



## **COURSE GUIDE**

<b>Course Code</b>	<b>HCM 342</b>
<b>Course Title Sanitation</b>	<b>Current Issues in Food Safety and</b>
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## **TABLE OF CONTENTS**

		<b>PAGE</b>
1. Introduction		2
2. What you will learn in this course	2	
3. Course Aims		4
4. Course Objectives		4
5. Course Materials		7
6. Study Units		7
7. Assignment files		8
8. Course Assessment	8	
9. Summary		9

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## **INTRODUCTION**

HCM 342 – Current Issues in Food Safety and Sanitation is a second semester compulsory course for undergraduate students of B.Sc. Hotel & catering Management in the School of Management Sciences (SMS). It is a 2 credit unit course made up of three modules and 15 units all on current issues in food safety and sanitation.

This course guide tells you what the course HCM 342 is all about, the materials you will require and how to make the best use of the materials to ensure desirable successful outcome. The course guide also tells you how to make good use of your time, the test questions in the Tutor-Marked Assignment (TMA). There will be tutorial classes for students and full details concerning the tutorial classes will be conveyed to you at the appropriate time.

## **WHAT YOU WILL LEARN IN THIS COURSE**

By the time you are through with this course, you should be able to have a general idea of the different types of ownership that exist in the food service industry- the franchises, the chains and the independent or sole proprietorships, their advantages and disadvantages.

You will also learn about food safety and sanitation issues, how to achieve food safety through food safety training and education. The course also examines the food service operation model which involves menu development, procedures for effective buying, receiving, storage and preparation of food items. Your attention will be drawn to the importance of safety precaution in food handling.

This course also exposes you to different food hygiene problems, sources of food contamination and safety measures to be taken and the Food Hygiene (Amendment) Regulation 1990/1991.

This course also examines the different temperature control requirements of different food, a guide to careful management of food temperature and the role temperature plays in keeping food safe. You will also learn the causes of food poisoning, the control and prevention of food contamination and food poisoning.

This course also exposes you to the factors that are involved in designing a safe kitchen and the basic criteria involved in the selection of kitchen equipment, you will also learn the relative advantages of the various materials used in the kitchen interiors and equipment constructions. The most important concepts in cleaning and maintaining kitchen equipment are also included.

Students will also learn about the implications of unhygienic kitchen and also identify measures to prevent food contamination. The issue of pest control in and around the kitchen premises was also dealt with; students will be able to identify the most common pests found in homes and factories, the processes and the chemicals used in controlling them.

Health and safety measures that are necessary for new catering premises care and cleaning of the premises, equipments, materials and electrical equipments are also

contained in this course. You will also learn about the different facilities that are required for a catering or food service operation like ovens, cookers, fryers, etc, their source, their different components and their maintenance.

This course also exposes students to the different positions that exist in the food service operation and how employees are selected to fill these positions. You will also learn about the role of the Catering/Restaurant Manager in developing and implementing healthy catering policies.

Food waste control was also examined in this course. Students will be able to identify the different waste generators and also learn how to reduce food waste, recover and recycle waste products.

### **COURSE AIM**

The main purpose of this course HCM 342 is to acquaint student with the current issues in food safety and sanitation; how to set up and equip a food service facility, how to recruit and train staff to prepare and serve healthy and safe food to customers and the public at large, adopting very excellent and hygienic catering practices in a clean and germ-free environment.

This course will also give you detailed information, practical knowledge and critical thinking skills that will equip you to start up and successfully run a food service business.

### **COURSE OBJECTIVES**

Upon successful completion of this course, you should able to do the following:

#### **Module 1**

- Identify different types and classification of food service operation
- Define food safety and identify some food safety problems
- Identify preventive measures to guard against food borne diseases
- Discuss the functions of the menu and trends in menu content
- Develop procedures for the effective buying , receiving, storage and preparation of food items
- Outline the necessary safety precautions to be taken in the handling of food
- Identify food hygiene problems and symptoms of allergic reactions
- Identify and describe sources of food contamination and food borne illness
- Recite and implement the food hygiene (Amendment) 1990/1991
- Design a comprehensive temperature management programme
- Identify the kind of foods that have to be kept under temperature control
- Understand the role temperature plays in keeping food safe
- Identify the various disease causing microorganisms and how they are spread
- Identify poisonous vegetables that cause food poisoning and avoid them
- Develop procedures for controlling and preventing food contamination and food poisoning

- Illustrate the importance of food waste control as a system of cost control
- Identify the environmental impacts of food wastages
- Give specific guidelines in food waste recovery and recycling of waste products

## **Module 2**

- Outline the importance of kitchen safety
- Identify the factors involved in designing safe kitchens
- Understand kitchen safety tips
- Develop procedure for avoiding accidents in the kitchen
- Understand issues in food safety
- Identify the basic criteria involved in the selection of kitchen equipment
- Identify basic equipment found in the kitchen
- Compare and contrast the relative advantages of various materials used in the kitchen interiors and equipment constructions
- Identify the most important concepts in cleaning and maintaining kitchen equipment
- Design a comprehensive energy management program
- Explain the meaning of hygiene
- Understand the implication of food poisoning
- Know how to keep a hygienic kitchen
- Identify measures to prevent contamination
- State why personal hygiene is essential
- Describe how hygienic standards are achieved
- Know why catering premises must be kept clean
- Understand why those employed in the catering industry should acquire good hygienic habits
- Identify most common pests which are usually controlled
- Identify the process of controlling pests in homes and factories

## **Module 3**

- Understand the preventive measures to keep good health
- Safety precautions at home and in the work place
- Maintaining cleanliness in the kitchen and in the toilets
- Identify different pieces of major equipment in use
- Be familiar with the material each equipment is made of
- Explain the function and the cleaning process of the equipment
- Be familiar with the careers that exist in the food industry
- Identify the steps involved in filling the positions that exist in the food service operation (staffing)
- Develop guide lines on how to conduct a hiring interview
- Identify the role of catering manager /restaurant manager or supervisor in sanitation

- Know how to develop and enforce effective sanitation policies for their catering business
- Identify constraints on policy implementation and how to avoid them
- Illustrate the importance of food waste control as a system of cost control
- Identify the environmental impacts of food wastages
- Give specific guidelines on food waste recovery and recycling of waste products.

## **COURSE MATERIALS**

- The course guide
- Study unit
- Textbooks, research papers, journals and internet sources
- The assignment file (self assessment exercise)
- Tutor-marked assignment
- Tutorials

## **STUDY UNITS**

This course is made up of 15 study units. Students are expected to study these units carefully, spending at least two to three hours on each study unit with absolute concentration. The study units include the following:

### **Module 1 Food Safety Operation**

- Unit 1 Food Safety and Sanitation
- Unit 2 Safe Food Handling
- Unit 3 Food Hygiene and Food hygiene (Amendment) Regulation 1990/1991
- Unit 4 Food temperature Control
- Unit 5 Food Contamination and Poisoning

### **Module 2 Operation Of The Kitchen Facility**

- Unit 1 Kitchen Safety
- Unit 2 Kitchen Equipments and Interiors
- Unit 3 Kitchen Hygiene
- Unit 4 Importance of Hygiene
- Unit 5 Pest Control

### **Module 3 Managerial Issues In Food Service Operation**

- Unit 1 Health and Safety for New Catering Premises
- Unit 2 The Physical Facility
- Unit 3 Employee Selection
- Unit 4 Implementing Healthy Catering Service

## Unit 5 Control of Waste and Recyclable Materials

Also included in the study units are the Introductions, Objectives, Main Content, Exercises, Conclusion, Summary, Tutor-Marked Assignment, References/Further Reading

### **ASSIGNMENT FILE/EXERCISES**

Each unit contains Self Assessment questions and Tutor-Marked Assignment which you are required to answer. These exercises are designed to test your assimilation and understanding of what you have learnt.

### **COURSE ASSESSMENT**

1. Tutor-Marked Assignment (TMA)

This assignment constitutes 30% of your total score. You are expected to do this assignment and hand it over to your tutor for grading.

2. Final Written Exam

At the end of the course, you will be required to write the final exam which is 70% of your total score.

The summation of the Tutor-Marked Assignment and the Final Written Exam gives a total score of 100%.

### **SUMMARY**

The course HCM 342 typically highlights almost every aspect of food service operation beginning with the different types of food service ownership arrangement that one may wish to embark upon, to the setting up of a new catering business or food service operation, equipping the facility, development of policies, employee selection and training, menu development, food purchasing, preparation and service, implementation of healthy catering practices and food hygiene regulations for food safety, which is the crux of the course material. The problems of food waste were also emphasized and solution on how to manage and control waste was also proffered with particular emphasis on reduction, reusing and recycling of waste products.



