Pork/ham
    - ✓ Fish/seafood
    - ✓ Egg dishes
    - ✓ Cooked rice
    - ✓ Milk and milk products

4.3 Avoiding Bad Habit

- Biting (one's) nails. The first bad habit is biting your nails. ...
- Pick at (one's) hair. The next one, the next bad habit is to pick at your hair. ...
- Smoking. The next bad habit is smoking. ...
- Drink too much. The next bad habit is "drinking too much." ...
- Wasting time. ...
- Snacking. ...
- Watch too much TV. ...
- Overspending.



Figure 4.5 Bad habits

Self-Check -4	Written Test

Directions: Choose the Correct Answer Of The Following Questions

1. The agent that causes the most foodborne illness
   A. Virus
   B. Parasites
   C. Bacteria
   D. Marine algal toxins
   E. All.
2. Foodborne illness may be considered an outbreak:
   A. When two or more cases with similar symptoms are identified
   B. If a person makes the claim that they know where they became ill
   C. When two or more persons experience similar illness and a common source of illness is identified
   D. If cases of illness are associated in time and place
3. What is the "danger zone" range of temperature in food handling"
   A. 50 - 100 deg F
   B. 80 - 120 deg F
   C. 40 - 140 deg F
   D. 100 - 212 deg F
4. Most people will not experience a food-borne illness in their lifetime.
   A. True
   B. False
5. the most common symptom of food-borne illness is:
   A. kidney failure
   B. diarrhea
   C. skin rash
   D. headache

UNIT FIVE	Clean and Sanitize Premise and Equipment

Instruction sheet

This learning guide is describes knowledge, skills and attitude required for food sanitation and safety in a commercial kitchen or catering operation.

- cleaning agents and sanitizing chemicals
- Kitchen Cleaning and Sanitizing
- Storing/stacking cleaned equipment and utensils

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Select cleaning agents and sanitizing chemicals
- Maintain Kitchen Cleaning and Sanitizing
- Store/stack cleaned equipment and utensils

5.1 Cleaning Agents and Sanitizing Chemicals

Introduction

Dirt, food waste and other debris can be a potential source of microbiological and physical hazards and will also attract pests that can contaminate the production environment. Effective cleaning on a regular basis is essential to remove dirt and debris from the food premises. Effective disinfection of clean food contact surfaces is necessary to reduce bacteria to an acceptable level. Poorly executed cleaning programmes and careless storage and use of cleaning materials may give rise to chemical hazards. Procedures are needed to prevent or minimise the risk of such hazards causing illness or injury to consumers.

Examples demonstrating the importance of cleaning:

Problem	Effect	Possible outcome
Poor cleaning within the working environment	Food is contaminated by dirt from the working environment such as dust, rust flakes, lubricating oil and food processing residues	Increases the chances of cross contamination of food products by food poisoning micro-organisms
Food premises is not cleaned properly	Organic material such as meat, blood and other edible and Inedible tissues can become contaminated. Moisture can Accumulate	Encourages growth of microorganisms such as Salmonella
Poor cleaning	Pests are attracted to organic Material	Pest species, for example, flies, beetles, rodents, are carriers of micro-organisms that can cause food poisoning
Careless use of cleaning Agents	Chemicals spill on food	Lead to chemical contamination of food
Ineffective and poor Cleaning	Cleaning implements are themselves contaminated during the cleaning process	Lead to cross contamination when implements are next used

5.2. Kitchen Cleaning and Sanitizing

'Clean' means free from dirt, marking, or soiling. Visibly clean surfaces look, smell and feel clean. Dirt and soil can be organic, for example, fat, blood; or inorganic, for example rust, lime scale.

Surfaces in contact with food should be:

- ❖ Physically clean – all visible dirt / soil / residues have been removed. Best assessed using white moist wipes.
- ❖ Chemically clean – all cleaning material residues have been removed.
- ❖ Microbiologically clean – the number of micro-organisms has been reduced to a level acceptable for human health. This usually involves the use of disinfectants.

5.3. Storing/stacking cleaned Equipment and Utensils

Effective cleaning depends on the removal of gross physical contamination followed by the correct use of chemical agents. This means using the right chemicals, applying them at the right concentration and application rate using the right equipment, and allowing them time to work.