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<b>TABLE PAGE</b>	<b>OF</b>	<b>CONTENTS</b>
<b>MODULE 1</b>	<b>Food Safety Operation</b>	
Unit 1	Food Safety and Sanitation	2
Unit 2	Safe Food Handling	17
Unit 3	Food hygiene and Food Hygiene (Amendments) Regulation 1990/1991	28
Unit 4	Food Temperature Control	44
Unit 5	Food Contamination and Poisoning	51
<b>MODULE 2</b>	<b>Operation of the Kitchen Facility</b>	
Unit 1	Kitchen Safety	56



Unit 2	Kitchen Equipments and Interiors		67
Unit 3	Kitchen Hygiene	78	
Unit 4	Importance of Hygiene	94	
Unit 5	Pest Control		101

### **MODULE 3 Managerial Issues In Food Service Operation**

Unit 1	Health and Safety for New Catering Premises		106
Unit 2	The Physical Facility		116
Unit 3	Employee Selection		123
Unit 4	Implementing Healthy Catering Services		132
Unit 5	Control of Waste and Recyclable Materials		140

### **MODULE 1 Food Safety Operation**

Unit 1	Food Safety and Sanitation		
Unit 2	Safe Food Handling		
Unit 3	Food hygiene and Food hygiene (Amendment) Regulation 1990 /1991		
Unit 4	Food Temperature Control		
Unit 5	Food Contamination and Poisoning		

## **UNIT 1 FOOD SAFETY AND SANITATION CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 Overview of the Food Service Industry
    - 3.1.1 The Franchises
    - 3.1.2 The Chains
    - 3.1.3 The Sole Proprietorship
    - 3.1.4 Types of Food Service Operations
  - 3.2 Definition of Food Safety Problems
  - 3.3 Food Safety Training and Education
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor- Marked Assignment
- 7.0 References / Further Readings.

### **1.0 INTRODUCTION**

Food is a source of energy for the body without which the body cannot function well; it is just like what fuel is to a car. However, food is much more than fuel for the body; it is a symbol of love and unity. The social context in which food is

served and eaten is part of what bonds the society. The sharing of food symbolizes familial love, friendship, concern for the ill and also to express welcome to a guest visiting our home.

We mark important occasions like birthdays, weddings, child christening or dedication, anniversaries etc with special food and we also celebrate with people through gifts of food.

The hospitality business is like an extension of families. Hotels and restaurants accommodate and feed people; different fast food outlets are all over the cities to cater to people who are at work and away from home. Sometimes special occasions are celebrated at restaurants, meetings are also held with refreshments. In schools, in the hospitals, on the aircraft, in prisons etc meals or snacks are served. In our different homes we plan and decide what to serve for breakfast, lunch etc. This then suffices one to say that food is indeed an integral part of the society because almost everything we do incorporates food.

The study of Food Safety and Sanitation is of utmost importance for the protection of the health of the consumers, you and me and the entire public or citizens.

Food Safety and Sanitation refers to food handling practices for public health. It is the practice of keeping foods from cross-contamination, storing perishable food at the appropriate temperature and heating food to a temperature that will inhibit bacterial growth.

## **2.0 LEARNING OBJECTIVES**

By the end of this unit you should be able to

- Identify the different types and classification of food service operation
- Define food safety and be able to identify some food safety problems
- Describe preventive measures to take to guard against food borne diseases

## **3.0 MAIN CONTENT**

### **3.1 Overview of the Food Service Industry in Nigeria.**

There have been vast changes in the Nigeria social and cultural practices which have been brought about by globalization influenced by the media. We are now faced with a situation where people venture out of their homes more often than previously, to savor delicacies and the ambience provided by the ever growing food industry. This situation however has been brought about partly by the increasing buying power of people on one hand and the long hours spent away from home commuting to work places on the other hand, which makes eating out a necessary part of people's daily life. Thus eating out, besides being a social event, can also be a matter of convenience.

The average Nigerian eats out at least once in a day. The diversity of the retail food outlets ranges from the usual road side shack to a white table cloth, fine dining restaurant and everything in between.

Competition in the food service or restaurant industry is intensifying and consumers in Nigeria can boast of a larger selection of restaurant available to them, which was not so several years ago. Food service operations are being set up in areas and locations that were not even thought of few years ago, for example, owners of fast food restaurant collaborate with owners of petrol stations to set up and engage in food service operations in their stations. Mr. Biggs, Chicken Republic, Sweet Sensation, to mention but a few, are some of the food service operators that are into this collaboration with petrol station operators.

This increase in food service operation in non-conventional areas is increasing the competition for the traditional or more conventional restaurants. Within the industry, competition is also increasing as there are non-traditional operators like the grocery stores who now compete with casual restaurants and fast food restaurants. However, competition requires that the food service operators meet the needs of their customers.

In recent times, the food service industry has grown to become a big and complex business such that it is becoming more and more difficult for non-professionals to succeed, not to talk of the small profit margin the food service operation has to offer and the high rate of personnel turnover the operators in the industry have to contend with.

For one to succeed in the industry, there is the need to cut out waste in all areas of operations, strive to meet the expectation and convenience of value –driven consumers and to put increased emphasis on managing employees and increasing their satisfaction by developing and implementing policies with “human face”.

Most eating and drinking establishments exist as small businesses, however three types of ownership arrangements have been identified in the food service industry which are:

- 3.1.1 The Franchises
- 3.1.2 The Chains and
- 3.1.2 The Independents or Sole Proprietorships.

### **3.1.1 The Franchises**

This is a business arrangement between two parties, the franchiser and the franchisee. The franchiser grants the franchise operator (the franchisee) the right to distribute certain products or services in a particular way, at a particular location and for a specified period of time. It also involves the use of various logos and promotional items and to participate in national media campaigns. The operational

systems and controls, facility designs and layouts are all together in the franchise package.

There exists several global franchisers in the food service industry for example the Mc Donald's, Kentucky Fried Chicken, Burger King, Pizza Hut, to mention but a few. In this type of ownership arrangement, the franchisee purchases operational systems and controls, facility designs and layouts with the franchise package. There are several advantages as well as disadvantages in this type of business arrangement.

#### **Advantages**

- There is access to a successful business model of operation.
- There is access to on-going research/development endeavours
- There is proven profitability.
- The management and staff (employees) are given proper training.
- The ability to use a nationally or regionally recognized name, in other words, trademark recognition, is also a plus.

#### **Disadvantages**

- The initial set-up costs and cost of operation are usually higher, when compared with the restaurant chain.
- The franchisee must pay initial franchise fees and on-going royalty fees for the duration of the business.
- There are some franchise agreements where businesses are required to purchase goods from the parent company or its subsidiary far above market prices.
- There is little or no room for creativity and innovation in the menus offered due to restrictions from the parent company which is based on the principle of consistency among all franchises

### **3.1.2 The Chains**

The restaurant chain which is part of a multi-unit is another is another form of ownership in the food service operations. The restaurant concept, design, menu, décor, and style of service are developed by the parent company and duplicated throughout the country.

There are quite a number of restaurant chains in Nigeria which are found more in fast food or limited menu operations than in full service operations for example, the likes of Mr. Biggs, Taste Fried Chicken, Tantalizers, Sweet Sensation, etc. Mr. Biggs owned by UAC foods started its operation in Lagos, Nigeria and now that parent company has generated so many other branches all over the country.

Chain restaurant is different from franchise in the sense that franchise properties are generally part of a chain, while chain restaurants can be operated in other ways besides being a franchise. Chain restaurants may be owned by the parent company, a franchise company or independent owners. Just like the franchise, the chains have their advantages and disadvantages.

### **Advantages**

- In chain restaurants some operation work are consolidated as efficient designs are developed and copied to other locations, thereby reducing the cost of facility development for each operation.
- Menu development and printing is also consolidated to further reduce cost and maintain consistency.

### **Disadvantages**

- Most management decisions are made at the top management level, far away from the other branches or locations of the restaurant, however some chains may allow some managers of different locations of the chain to use their initiative to make decisions in times of urgency.
- The corporate structure also makes it difficult to make decisions on a timely basis deterring chains from keeping up with a changing marketplace.

### **3.1.3 Independents or Sole Proprietorship**

Although chains and franchises are expanding into the restaurant business, independent ownership is also springing up side by side with the chains. There will always be room for hard-working entrepreneurs to own and operate their own businesses.

However the problem with independent ownership is that of lack of adequate funding to run the business satisfactorily, hence most of them wind up within their first few years of operation. Lack of adequate knowledge about the industry, especially about customers' tastes and preferences is also another factor that acts to the disadvantage of the independent owners.

Though they lack corporate support which the chains and franchises enjoy, they are however closer to the people they serve and can react faster and more efficiently to changes in the local market than the chains and the franchises.

### **SELF-ASSESSMENT EXERCISE**

List the three types of ownership arrangement that exist in the food service industry.

### **3.1.4 Types of Food Service Operations**

Different types of food service operations exist in Nigeria and at different levels. The food service operation is vast and it includes much more than restaurants. Every individual will always find one that he/she can identify with depending on the individual's taste and earning power. They range from food service being operated from a table stand by the roadside from where food is served from, to a shack, uncompleted building and moving upwards to fine dining restaurants.

The different types of food service operation in Nigeria include:

#### **A. Restaurants**

Restaurants range from full service, sit-down restaurants to walk-up, self-service or limited menu establishments. However, they differ in the type of service, type of food served, décor and prices.

There are quite a number of full service as well as walk-up restaurants all over the country, some are part of a national chain, family businesses, and others are jointly owned (partnership) and others are operated as a one man business. However, majority of the full service restaurants are operated independently.

The self service restaurants are usually found in big hotels in Nigeria like Sheraton Hotels and Towers, Federal Palace Hotel, Transcorp Hilton, to mention but a few. The buffet service in these hotels allows customers to get what they want for one price and to serve themselves as quickly as they wish.

An example of the walk-up restaurant is Mama Cass, where the customer walks up to the counter and the food is served, he pays and sits down to eat the food or may decide to take the food away. There are so many walk-up restaurants all over the cities in Nigeria. You can check them out to see how they operate

In all of these restaurants, a good portion of their food is produced from raw ingredients, usually on the premises and requires skilled preparation and personnel.

#### **B. Fast Food**

One very important feature of the fast food restaurant is that they are able to provide food quickly to their customers with menu having multiple variations of a few types of items which are priced separately. They are able to provide

quick service due to the reduced production requirement of the food they serve.

Another good feature of the fast food or quick restaurants is that of low labour requirement, this is because the kitchens are more automated than full service operations and most of the kitchen utensils are disposable. All these help to keep the cost of operating these restaurants down.

### **C. Social Caterers**

Majority of the food service operators in Nigeria fall into this group since the start-up cost is not usually high. It is labour intensive rather than capital intensive. An individual can operate straight from the confines of his/her kitchen. In this type of food service operation, food is prepared in one location and conveyed to another location to be served. Services provided range from simple food and beverage preparation to complete party planning. They also deliver and serve in offices, schools and different types of social gathering. Social caterers take away the stress off individuals and corporate bodies by helping them to plan and manage their events.

### **D. Commercial Cafeterias**

These are set up like school cafeteria. In school cafeteria especially, in the Universities and some offices too, food is prepared and served from steam tables to customers who walk through a line to pay for each item individually. However, commercial cafeteria differs from school cafeteria because it provides more menu choices and is open to the public. The customer has control over the composition of his food and the price.

### **E. Food Service in Guest Houses or Hotels**

The role of food service in guest houses cannot be overlooked as a traveler needs a certain level of comfort at the end of a long day journey. Whether it is a full-service restaurant, catering department or room service, these food service operators provide very useful service to the guests of the hotel.

### **F. Bars and Club Houses**

This segment of food service industry is not very reliable. Every now and then, a bar or a night club springs up and within a short time; it experiences a decline in sales and closes down. Despite the popularity of bars and club houses, the insecurity in the country and the pressure on individuals by significant others like pastors has resulted in a decline in the patronage of club houses.

### **G. Catering/ banquets**

This serves both the hotel guests and also the residents of the area where the hotel is situated, who may desire to eat out for a change. The banquet rooms are usually

designed to accommodate a wide variety of group sizes and there is ease of movement. This is what obtains in Sheraton, Federal Palace hotel, etc. These banquets and catered functions usually generate a large portion of revenue for the hotel's food and beverage department.

#### **H. Grocery and Convenience Store Food Service**

New service Grocery and Convenience Stores include fully stocked delicacies packaged and put in freezers. Some provide microwave oven for customers to use heat up their food and places for customers to eat in or package food for takeout. Some stores are leasing spaces to fast food companies to broaden food offerings to customers.

The food service provided at grocery and convenience stores is the fastest growing segment of the industry. A visit to shop rite in the Lekki or Ikeja axis of Lagos, Nigeria will confirm this. It is common sight to see large number of people queuing up to buy food from the fast food section of the store 24/7.

There are so many grocery and convenience stores all over the big cities in Nigeria that are leasing out spaces to fast food companies for small operations in a chain of grocery stores. For example UTC has a food court, Park & shop too and so many others. As a student of Hotel and Catering Management you can check out the grocery and convenience stores in the city where you live and come up with more examples.

#### **I. Ice cream and Frozen Yogurt**

The popularity of ice cream and frozen yogurt continues to soar, especially in the tropical regions, during periods of high temperature. It is a common sight to see ice cream and yogurt hawkers along the street, around school premises hawking these products which have been carefully packed into an insulated container attached to their bicycles. Ice cream and yogurt shops are popping up all over the country in order to satisfy the demand of the teeming population, some of the operators who are already meeting this need include Fan Milk PLC, Supreme Ice Cream, etc.

### **3.2. Definition of Food Safety and Sanitation Problems**

Food safety is a scientific discipline handling preparation and storage of food in ways that prevent food borne illness. These include a number of routines that should be followed to avoid potentially severe health hazards.

For a restaurant, sanitation focuses on wholesome food and beverages that are prepared and served in an environment that is free of disease-causing organisms and other harmful contaminants. At one time or another, we may have suffered from a flu caused by a food borne illness. Most food borne illnesses contracted at restaurants go unreported because people often incorrectly assume that it is just a touch of flu, without realizing that almost everyone who ate that particular dish at the same restaurant got the same flu.



Health department inspections are incredibly important to the life and reputation of any food service operation in the food service industry. From time to time, the National Food and Drug Administration Control (NAFDAC) pay unexpected visits to various locations or factories where food service operation or production is being carried out.

Sometime ago,, a team of NAFDAC staff paid an unexpected visit to a bakery and discovered that the dough for the bread was being kneaded on a very filthy table, in a very filthy environment by a group of young men who wore only trousers with no shirts on. Some of the men had open sores on their bodies and were sweating profusely. The sweat from their bodies dropped freely onto the dough they were kneading for the bread. This scenario was televised on one of the local TV stations. The NAFDAC agents subsequently sealed off the bakery immediately.

In order to avoid inspection problems, onsite management and staff should treat food safety as the top priority. Implementing good safety practices ultimately depends upon higher management which controls the amount of money available for training and equipment updates. Food safety competes for funding with many other corporate programmes..

In an executive research conducted by Eastern Research Group, Inc. (ERG) under contract to US Food and Drug Administration ( similar to Nigeria's NAFDAC), titled Good Manufacturing Practices (GMPs), for the 21st century food processing, in 2009, the group came up with some definition of food safety problems which includes the following:

- **Contamination of Raw Materials.**

This is the adulteration of food ingredient with pathogens and foreign objects so that it is no longer wholesome and safe to eat the product. The problem encompasses those instances where the incoming raw material or ingredient arrives contaminated. Contamination can also be caused by the use of non-potable water to wash food ingredients, inadequate cooling, i.e. not using the proper temperature during storage or processing of food ingredients.

- **Biofilms.**

This is a slimy layer formed by bacteria on a surface, which provides an environment for pathogens to proliferate. Food contamination can result when biofilms detach from their substrate and enter food products or ingredients.

- **Contamination during Processing.**

This is the adulteration of a product during processing with pathogens, chemicals allergens or foreign objects so that it is no longer wholesome and safe, therefore potentially rendering the finished product unsafe to eat. Contamination during

processing can also be caused by inadequate glass clean-up policy (i.e., the cleaning up of glass containers, providing shielding in the event of glass breakage during productions and the proper clean up of glass in production areas).

- **Condensate on Pipes and Other Equipment.**

When cold pipes come in contact with humid air in a food processing plant, condensate will form, which can drip and contaminate food.

- **Difficult-to-clean Equipment**

When food production and packaging equipment is not designed and installed in such a way as to produce a wholesome product for example the equipment is difficult to access for cleaning or the equipment is not operating properly.

- **Inadequate Cooling**

This is when the proper temperature is not used during storage or processing of food ingredients or food products especially refrigerated or frozen foods.

- **Stagnant water due to dead-ends in Plumbing**

When plumbing connections do not have a drain into other areas, this will result to sitting water that can contaminate food.

- **Poor Employee Hygiene**

Employee hygiene is considered poor if it could result in unsafe food or increases the likelihood of unsafe food prepared to be served to people or food manufactured at the plant. This could be attributed to inadequate employee hygiene policies and procedures, lack of monitoring and compliance verification and other causes

- **Poor Pest Control**

This has to do with the absence of a detailed pest management policy and program that is documented and conducted under the supervision of a licensed pest control contractor.

- **Poor Equipment and Plant Sanitation**

Plant and equipment sanitation is considered poor if it could result in unsafe food or increase the likelihood of unsafe food manufactured at the plant. This could be attributable to lack of adequate sanitation procedures, ineffective application of sanitation policies, inadequate or lack of monitoring and verification of cleanliness.

### **3.2 Food Safety Training and Education**

Management and employees in the food industry should undergo training at regular intervals and be provided with information and educational materials for food safety.

To ensure food safety, management has the responsibility and duty of demonstrating knowledge of food borne disease prevention and implementing healthy catering services.

The management's primary responsibility is to provide safe food to consumers by

- Complying with the National, State and Local food codes of the National Food and drug Administration Control.
- Minimizing liability issues
- Dealing with crisis, such as food recalls, food illness out breaks, equipments breakdowns and other emergencies
- Ensuring personnel follow appropriate food safety and hygiene practices
- Being a certified food handler
- Providing a safe place to work
- Keeping equipment in good operating order
- Publishing rules for food safety and
- Training employees in proper food safety principles.