Cleaning chemicals

- ***Detergents*** – chemicals used to dissolve grease and remove dirt and soil. Appropriate acidic or alkaline products can also be used.
- ***Disinfectants*** – chemicals that reduce bacteria to an acceptable level and may kill them. Products may be called germicides, bactericides or biocides. Surfaces need to be clean of grease, dirt and soil before a disinfectant is used - there is little point in disinfecting a dirty Surface. As well as the main biocide components, disinfectant formulations may include:
  - ✓ surfactants to improve the wetting properties of the product and to control foam production
  - ✓ sequester ants to improve suspension of any remaining inorganic soils from the surfaces, to prevent scale forming on contact surfaces and to improve the biocidal activity of the disinfectant
  - ✓ stabilisers to prevent disassociation of the disinfectant when used
  - ✓ alcohols to decrease drying time by evaporating off the surface and leaving it dry

- ***Sanitizers –*** two-in-one products that act as both a detergent and a disinfectant. Do not attempt to mix cleaning chemicals yourself.

Dilution rate – is the quantity of water to use with a concentrated chemical before it can be used. Follow the label instructions for the specific situation.

Contact time – is the time that the cleaning chemical needs to be left on the surface to work effectively and manufacturer's instructions should always be followed. Vertical surfaces can present problems when applying the correct contact time. Substances such as foams and gels may be used in the formulation to extend contact time.

Deep cleaning – periodically (a weekly basis is highly recommended) equipment and fixtures that are difficult to access, for example, extractor fans, should be stripped down and thoroughly cleaned to remove built up dirt / debris. This is also an opportunity for maintenance work to be carried out

Provide instructions to make sure that disinfectant use is effective by avoiding common situations such as:

- ❖ lack of cleaning before disinfection
- ❖ use of incorrect disinfectants
- ❖ incorrect use of disinfectants
- ❖ biofilm build up, which prevents penetration by chemical disinfectants
- ❖ poor rinsing or non-rinsing of disinfectants

Ensure the following surfaces and equipment at least is disinfected:

- ❖ food contact surfaces and equipment
- ❖ hand contact surfaces
- ❖ cleaning equipment and materials

Verification – carry out a daily pre-operational hygiene inspection of food handling areas to check that cleaning has been carried out properly and thoroughly before work starts. Pay particular attention to equipment and work surfaces that come into contact with food material, or are known to be difficult to clean or are easily contaminated.

Inspect other areas for evidence of build-up of dirt / debris and other soiling, as well as other issues that may lead to cleaning problems, including damaged surfaces, poor maintenance, restricted access, poor storage or signs of pest presence.

Check periodically that the cleaning schedule and instructions are being followed by staff and / or contractors, that cleaning chemicals, equipment and procedures are effective particularly in areas known to present problems and that corrective actions are taken if necessary.

Frequency of verification – other than the daily pre-op inspection, this will depend on the area / item and the likelihood of a problem being found. Once a month may be sufficient for management checks on experienced staff /contractors that are following long-standing cleaning and disinfection procedures in easy-to-clean premises more frequent checks may be needed if there is new staff or procedures.

Microbiological testing – microbiological or rapid hygiene monitoring of cleaned surfaces will help assess the effectiveness of cleaning and disinfection.

Records – keep an accurate, dated account (for example, on a cleaning checklist that cleaners can refer to and use) of the result of each periodic verification check, notes about areas requiring special attention, and of any corrective action taken.

Corrective action – take action when failures of the company's cleaning procedures are identified to ensure that control is restored.