Food safety is achieved in a food service establishment when both employees and management properly perform their duties. Additional examples of management's responsibility are as follows:

- Management shall be in charge of the supervision of the food service establishment or designate an individual to be in charge (a manager or supervisor) who has the responsibility and duty of ensuring that personnel follow appropriate food safety and hygiene practices.
- Management or person in charge shall require food service personnel (applicants to whom a conditional offer of employment is made and current food service employees) to report information about their health and activities as they relate to disease that are transmissible through food.
- Management should ensure good hygienic practices so that food is not contaminated with bacteria, foreign objects or chemicals. It is important that all food service workers maintain a high standard of personal hygiene and cleanliness. Some hygienic practices that every food service worker should follow include:

- Frequent hand-washing

- Personal hygiene
  - Hair restraint
  - Wearing appropriate attire (clean clothes, Aprons, closed toe-shoes) and limited jewelry.
  - Keeping fingernails trimmed, filed and maintained
  - Abstaining from smoking, chewing gum and other unhygienic practices in food handling areas and covering all wounds on hands and arms.
- 
- All food handlers and servers shall be free of communicable disease. If an employee or volunteer is believed ill or a carrier of a communicable disease, she/he shall be restricted from performing food preparation and service activities. The employee must obtain a clearance from a physician to certify that he/she is fit to return to work.
  - All food handlers and servers shall wear clean, washable clothing, closed-toed protective footwear and hair nets, caps or other suitable hair coverings to prevent contamination of foods, beverages and or utensils.
  - All food handlers and servers are prohibited from using tobacco in any form while preparing, handling or serving food or beverages. Tobacco shall not be used in any form in any room or space used primarily for the preparation or storage of food. No smoking sign should be posted and maintained in such room or places.
  - All food handlers and servers shall thoroughly wash their hands prior to beginning work, after using the toilet and every time hands are soiled.
  - Hand washing facilities in good repair and equipped with hot and cold running water shall be provided for employees within or adjacent to the food preparation area.
  - A permanently installed detergent or soap dispenser and single use paper towels or hot air blowers shall be provided at or adjacent to all hand washing facilities.
  - Legible signs shall be posted in each toilet room directing employees that they shall wash hands with soap before returning to work.

#### **4.0 CONCLUSION**

Adopting and maintaining healthy food handling practices is necessary at any level in the food service industry. Whether you are hawking the food from a basin placed on your head or you are operating from a road side shack, a one room restaurant or a five star hotel etc, food should be kept from cross-contamination, stored at appropriate temperature and prepared and served in clean environment using potable water for washing and cooking the food ingredients.

#### **5.0 SUMMARY**

The purpose of precaution in food preparation is to avoid food borne illness, which may result in a mild discomfort and sometimes may degenerate to death. Many people have lost their lives through food poisoning, after eating contaminated food. Therefore the study of food safety and sanitation is very important for everyone and especially for the practitioners and aspiring practitioners in the food service industry for the protection of the health of the consumers and the public at large. In other to achieve food safety preventive measures such as adequate cooling of refrigerated or frozen foods, good employee hygiene, good pest control, good equipment and plant sanitation, etc should be implemented.

#### **6.0 TUTOR- MARKED ASSIGNMENT**

1. Discuss the preventive measures you can take to guard against food borne illnesses.
2. Identify and describe the types of food service ownership in Nigeria
3. What is food safety -and Sanitation?

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## **UNIT 2 SAFE FOOD HANDLING CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 Food Service Operation Model
    - 3.1.1 Menu Development
    - 3.1.2 Procedures for effective buying, receiving, storage and preparation of food items
  - 3.2 Safety precautions in food handling.
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/ Further Readings

### **1.0 INTRODUCTION**

When we talk of shopping for food, what readily comes to mind is a grocery store. A grocery store is a store that retails food and food items. A grocer, the owner of a grocery store stocks different kinds of foods from assorted places and cultures and sells these groceries to customers.

Small grocery stores that sell mainly fruits and vegetables are known as produce markets or greengrocers. We have all these grocery stalls within our local markets in Nigeria both in the rural areas and the big cities. Small grocery stores that predominantly sell snack foods and sandwiches are called convenience stores or delicatessens. Those that combine food, clothing and household items are referred to as supermarkets.

There is need for a brief enlightenment on what a grocery store is because safe food handling actually starts from the grocery store or the open market stalls or the produce market as the case may be. How and where these food items are

handled and stored is very important because contamination of food items may even begin right from the stores before the actual purchasing of those items by customers.

Food handling safety refers to best practices for handling different types of food, safe food handling temperatures, proper sanitation practices and extensive training in food borne illnesses and bacteria and how to prevent them.

Food borne illness can strike anyone at anytime. However, some people are at a higher risk for developing food borne illness. These include the young children, the pregnant women, older adults and people with weakened immune systems. Therefore if you or any of your loved ones belongs to this group of people, it is therefore very important to pay extra attention to how you select (buy), store and prepare food.

To be able to fulfill the tremendous responsibilities inherent in food service management, the food service manager must possess many skills and most commonly identified skill is operation (the ability to prepare and serve good quality food to customers), which may be otherwise referred to as production management.

Many food borne illnesses go unreported because most of them are mild and a vast majority occurs at home. Therefore how food is handled can mean the difference between health and illness.

Safe food handling begins with purchasing food items that are in good condition, without any form of contamination. If you have a number of errands to run in addition to shopping for food items, it will be proper to make the grocery store your last stop. If it is possible, you may keep an insulated container in your car or van for transporting refrigerated or frozen items. Food items should not be left in a hot vehicle, they should be taken home or to the restaurant and put away in the freezer or refrigerator.

This unit will take us through what it takes to develop a menu (the food to be served), since it is the menu that determines what food items the caterer or food service operator will purchase or shop for in the market. The unit will also look into the procedures for effective buying, receiving, storage and preparation of food items and then safety precaution in food handling.

It is very important that a food service manager must possess adequate knowledge of marketing finance, human resources and other related functional areas for he/she to succeed as a restaurant manager. It is also vital that students

interested in a management career in any part of the hospitality industry develop a well rounded understanding of all aspects of business.

## **1.0 LEARNING OBJECTIVES**

By the end of this unit, students should be able to

- Discuss the functions of the menu and the trends in menu content
- Develop procedures for the effective buying, receiving, storage and preparation of food items
- Outline the necessary safety precautions to be taken in the handling of food.

## **3.0 MAIN CONTENT**

### **3.1 Food Service Operation Model**

Food service management begins with the menu. The menu practically affects everything that takes place in the restaurant. Even the restaurant's image is partially created by its menu because customers tend to categorize restaurants by the primary type of food served.

This model is based on the natural progression of responsibilities of managers and owners of restaurants. It begins with the development of the menu, which is the first component of the food operation model that dictates the firm's purchasing requirements, after which all other processes and steps by which the food find their way to the customer follow.

#### **3.1.1 Menu Development**

The menu does not only dictate what resources are needed and how they must be expended but it is also an essential part of the marketing effort. The menu is in fact the most powerful marketing device available to a restaurant or any food service operator. A menu lists the various product offerings of a restaurant. It is a contract with the customer; an indication that what is described in the menu is what will be offered or delivered to the customer. When a menu is properly designed, priced and presented, the menu can boost sales of specialty items while complementing the overall atmosphere of the facility. In order to achieve this, it is important to recognize and deal with certain factors in and around the physical facility that may impose restraints, these factors include:

- Equipment----- The right equipment must be available to produce all items required by the menu.



- Space-----There should be ample space for equipments to be properly arranged and for receiving, storing, serving and all other needs.
- Labour-----The adequate number of employees with the right skill should be at hand to produce all menu items.
- Ingredients-----All ingredients should be readily available at cost levels that align with the anticipated product selling price.
- Layout and design-----The outline of equipment and space should be such that it does not hinder employee workflow and efficiency.
- Time concerns-----The timing of menu item production is important too and should be taken care of.
- Cost implication -----All of these factors mentioned above can be translated into cost. The menu planner must be cost conscious in order not to incorporate additional cost since a menu item's price will be influenced by its costs among other costs.

To keep customers returning, we have to continuously improve our menus. There is a saying that, “variety is the spice of life”; it is therefore necessary for a food service operator to serve a solid variety of items that reflect different cooking methods and flavor profiles.

One of the fun things about menu development is the opportunity to play with food. However, while experimenting with different types and flavours of foods, which make cooking exciting, the nutritional level of the food should be taken into consideration. It is the responsibility of the Chef or the Cook to prepare food by minimizing fat and sodium intake for the health of the public. Consumer concerns about health and wellness are leading more restaurants to add items that appeal to diet- and nutrition-conscious customers as well as adjusting preparation methods of existing menu items. After the menu is planned, a series of operating systems concerning buying, receiving, storing, issuing, preparation and serving become important.

### **SELF –ASSESSMENT EXERCISE**

What is the role of the menu in food service management?

### **3.1.2 Procedures for effective buying, receiving, storage and preparation of food items.**

- **Buying**  
All food purchases should be based on actual need of the food service operation determined by menus. The control of food costs begins at the

time of purchase. No sets of controls can bring back lost profits that occur through poor buying. This is why it is necessary for a restaurant manager to have adequate knowledge of finance and marketing.