Such action may include:

- dealing with any product that has been contaminated
- establishing the underlying cause and what needs to be done to prevent similar incidents in the future
- ending the service contract
- amending the cleaning schedule and validating its effectiveness
- improving staff training

Table 5.1 Cleaning schedule example

CLEANING SCHEDULE			Issued by [Name] [Date]		
CLEANING OF:	Method, Chemical, Time	Equipment	PPE	Frequency	Notes
Kitchen / Area [A]	XXXXX + disinfection			Daily	
Kitchen Machine [1]	YYYY			D +breaks	
Kitchen hood	ZZZZ			D	+ deep Clean

Table 5.2 Cleaning checklist example

CLEANING CHECKLIST									Checked by [Name] [Date]	
AREA / cleaned	Initialled by Cleaner Equipment								Frequency	Notes
	M	**T**	**W**	**T**	**F**	**S**	**S**	**remark**		
Kitchen / Area [A]									Daily	
Kitchen Machine									D +breaks	
Kitchen Hood									D	+ deep Clean

Self-Check -5	WRITTEN TEST

Directions: Answer all the questions listed below

1. What are the principles of cleaning?
2. What are the 3 types of cleaning?
3. What are the 4 basic steps in cleaning?
4. …….. Is means free from dirt, marking, or soiling?

UNIT SIX	Reduce Negative Environmental Impacts

Instruction sheet

This learning guide is describes knowledge, skills and attitude required for food sanitation and safety in a commercial kitchen or catering operation.

- Conserving resources
- Segregating and Disposing all wastes using color coded bins

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Conserve Resources Efficiently
- Segregate and Dispose all wastes using color coded bins

6.1 Conserving resources

6.1.1 Restaurants and Hotel Kitchens

The preparation of meals, snacks and drinks is a core tourism service undertaken in most types of accommodations, and in dedicated restaurants and bars. This chapter covers the main measures available to minimise environmental impacts attributable, directly and indirectly, to operations in restaurant and hotel kitchens. Many of these techniques are also applicable to smaller food and drink services such a bars or breakfast preparation in small bed and breakfast accommodations.

Water and energy efficiency measures have therefore traditionally been a low priority for kitchen managers. Operational optimization is usually focussed on delivering service quality (Carbon Trust, 2011). Consequently, as little as 40 % of the energy consumed in kitchens goes into useful processes such as cooking, food storage and washing: much of the remainder is lost as waste heat (Carbon Trust, 2007). Therefore, there is considerable scope for improvement in the energy efficiency of kitchens serving standalone restaurants or hotel guests. Figure 8.24 shows that, excluding processes attributable to the dining area, the main energy consuming processes in kitchens are:

- cooking
- water heating
- cooling and ventilation
- refrigeration
- Lighting.

Catering establishments prioritise food quality, and operatives often work under high pressure. Water and energy efficiency measures have therefore traditionally been a low priority for such establishments. Few catering supervisors have any input into equipment selection, especially in terms of energy and water efficiency, whilst the behaviour of catering staff is largely determined by a need to deliver quality and service using the equipment available

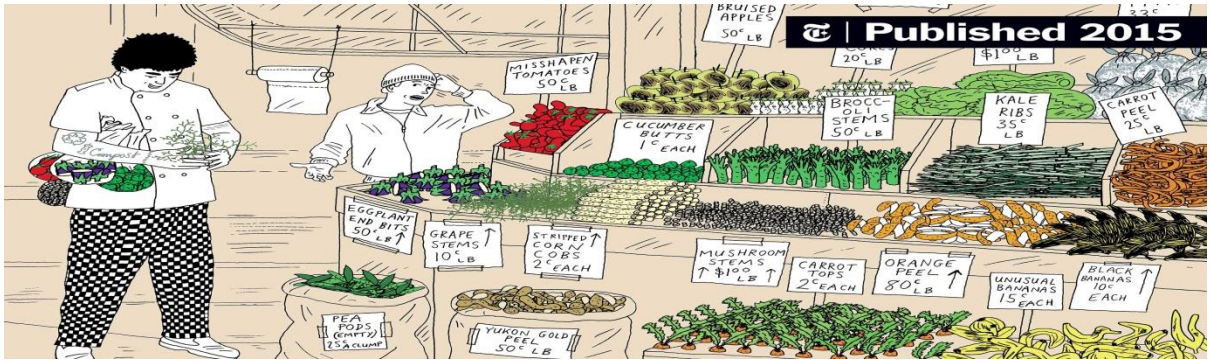


Figure 6.1 vegetable market

Upstream environmental impacts arising during the production and transport of ingredients used to prepare meals in restaurant and accommodation kitchens are greater than the environmental impacts arising directly from kitchen processes.