High quality dishes come from high quality ingredients; hence the importance of purchasing. It is important that the right product be purchased from the right supplier at the right time for the right price in the right amount. In large restaurant businesses or hotels, food purchasing is usually done by a specialized staff purchasing agent or department but in smaller operation, it is usually done by the manager / supervisor or a chef.

Regardless of who does the purchasing, it is important to do a forecast of the number of servings of each item needed for each meal period. This serves as the basis for the quantities of each item to be ordered, however this can be made easy by using the average number of dishes ordered in the past. Poor forecasting may lead to shortage of items due to too few items ordered or wastages due to too many items that have been ordered. The use of computer systems may help to check these defects and improve forecasting.

The purchasing methods also differ; buying of items may be formal or informal. Formal buying is the type of buying where vendors submit written quotes based on specifications sent out by the restaurateur or the manager of the food service operation. This method is open to negotiations for a good and fair price to be negotiated (competitive bidding). Another form of buying is the informal method where prices may be negotiated with vendors before the formal written bid. These formal methods take long but the written quotes are used as evidences should a dispute arise.

The informal buying method usually occurs over the phone, whereby several vendors are called upon for a price quotation and the order is placed with the lowest bidder. There is little or no paper work in this method of buying and this makes the buying to be done as quickly as possible. This method is ideal for small food operations, where it is also possible to take advantage of lower cost in the market place, but not in all cases.

- **Receiving**

Receiving is an extremely important activity because it is the point where ownership is transferred from the supplier to the food service firm. It is at the receiving critical control point that delivered food items may be

accepted, adjusted or rejected, based on the condition of the items at the time of delivery or the standards for receiving particular food types. If certain standards are not met, the delivery must be rejected to avoid food contamination. For example any meat, chicken or fish delivered with an “off” odour or colour must be rejected.

The receiving of food items, beverages and other supplies should be done independently of the person who does the purchasing, however this is not always the case in most food service operation. Substantial losses have been suffered by food service operations due to ineffective receiving practices which provide opportunities for dishonesty. There is need to have a well trained and well paid receiving personnel who will man or supervise the receiving area, which should be located between the landing place of the property and the storeroom, where the personnel can see what comes in and goes out of the building. Certain tasks are involved in receiving, which includes; examining, moving, receiving, unpacking and verifying. The receiving personnel must see to it that these tasks are carried out adequately by weighing; counting and measuring to ensure the orders are complete before signing the delivery invoice.

- **Storing**

The receiving clerk should quickly move all items to their proper place for storage after all careful analysis of the items have been done to help reduce product losses in terms of quality or through pilfering. It is important to note that food products rarely improve in quality while in storage. Proper sanitation procedures should be adhered to in the store rooms or storage areas to guard against product spoilage and contamination

In some operations, the store room is under the control of the purchasing agent but in smaller operations, the store room is being controlled by the steward who may also act as the purchasing agent, however in all cases, the controller should see to it that:

- Refrigerators and freezers are in good mechanical condition and maintained by regular cleaning and servicing of essential components.
- Foods are stored at least six inches above the floor, unless they are on movable racks or pallets
- All selves are labeled so that products are consistently stored in the same location
- All storage areas are kept clean, free of particles and spills of food and chemicals such as detergents and pesticides, which should stored in separate room.

- All products delivered are dated with dark markers.
- Items should be so arranged so as to allow for easy access and quick identification of products.
- Food items are issued from the store room by a properly authorized requisition and that all products are issued on first in, first out basis.
- The entire storage area is lockable and the keys must be tightly controlled.
- At the end of the month, the accounting division personnel take an inventory of the actual stock on hand.

It is important to note that the main objective of storage is to have enough items on hand so that the restaurant does not run out while minimizing loss caused by spoilage and or theft. Food spoilage is due to holding the food for too long a time, which also ties up money and space too.

- **Preparation**

Good food is one of the five basic requirements (good environment, good service, good value and good management controls) for a successful food operation. In order to remain in business, the food served by a restaurant should be as good as or better than all nearby competing food service operations. Good food requires quality ingredients and to get the best results from quality ingredients, the food should be prepared as close as possible and practical to the time of service.

In the preparation area, functions are divided into poultry/ fish/meat preparation, salad preparation, vegetable preparation and sandwich preparation. However in smaller organizations, the vegetable and salad or salad and sandwich functions are combined. This is done to meet the needs of various customers in terms of quality and quantity, while minimizing waste simultaneously. Adequate care should be taken to ensure that items susceptible to food borne bacteria are kept in the preparation area for as little time as possible. Such items should be kept in the cold room or refrigerator to avoid spoilage.

Proper cooking methods must be followed as food is produced and the food should be properly cared for after it is produced and before it is served. The kitchen should be adequately equipped so that the production staff have the proper tools to work with for the production of good food. It is very necessary that the manager of a food service operation has proper management attitude and the desire to serve good food, he or she may not necessarily know how to

cook, but with the desire to offer quality food, he or she will work well with department heads in the kitchen and motivate them to serve good food.

### **3.2 Safety Precaution in Food Handling**

As the number of meals consumed away from home increases, so does the food-safety risk. Most of us have experienced some type of food borne illness and assumed that we had the stomach flu. What you experienced is food poisoning. Our food industry needs to make some radical effort in training and implementing practices and procedures in food safety.

There are different requirements to prepare and serve hot meals at food service centres and to the home bound than for meals prepared and delivered from a central kitchen. Inadequate food temperature controls are common factors contributing to food borne illness. If food is not properly handled when purchased, stored, prepared and served, contamination may occur.

Regardless of the type of meal prepared or served, a critical element in maintaining food safety is to cook foods to appropriate temperatures and to keep perishable food products out of temperature danger zone (between 41 degrees Fahrenheit and 140 degrees Fahrenheit)

Foods and other products such as utensils and dinnerware must be packaged and delivered in a manner that prevents contamination and maintains proper food temperatures. State of the art food carrier and transport systems can safely deliver cold and hot food items and or meals at proper temperatures within acceptable time frames. In order to prevent food contamination, below are safety precautions to be taken by food service personnel in the handling of food.

#### **Step 1: Clean: Wash hands and surfaces often**

According to food safety experts, bacteria can spread throughout the kitchen and get on to cutting boards, knives, sponges and counter tops. Therefore, the following measures should be taken;

- Wash hands in hot spongy water before preparing food and after using the bathroom, changing diapers and handling pets. For best results, consumers should use warm water to moisten their hands and then apply soap and rub their hands together for 20 seconds before rinsing thoroughly. Hands should be dried with a paper towel or with an air hand-drying device.
- Wash cutting boards, knives, utensils and counter tops in hot soapy water after preparing each food item and before going into the next one.

- Use plastic or other non-porous cutting boards. Cutting boards should be run through the dishwasher or washed in hot soapy water after use.
- Consider using paper towels to clean up kitchen surfaces or if using cloth towels, consumers should wash them often in the hot cycle of the washing machine.

### **Step 2: Separate: Do not cross-contaminate**

Cross-contamination is how bacteria are spread from one food product to another. This is especially true of raw meat, poultry and seafood. Experts caution to keep these foods and their juices away from ready-to-eat foods to prevent bacteria through

- Separating raw meat, poultry and sea food from other food in the grocery-shopping cart.
- Storing raw meat, poultry and seafood on the bottom shelf of the refrigerator so juices do not drip onto other foods.
- Using different cutting boards for raw meat products and another for salads and other foods that are ready to be eaten.
- Washing of cutting boards, knives and other utensils with hot soapy water after they come in contact with raw meat, poultry and sea food.
- Never placing cooked food on a plate which previously held raw meat, poultry or sea food.

### **Step 3: Cook: Cook to proper temperature**

Food experts agree that foods are properly cooked when they are heated for a long enough time and at a high enough temperature to kill the harmful bacteria that cause food borne illness. The best way to do this is to

- Use a meat thermometer, which measures the internal temperature of cooked meat and poultry to make sure that the meat is cooked all the way through.
- Cook roasts and steaks to at least 145 degrees Fahrenheit. Whole poultry should be cooked to 180 degrees Fahrenheit for doneness.
- Cook ground meat, where bacteria can spread during grinding, to at least 160 degrees Fahrenheit. Experts from disease control centres have linked eating undercooked, pink ground beef with a higher risk of illness. If a thermometer is not available, one should not eat ground food that is still pink inside.
- Cook eggs until the York and white are firm, not runny. Don not use recipes in which eggs remain raw or only partially cooked.
- Cook fish until it is opaque and flakes easily with a fork.
- Make sure there are no cold spots in food (where no bacteria can survive) when cooking in a microwave oven. For best results, cover food, stir and rotate for even cooking. If there is no turn table, rotate the dish by hand once or twice during cooking.
- Bring sauces, soups and gravy to a boil when reheating. Heat other leftovers thoroughly to 165 degrees Fahrenheit.