Waste management can make a significant contribution to the lifecycle environmental burden of food value chains. Specifically, disposal of food in landfill leads to significant GHG emissions and other impacts such as land occupation and leachate. On average in UK restaurants, 0.48 kg of food waste is generated per diner (SRA, 2010). In addition, food waste contributes to unnecessary food production impacts

6.1.2 Water consumption

For relatively water-efficient hotels with small restaurants that serve breakfast for all guests plus cover meals to conference and à-la-carte guests numbering no more than half the number of overnight guests, water consumption in bar and restaurant areas equates to approximately 15 % of total water consumption, or just over 20 L/gn (Scandic Hotels, 2012). This corresponds with modelled water consumption for hotels presented

6.1.3 Energy consumption

According to ÅF-Energikonsult AB (2001), kitchens represent 25% of total hotel energy consumption, through demand for cooking, appliances, refrigeration and ventilation. Bohdanowicz and Martinac (2007) refer to average energy consumption of between 4 and 6 kWh per cover meal served in hotels. However, this value varies considerably depending on the type of meal served. ÅF-Energikonsult AB (2001) estimate average energy consumption in hotel kitchens of between 1 and 2 kWh per meal. Best practice to minimise energy consumption in kitchens, with a focus on cooking, ventilation and refrigeration

6.2 Segregating and Disposing all Wastes Using colour Coded Bins

6.2.1 Waste Segregation

A survey of organic waste generation, including information on sources (e.g. spoilage of stored food, preparation, and plate returns), should be used to inform appropriate avoidance actions. Portion sizing may be reduced without impacting on customer satisfaction. The quantity and type of food returning on customers' plates can be used as a guide for portion sizing and menu planning. Menu planning to avoid waste should be performed in combination with green procurement (section 8.1). One pub-restaurant in Tipperary, Ireland, reduced the amount of food waste generated by over one-third through reducing portion sizes (Irish EPA, 2008). Boxes or bags can be offered to diners to take home food servings that they cannot eat.

Separation of non-organic waste fractions is also important in kitchens,



Figure 6.2 Disposing Area

Food preparation accounts for the majority of food waste. Organic waste bins should be conveniently positioned for easy access at all stages of food preparation, plate return and washing. Biodegradable bags made from, e.g. corn starch can be used to collect food waste where necessary, as this breakdown during composting and anaerobic digestion. The sequence below presents an example of organic waste recovery throughout kitchen operations, from food preparation to plate washing.

1. Food preparation

Bins are placed next to chefs during food preparation to separate offcuts and peelings, etc., at source.




2. Plate return

Food scrapings from returned plates separated from other waste (rather than placed in mixed bins, or the sewer via a macerator).




3. Prewashing

Food residues are rinsed off crockery and utensils during prewashing and captured in a sieve (also reduces drain blockages).



Separated organic waste can then be placed in large separate waste bins for collection to centralised or decentralised anaerobic digestion plants, or alternatively if other options are not available, for centralised or on-site composting (see below). Food close to its use-by date may be used for staff meals, given to staff to take home, or donated to charities. Food past its use-by date should be placed in organic waste recycling bins for separate collection. Waste bins containing organic waste may be chilled, especially in urban locations, to prevent odour and vermin problems (e.g. Scandic Berlin, 2011).

6.2.2 Achieved Environmental Benefit

Achievable water savings are referred to in Table 6.1. Installing efficient PRSVs and dishwashers can achieve the greatest annual water savings. Replacing boiler steamers with chemical dosing in dishwashers is based on water consumption, so that chemical consumption is proportionate to water consumption. Chemical-saving systems that use an extra prewash cycle and deionised water for rinsing can reduce chemical dosing by up to 80 %, equivalent to 400 litres per year for a water-efficient machine.

Table 6.1 Environmental Benefit

Measure	Achievable reduction in specific consumption	Typical SME annual saving
Efficient PRSVs	67 % (from 15 to 5 L/min)	200 m^3
Efficient dishwasher	50 % (from 4 to 2 L/rack)	150 m^3
Low flow sink taps	40 % (from 20 to 12 L/min)	50 m^3
Efficient steam cookers	92 % (from 100 to 8 L/ hour)	200 m^3
Waterless thawing	100 % (from 10 hrs per week under running water)	10 m^3
Source: Smith et al. (2009); Alliance for Water Efficiency (2009; 2011); Karas (2005).		

Self-Check -6	WRITTEN TEST

Directions: Answer All the Questions Listed Below

1. What are the benefits of waste segregation at source?
2. What is resource efficiency in waste management?
3. Why is it important to segregate and dispose waste properly?

UNIT SEVEN	Report Any Personal Health Issues

Instruction sheet

This learning guide is describes knowledge, skills and attitude required for food sanitation and safety in a commercial kitchen or catering operation.

- Reporting personal health issues that cause a hygiene risk
- Reporting incidents of food contamination

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Report on Health Issues in kitchen working area
- Report personal health issues that cause a hygiene risk
- Report for incidents of food contamination

7.1 Reporting personal health issues that cause a hygiene risk

If you're worried about something, it helps to speak up. Reporting your concerns means they can be addressed. Problems can be fixed. Accidents can be avoided. But how should you report your concerns, and who should you report them to? Let's look at ways to report health and safety issues.

The best health and safety management is proactive. It controls hazards and minimises risks. It gives people a safe place to work. It prevents harm from occurring. But what if you find a hazard that hasn't been controlled, if you feel you, or others might be at risk?

If you are worried about something, it helps to speak up. Reporting your concerns means they can be addressed. Problems can be fixed. Accidents can be avoided.

It's not possible to remove all risks completely. Sometimes, we have to react to problems. Reactive health and safety management deals with problems before they get out of hand. By reporting a problem, you can help get it sorted. That protects you, and others too!

7.1.1 Health and safety concerns at work

If you have a health and safety concern at work, don't stay silent. Your boss isn't a mind reader, they need your help to notice when there is a problem. As an employee, you have health and safety responsibilities. One of those responsibilities is to report dangers to health and safety.

Every employee shall inform his employer or any other employee of that employer with specific responsibility for the health and safety of his fellow employees—of any work situation which a person with the first-mentioned employee's training and instruction would reasonably consider represented a serious and immediate danger to health and safety; and of any matter which a person with the first-mentioned employee's training and instruction would reasonably consider represented a shortcoming in the employer's protection arrangements for health and safety

- **Report to your supervisor**

The first step you can take is to report to your supervisor. Let them know what you are worried about, and why. They should be able to show you the risk assessment, perhaps even involve you in improving it. If they feel that the work is safe, they should be able to explain the controls in place, and how are adequate to control the risks.

If you are still worried or feel that your supervisor hasn't taken your concerns seriously, report to your health and safety manager, or directly to your employer.

Employers also have health and safety responsibilities. They must make sure that your work can be carried out safely.

It shall be the duty of every employer to ensure, as far as is reasonably practicable, the health, safety and welfare at work of all his employees.

- **Submit a written report**

Many workplaces have a formal reporting system for health and safety concerns, near misses or dangerous situations. Even if yours doesn't, putting your concerns in writing can help make sure any issues get resolved.

If you spot a hazard or witness a near miss, you should submit a near miss report. Not every workplace has a formal system in place, but you can use this free near miss report template to get started. Near miss reporting has many benefits, the biggest being, it stops accidents before they happen!

Once you have submitted your report, you should expect to hear back on what action has been taken, and why. Not all risks need to be addressed right away, they are usually prioritised. Anything high risk should be dealt with as a matter of urgency.

- **Report to union or health and safety representative**

Some workers are represented by unions. If your employer recognises a trade union, safety representatives are appointed. A safety representative will be able to give you confidential help and advice with health and safety concerns or complaints.

Not every workplace has this, but it may be available to you in larger organisations or particular industries.

❖ **Report to the local authority governmental office**

If none of the above resolves the issue, you may want to report your concerns to an enforcing authority. If you think health and safety laws are being broken, putting you or others at risk of serious harm, you can report your concerns to the HSE (or the local authority).