#### **Step 4: Serving Food**

- Perishable food should never be left unrefrigerated for more than 2 hours. Bacteria that can cause food poisoning grow quickly at warm temperatures.
- Food should be served in clean dishes and utensils always. Do not serve food with utensils used to prepare the food. If you grill food, serve it on a clean plate and not on the one that held the raw meat, poultry or fish.
- Cold food should be kept on ice or refrigerated until time to replenish platters. If serving hot food, maintain it at 140 degrees Fahrenheit or divide into smaller serving platters which can be refrigerated until time to warm them up for serving.

#### **4.0 CONCLUSION**

With the proliferation of restaurants and different kinds of food service operation, there is need for everyone in the food service industry or anyone aspiring to get into the industry to step up his or her game in order to remain in business. The industry has become somewhat competitive; therefore one must have something good or better than what other food service operators around you are offering. Apart from good environment, good service, good value and good management controls, the food which is the most important has to be good. Good food comes from using quality ingredients which is as a result an excellent menu planning. There should be continuous improvement on the menu to keep customers returning. Proper handling of the food to make it safe and fit for consumption is of utmost importance. Adequate safety handling measures should be taken right from the time of purchase all through the other stages before it is ready to be served to the consumers or customers.

#### **5.0 SUMMARY**

The food service operation model requires that a menu has to be planned which then determines what is to be purchased. The process by which food gets to the consumer consists of several steps which include purchasing, receiving, storage, preparation and serving of the food to the customer. Each of these steps, have specific safety requirements that must be met in order to avoid food contamination and food borne illnesses. Each of the stages entails the proper handling of food for best results.

## **6.0 TUTOR-MARKED ASSIGNMENT**

1. What are the factors within and around the food service facility that if not recognized and dealt with, may get in the way of developing an excellent menu?
2. The process by which food find their way to the consumer consists of several steps, list these steps and discuss
3. Discuss three of the safety precautions to be taken in the handling of food

## **7.0 REFERENCES / FURTHER READINGS**

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## **UNIT 3 FOOD HYGIENE AND FOOD HYGIENE (AMENDMENT) 1990/1991 CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 Food Hygiene and Problems of Food Hygiene
  - 3.2 Sources of Food Contamination and Safety Measures
    - 3.2.1 Biological Sources
    - 3.2.2 Chemical Sources
    - 3.2.3 Physical Sources
  - 3.3 Food Hygiene(Amendment) Regulation 1990/1991
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Readings.



## **1.0 INTRODUCTION**

How would you feel buying a plate of rice from a food vendor who looks very untidy with unkempt hair and fingernails or how would you feel buying some bean balls (Akara) from a man or a woman who is mixing and frying the bean balls with very dirty utensils adjacent to a dirty gutter? When an individual cannot take good care of himself/herself and his/her surrounding, how do you expect the individual to take care to prepare the food he/she is going to serve you?

To put it succinctly, a restaurant that is clean is not only attractive to customers but serves to convince the customers that the management of the food service operation is interested in serving customers in a healthy environment. Naturally customers tend to associate the cleanliness of the restaurant with the care taken to prepare the food. It is logical for anyone to think that way.

Food hygiene and sanitation focuses on wholesome food and beverages that are prepared and served in an environment free of disease causing organisms and other contaminants. The study of food hygiene is necessary and of utmost importance to managers, food handlers, chefs, caterers and restaurant personnel because it concentrates on the standard of cleanliness during food preparation and the use of preventive measures taken to prevent or minimize the chances of contracting food borne illnesses. Such preventive measures include cleanliness of the food preparation area, utensils, adequate cooking time and refrigeration or preservation of perishable foods.

The manager or the supervisor in a food service operation is responsible for serving food that is safe to eat and he or she is also responsible for instructing the staff in safe food handling procedures. When a particular restaurant's food makes people sick, it is usually difficult to regain the trust of consumers and this may even lead to the closure of the business. Therefore guarding against food borne illnesses is a sure way to stay in business.

## **2.0 LEARNING OBJECTIVES**

By the end of this unit, you should be able to

1. Identify food hygiene problems and symptoms of allergic reactions.
2. Identify and describe sources of food contamination and food borne illnesses.
3. Outline and describe the food hygiene(Amendment) 1990/1991

### 3.0 MAIN CONTENT

#### 3.1 Food Hygiene and Problems of Food Hygiene

When people eat something they are allergic to, they experience an abnormal reaction in which the immune system overreacts. For some individuals, food borne illness may result in a mild, temporary discomfort.

Children, expectant mothers and older adults are the group of people that are more likely to be affected by food borne illnesses than any other group in the population. However older adults are a highly susceptible population and food borne illness may have serious or long term consequences and may even lead to death if adequate care is not taken. Older adults are vulnerable to food borne illness for several reasons and these include:

**A. Weakened Immune System-** As part of the aging process, the ability of the immune system to function at normal levels decreases. Decrease in the level of disease fighting cells is a significant factor in making the average older adult highly susceptible to harmful micro organisms in food.

**B. Inflammation of the stomach lining and a decrease in stomach acid.**

The stomach plays an important role in limiting the number of bacteria that enter the small intestine. During the natural aging process, an older person's stomach tends to produce less acid. The decrease or loss of stomach acidity increases the likelihood of infection if a pathogen is ingested with food or water.

**C. Decline in sense of smell and taste.**

Many contaminated foods do not smell or taste bad. However, for foods like spoiled milk, a person who does not notice "off" odours and flavours is more likely to eat the food and more likely to become ill.

**D. When they live on their own or all alone.**

For an older person, preparing meals may pose special challenges. For example, a widower who has not cooked for himself may not know how to prepare food safely. A person receiving home-delivered meals may not be familiar with safe handling and storage practices for meals and leftovers.

The causes of food borne illness are multifaceted. Some major risk factors of food- borne illnesses are related to employee behaviors and preparation practices in food service establishments. Employees should be able to

recognize the symptoms of an allergic reaction. Symptoms may show up immediately after consuming the food or after a period of hours and these symptoms include:

- Nausea
- Cramping or vomiting
- Shortness of breath
- Itching in and around the mouth
- Tightening of the throat
- Wheezing and hoarseness
- Swelling of the eyelids, lips, hands, or feet
- A drop in blood pressure
- Loss of consciousness, etc.

### **SELF-ASSESSMENT EXERCISE**

Why is it that older adults are more vulnerable to food borne illnesses?

### **3.2 Sources of Food Contamination and Safety Measures**

The food and drug administration agencies are not solely responsible for ensuring the safety of the nation's food supply, however they oversee the monitoring and intervention of the food supply. Although food safety is the responsibility of everyone, from producers to consumers, the food and drug agency and other regulatory agencies have an essential role to play but sometimes these roles and responsibilities are hampered by multiple stake holder interests, inadequate resources and competing priorities.

Some sources of food borne illnesses have been traced to Biological, Chemical and Physical contamination. These sources will be discussed briefly below.

#### **3.2.1. Biological Sources of Contamination**

Most food borne illnesses are caused by micro organisms and this is referred to as Biological contamination. Biological contamination can come from bacteria, viruses, parasites and fungi.

Bacteria which is the most significant group of micro organisms thrives well on high protein food products like fish, poultry, meat, eggs, milk, etc. Bacteria are transmitted by wind, moisture, dust and direct contact with other living organism. A bacterium requires a certain amount of moisture to thrive and finds it difficult to thrive and multiply on dry products like cereals, flour, rice and others. Certain bacterial growth occur at high temperatures , while others occur at lower temperatures, freezing and drying of foods will delay the growth of food. However the best way to limit bacterial growth is to control time and temperature i.e. the time that foods are within the temperature danger zone.

Viruses are spread to food through employees who are infected with the virus. Such viruses like cold viruses, influenza viruses, gastrointestinal infections like Rotaviruses, Hepatitis A, etc can be spread to food by food service personnel through such means as failing to wash hands after going to the bathroom, coughing, sneezing or wiping a runny nose with a hand. Viruses reproduce at a fantastic rate in living host cells. The foods most likely to cause illness are those that are not heated after handling like salads, cold sandwiches etc.

Parasites live off other organisms by getting their nourishment from them. For example some parasites and their eggs are contained in such foods as pork and fish. They can be destroyed by cooking the food at high temperatures to at least 140 degrees Fahrenheit. When pork is not cooked properly enough to destroy the parasite, an illness called Trichinosis could result.

Fungi like moulds, yeasts and mushrooms can be very poisonous, they cause certain foods and beverages to spoil and if these foods infected by bacteria are consumed it could lead to nausea, vomiting, diarrhea and intestinal cramps, however they can be destroyed by heating to 140 degrees Fahrenheit but the heat does not destroy the toxins already present completely. Freezing on the other hand retards the growth of moulds but will have no effect on those already existing in the in the food. The best way to prevent fungi growth is cooking at high temperatures.

### **Micro biological Safety**

The food standards Agency promotes the micro biological safety of food throughout the food chain. It is responsible for reducing food- borne illnesses, promoting a hazard analysis based approach to food safety management and providing guidance for producers, retailers, caterers and the general public. It also deals with micro biological food hazards and out breaks of food borne disease. Campylobacter is the most common cause of food poisoning. In the United Kingdom, campylobacter was responsible for an estimated 321,000 cases in England and Wales in 2008 which resulted in more than 15,000 hospitalizations, 76 deaths and an estimated cost to the economy of more than five hundred and eighty three million pounds. As part of the effort to control campylobacter, Food Standards Agency launched a campaign in January 2004 to help improve hygiene-measures in broiler farms and ensure that best practices are followed at all times.