Reporting concerns to the HSE can be done through an online form or via telephone. They will take your details but you can ask them not to disclose this to your employer if you don't want them to.

❖ **Health and safety concerns outside work**

Employers don't just need to protect their employees, but anyone who may be affected by their work. If you are worried or concerned about health and safety, you should report your concerns. It may save a life, or stop someone getting hurt.

❖ **Report to the business**

Your first step can be to report the health and safety issue or concern to the business involved. It might be obvious who this is, for example, if you are in their premises. It might also not be so obvious, for example, if some workers are working remotely and there are no signs or they don't wear a uniform.

The business should take any concerns seriously. They may advise you how and why the situation is safe, and the controls in place. Or they might need to take action to resolve any issues.

- ***Remember, this is for reporting health and safety concerns. If an accident has already happened***

➢ **Training**

As an employer, you must consider the health and safety training needs of your employees, including new recruits, young workers, part-timers and temporary or agency staff. You must also consider how you will train employees who do not have English as their first language.

➢ **The role of enforcement officers**

In most catering situations, local authority enforcement officers are responsible for enforcing health and safety law. Inspectors from HSE look after health and safety in catering facilities

in institutions such as hospitals, schools etc. The role of the enforcement officer is not just to enforce the law, but also to promote health and safety, give advice on the law and how to comply with it and advice on other sources of information

7.2 Reporting Incidents of Food Contamination

An incident is defined as:

‘Any event where, based on the information available, there are concerns about actual or suspected threats to the safety or quality of food and/or feed that could require intervention to protect consumers’ interests.’

Incidents involving contamination of food or animal feed in the processing, distribution retail and catering chains. These incidents may result in action to withdraw the food from sale and, in certain circumstances, to recall. Alerting the public not to consume potentially contaminated food

Hygiene Incident Report Form

In order to maintain due diligence in accordance with the Food Safety Act and Good Manufacturing Practices all hygiene contamination incidents must be initially recorded via the Hygiene Incident Report Form, and should be completed by the affected person/team.

Upon completion of this form it must be signed and returned to the Operations Manager.

Hygiene Incident Report Form

Department Affected:-……. **Name of employ:-……..**								
Area/Machine Affected……								
Shift:……	**Day or Night**							**Time of Incident:……...**
								Date of Incident:……
Type of incident: (Please tick appropriate box/s)								
Physical contamination:	Glass		Sharps		Insect/Pest		Other	
Chemical contamination:	Oil		Solvent		Grease		Other	
Biological contamination	Food		Body fluids		Jewellery		Other	

Overview of the Incident:……
……
……
……
……

Approved by ……

Sign ……

Self-Check -7	WRITTEN TEST

Directions: Answer all the questions listed below

1. What are some personal health issues likely to cause a hygiene risk?
2. How do you report hygiene risks in the workplace?
3. Who should you report health and safety issues to?

Choose the Following Correct Answer

1. Which one of these statements is true?

A. All types of bacteria cause food poisoning
B. Bacteria grow fast in warm conditions
C. All bacteria need air to survive
D. Freezers make food last longer and kills bacteria

2. Food contaminated with food poisoning bacteria would...

A.) Smell
B.) Change colour
C.) Look and smell normal
D.) Be slimy and sour

3. Which of the following is a high risk food?

A.) Tinned cream
B.) Bottled mayonnaise
C.) Raw chicken
D.) Chicken salad sandwich

Reference

- ÅF-Energikonsult AB, Chose: Energy Savings by Combined Heat Cooling and Power Plants (CHCP) in the Hotel Sector (final report), ÅF-Energikonsult AB, 2001, Stockholm.
- Bohdanowicz, P., Martinac, I., Determinants and benchmarking of resource consumption in hotels – Case study of Hilton International and Scandic in Europe, Energy and Buildings, Vol. 39 (2007), pp. 82 – 95.
- Carbon Trust, Cost effective efficiency savings in commercial kitchens, publication CTG040, Carbon Trust, 2011a, London UK.
- Scandic Hotels, personal communication January 2012.
- SRA, Too good to waste: restaurant food waste survey report (2010), SRA, 2010, London UK.
    - Professional cooking 6th and 7th edition

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