### 3.2.2 Chemical Sources of Food Contamination

Chemical contamination is as a result of chemicals like cleaning agents or pesticides getting into food. Chemical contamination may also result from food additives and preservatives which are used to enhance foods but have some negative side effects due to some harmful elements they contain such as nitrites and sulphites. Chemical contamination could be from zinc-galvanized containers which make acidic foods like fruit juice poisonous. Other sources of chemical contamination include lead, copper, brass etc which are toxic metals that may come in contact with food one way or the other.

#### Chemical Safety

Chemical safety determines safe levels of the naturally occurring or deliberately added chemicals in food which are potentially harmful to health. There are many potentially toxic or harmful chemicals present in the food we eat, whether occurring naturally as contaminants or as deliberate additives. But these chemicals are not necessarily harmful in small amount. The effect they have depend upon the amounts we consume, these include:

- Supplements- some people choose to take supplements which are thought to have some beneficial effects, for example vitamins and minerals, which our bodies need in small amounts as well as other chemicals for which there is less evidence of beneficial effects. But in most cases we receive adequate amount of these chemicals from the food we consume and all of them may be harmful if taken in excessive amounts.
  
- Chemicals present in food- chemicals become present in our food in a number of ways:
  - Contaminants are widespread in our environment and may enter the food chain and be present in all plant and animal products we eat.
  - Chemical compounds of materials which come into contact with food such as packaging materials may be absorbed into our foods.
  - Chemicals may form during cooking or food processing e.g.poly cyclic aromatic hydrocarbons.
  - Chemicals used in farming such as pesticides and veterinary medicines may remain in the products we eat.
  - Additives are deliberately added to food in order to provide some useful purpose such as flavours and preservatives, which allow the consumer to select a varied diet from preserved foods all the year round.

- Some natural components of plants may themselves cause toxicity e.g. glycoalkaloids in potatoes. Some may be harmful if not cooked properly e.g. lectins in pulses. There are also some foodstuffs which can cause allergies in susceptible individuals e.g. peanuts.
- Chemicals may be produced by moulds which contaminate crops during storage such as aflatoxins.

### **3.2.3 Physical Sources of Contamination**

Physical contamination occurs when dirt, hair or any particle comes in contact with food. Cross-contamination occurs when contaminated food comes into contact with safe food and renders it unsafe for consumption. To prevent physical contamination, equipments should be cleaned and sanitized between use with different foods and between same cooked and raw foods.

### **Radiological safety**

Radioactivity has been around since the earth was created and it exists naturally in the atmosphere, soil, seas and rivers. It is also created by human activity during energy production and military operation and inevitably, some of it gets into the food we eat. Radioactivity is invisible, tasteless and not mentioned on food labels. Radioactivity can damage our body's DNA, a complex molecule found in all our cells that control their function and growth. Low radiation doses can be repaired but higher does can change our body's cells. In these cases cancer can develop.

## **3.1 Food Hygiene (Amendment) 1990/1991**

The Food Hygiene (Amendment) Regulation 1991 was made on the 5th of June, 1991. It was laid before parliament on the 14th June, 1991 and came into force on 5th July, 1991.

The Minister of Agriculture, fisheries and food and the secretaries of state respectively concerned with health in England and food and health in Wales, acting jointly in exercise of the powers conferred by section 16 (1) (c), (d) and (f) and 48(1) of the Food Safety Act 1990 (1) and all other powers enabling them in that behalf, after consulting in accordance with section 48 (4) of that Act with such organization as appeared to them to be representative of interests likely to be substantially affected by these Regulations, hereby make the following Regulations:

### **Citation and Commencement**

1. These Regulations may be cited as the Food Hygiene (Amendment) Regulations 1991, and shall come into force on 5th July, 1991

Amendment of the Food Hygiene (Markets, Stalls and Delivery Vehicles) Regulations 1966 and the Food Hygiene (General) Regulations 1970

2-(1) In regulation 2 (1) of the Food Hygiene (Markets, Stalls and Delivery Vehicles) Regulations 1966 (2) after the definition of “preparation” there shall be inserted the following-

““railway” means a railway having a gauge of 350 millimeters or more used for the purpose of public transport of passengers, but does not include-

- (a) A tram way
- (b) A railway laid on a beach or pier or
- (c) A railway providing communication between the top and bottom of cliff.”

(2) Regulation 12 of the Food Hygiene (Markets, Stalls and Delivery Vehicles) Regulations 1966 shall be amended in accordance with the provisions of schedule 1 to these Regulations

(3) Regulations 27 of the Food Hygiene (General) Regulation 1970 (3) shall be amended in accordance with the provisions of schedule 2 to these Regulations

In witness whereof the official seal of the Minister of Agriculture, Fisheries and Food is hereunto affixed this 4th day of June, 1991

**SCHEDULE 1**

**Regulation 2(2)**

Amendment of Regulation 12 of the Food Hygiene (Markets, Stalls and delivery Vehicles) Regulations 1966

1. In paragraph (1) for “is any” there shall be substituted “is of any”
2. In paragraph (1) (g) for “fish and” there shall be substituted “fish or” and for “or vegetables” there shall be substituted “or vegetables or cheese or any combination thereof.”
3. For paragraph (1) (k) there shall be substituted “(k) cakes containing cream or anything used as a substitute for cream.”
4. In paragraph (2) (a) for “or milk”, there shall be substituted, “milk or cheese”, and for “introduced into the products” there shall be substituted “in the products (other than in any filling in such products)”.
5. After paragraph (2) (a) there shall be inserted the following paragraph-  
“(aa) filled cooked pastry products where-

- (i) They are relevant foods by reason only of the use of Egg or egg and milk
- (ii) The products are intended for sale within 24hours of their production and
- (iii) The products are not cut after the conclusion of preparation,”

6. In paragraph (3) after “paragraphs” there shall be inserted “(3A), (3B),”

7. After paragraph (3) there shall be inserted the following paragraphs-

“(3A) for the purposes of this regulation, the preparation of relevant food which is of any of the description specified in paragraph (1) (g) or (h) or a filled cooked pastry product the filling of which principally comprises a combination of egg and milk, but also contains other relevant food, shall be treated as concluded when its baking is concluded.

(3B) For the purposes of this regulation the preparation of relevant food of the description specified in paragraph (1) (K) shall be treated as concluded when the cream or substitute for cream is added.”

8. For paragraph (7) there shall be substituted the following paragraph-

“(7) The provision of paragraphs (3), (5) and (6) of this regulation do not apply to relevant food-

(a) In any market premises, stall or delivery vehicle, for a period of two hours from the conclusion of preparation if it is intended-

(I) To be sold within that period having been subjected during that period to any process of heating the purpose of which is to maintain the food at a temperature between the specified temperature and 63 degrees Centigrade or

(II) To be reheated to at least 63 degrees Centigrade at any time prior to sale.

(b) In any market premises, stall or delivery vehicle, for a period of four hours from the conclusion of preparation if it is not to be subjected to any process of heating the purpose of which is to maintain the food at a temperature between the specified temperature and 63 degrees Centigrade between the conclusion of preparation and the time of sale; or



- (c) Displayed for a period not exceeding four hours at any market premises or stall where such display is for the purpose either-
  - (i) Of indicating to prospective purchasers the nature of food which is for sale at those premises or that stall for immediate consumption, or
  - (ii) Of having it available for service to a purchaser at those premises or that stall for immediate consumption, provided that in either case no more food is displayed than is reasonably necessary for that purpose.”

9. After paragraph (7) there shall be inserted the following paragraph-

“(7A) After the expiry of the period specified in paragraph (7) (a), relevant food which has been subjected to heating as specified in paragraph (7) (a) (i) shall not be sold or offered or exposed for sale.”

10. After paragraph (10) there shall be added the following paragraphs-

“(11) The requirements of paragraph (5) shall not apply until 1st April 1992 to relevant food in a delivery vehicle used exclusively for the delivery of food to an aircraft for consumption on board the aircraft.

(12) This regulation shall not apply until 1st April 1992 to food which is in a carriage on a railway, and is intended for sale to persons travelling on the railway.

(13) This regulation shall not apply to relevant food while it is in the course of conveyance by post or by a private or common carrier to the ultimate consumer within the meaning of the Food Labeling Regulations 1984 (4)

(14) Subject to paragraph (15), this regulation shall not apply to relevant food of any of the descriptions specified in paragraph (i) (g), (h) or (k) or filled cooked pastry products the filling of which principally comprises a combination of egg and milk but also contains other relevant food’ in any market premises, stall or delivery vehicle for a period of two hours from the conclusion of preparation.

(15) Where the process of bringing food to the specified temperature is begun, but not completed, before the expiry of the period of two hours specified in paragraph (14), the period shall be treated as extended for so long as is reasonably necessary to bring the food to that temperature.”

## **SCHEDULE 2**

## **Regulations 2(3)**

Amendments to Regulation 27 of the Food hygiene (general) Regulation 1970.

1. In paragraph (1) (b) for “containing” there shall be substituted “comprising or containing”.
2. In paragraph (i) (g) for “meat, fish”, there shall be substituted “meat, fish or ,” for “vegetables” there shall be substituted “vegetables or cheese or any combination thereof,” for “consumed” there shall be substituted “sold” and for “preparation” there shall be substituted “ their production”.
3. In paragraph (i) (h) for “consumed” there shall be substituted “sold” and for “preparation” there shall be substituted “their production”.
4. For paragraph (i) (k) there shall be substituted-  
    “(k) cakes containing cream or anything used as a substitute for cream.
5. In paragraph (2) (a) for “or milk” there shall be substituted, “milk” there shall be substituted, “milk or cheese” and for “introduced into the products” there shall be substituted “in the products (other than in any filling in such products)”.
6. After paragraph (2) (a) there shall be inserted the following paragraph-  
    “(aa) filled cooked pastry products where-
  - (i) They are relevant foods by reason only of the use of egg or egg and milk;
  - (ii) The products are intended for sale within 24 hours of their production; and
  - (iii) The products are not cut after the conclusion of preparation,”
7. For paragraph (3) there shall be substituted the following paragraph-  
    “(3) Subject to paragraphs (3A), (3B), and (4), the provisions of regulation shall not apply to relevant food in any food room-
  - (a) For a period of two hours from the conclusion of preparation, if it is intended-
    - (i) To be sold within that period having being subjected during that period to any process of heating the purpose of which is to maintain the food at a temperature between the specified temperature and 63 degrees centigrade; or

- (ii) To be reheated to a least 63 degrees centigrade at any time prior to sale;
- (b) For a period of four hours from the conclusion of preparation if it is not to be subjected to any process of heating the purpose of which is to maintain the food at a temperature between the specified temperature and 63 degrees Centigrade between the conclusion of the preparation and the time of sale; or
- (c) Displayed for a period not exceeding four hours on catering premises where such display is for the purpose either-
  - (i) Of indicating to prospective purchasers the nature of food which is for sale for consumption on those premises, or
  - (ii) Of having it available for service purchaser for consumption on those premises,Provided that in either case no more food is displayed than is reasonably necessary for that purpose.”

8. After paragraph (3) there shall be inserted the following paragraphs-

“(3A) For the purposes of this regulation, the preparation of relevant food which is of any of the descriptions specified in paragraph (i) (g) or (h) or a filled cooked pastry product the filling of which principally comprises a combination of egg and milk, but also contains other relevant food, shall be treated as concluded when its baking is concluded.

(3B) For the purposes of this regulation, the preparation of relevant food of the description specified in paragraph (i) (k) shall be treated as concluded when the cream or substitute for cream is added.

(3C) After the expiry of the period specified in paragraph (3) (a), relevant food which has been subjected to heating as specified in paragraph (3) (a) (i) shall not be sold or offered or exposed for sale.

(3D) Subject to paragraph (3E), this regulation shall not apply to relevant food of any of the descriptions specified in paragraph (i) (g), (h) or (k) or filled cooked pastry products the filling of which principally comprises a combination of egg and milk but also contains other relevant food, in any food room, for a period of two hours from the conclusion of preparation

(3E) Where the process of bringing a food to the specified temperature is begun but not completed, before the expiry of the period of two hours specified in paragraph (3D) the period shall be treated as extended for so long as is reasonably necessary to bring the food to that temperature.”

9. For paragraph (4) there shall be substituted the following paragraph-

“(4) The purpose of this regulation shall not apply to relevant food in any food room which is in any catering premises and is intended for consumption on those premises if the process of service of such food is intended to be commenced-

(a) Within 2 hours of the conclusion of preparation if it is intended that the food be reheated to at least 63 degrees Centigrade prior to the commencement of the process of service;

(b) Within 4 hours of the conclusion of preparation if the purpose of which is to maintain food is not to be subjected to any process of heating the purpose of which is to maintain the food at a temperature between the specified temperature and 63 degrees Centigrade between the conclusion of preparation and the intended commencement of the process of service”.

10. After paragraph (9) there shall be added to the following paragraph-

“(10) This regulation shall not apply to relevant food while it is in the course of conveyance by post or by a private or common carrier to the ultimate consumer within the meaning of the food labeling Regulations 1984 (5)”.

### **Summary and Explanation of the Regulations**

These Regulations make amendments to the Food Hygiene (Markets, Stalls and Delivery Vehicles) Regulation 1966 and the Food Hygiene (General) Regulations 1970.

Schedule 1 contains amendments to the 1966 Regulations, bringing pies and pasties containing cheese, and cakes containing cream substitutes, within the scope of the temperature controls imposed by the Food Hygiene (Amendment) Regulations 1990 (paragraphs 2 and 3). The exemptions conferred by paragraph (2) of regulation 12 of the 1966 Regulations are modified and extended by these Regulations to include pastry products where cheese is an ingredient in the pastry (paragraph 4) and custard tarts if they are to be sold on the day of their production (paragraph 5).

The conclusion of preparation of a filled pastry product, pie or pasty is defined as the conclusion of baking and the conclusion of preparation of a cream cake as the time of the addition of the cream or substitute for cream (paragraph 6 and 7).

The exemption conferred by the 1990 Regulations for the display of food on catering premises are applied by these Regulations, with necessary modifications, to market

premises and stalls and paragraph (7) of regulation 12 of the 1966 Regulations has been restructured accordingly (paragraph 8). That paragraph also allows certain foods (notably oil based emulsions such as Hollandaise sauce) to be kept warm for short periods provided that any unused portion is not subsequently to be sold (paragraph 9).

Paragraph 10 confers new exemptions for food in railway carriages and in vehicles used for the delivery of food to aircraft, if prescribed conditions are met, until 1st April 1992 and an exemption for food being conveyed by post or carriers to the ultimate consumer.

Schedule 2 makes similar amendments to the 1970 Regulations as those made to the 1966 regulations by paragraphs

(2) to (7) and (9) of schedule 1, and also includes exemptions for food in food rooms whilst in the course of delivery to the ultimate consumer by post or carriers.

#### **4.0 CONCLUSION**

Food hygiene problems can manifest in various forms, from the feeling of nausea, to loss of consciousness and even death if proper care is not taken. Food may be contaminated through physical, chemical and biological sources. Safety measures are to be taken by way of preparing food in highly hygienic conditions in order to reduce the cases of or prevent food hygiene problems.

#### **5.0 SUMMARY**

Food Service industry just like any other sector or field of discipline has certain rules and regulations guiding all the activities or processes being carried out in those sectors. The Food Hygiene (Amendment) Regulation is one of those rules or regulation that is cited and put into force to regulate the processes or the stages (purchasing, delivery, storage, preparation, serving) the food for consumption passes through before it get to the customer or consumer. These rules and regulations are put into place to check unhygienic practices by food service providers. If and when food service providers abide strictly to these rules and regulations, it will go a long way to forestalling food borne illnesses and preserving the health of the public at large.

#### **6.0 TUTOR-MARKED ASSIGNMENT**

1. Enumerate and discuss the sources of food contamination and food borne illnesses.
2. Mention some symptoms of allergic reactions that may occur after the consumption of contaminated food.
3. What is the whole essence of food hygiene and food hygiene (Amendment) Regulation?

#### **7.0 REFERENCES / FURTHER READINGS**

Mill, R.C. (2007). RESTAURANT management: Customers, Operations, and

Employees. (3rd Edition). PEARSON Prentice Hall, Upper Saddle River, N.J.  
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## **UNIT 4 FOOD TEMPERATURE CONTROL CONTENT**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 Temperature Control Requirements
  - 3.2 Careful Management of Temperature
  - 3.3 The Role of Temperature in keeping Food Safe
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References / Further Readings

## **1.0 INTRODUCTION**

Controlling food temperature is vital to serving and consuming safe food. It is important to know the temperature of foods at all times, especially those that are susceptible to harbouring potentially harmful pathogens.

The temperature danger zone ranges from 41 to 140 degrees. This range is ideal for pathogens to reproduce exponentially. Food Temperature Control violations should be among the most common critical item violation marked on restaurant inspections by agents or monitoring team of NAFDAC officials. This should be so because so many foods are subject to temperature control and there are a lot of opportunities or circumstances for things to go wrong

According to the National Food Service Management Institute, the FDA(Food and Drug Administration, all in The United States of America) food code suggests that food is safe to be left within the temperature danger zone range for 4 hours before it spoils, including the time it may have spent during transit, waiting for someone to put it away.

Controlling food temperature is indeed vital and these can be done through careful management of temperatures in the kitchen, both in the restaurant and at home. This can go a long way in helping to prevent food borne illnesses.

## **2.0 LEARNING OBJECTIVES**

By the end of this unit, you should be able to;

1. Identify the kind of foods that have to be kept under temperature control
2. Understand the role temperature plays in keeping food safe.
3. Design a comprehensive temperature management programme

## **3.0 MAIN CONTENT**

### **3.1 Temperature Control Requirements**

When it comes to temperature control requirements, the first question that comes to mind is, “which foods require to be kept under temperature control?” To be able to answer this question, there is need to divide foods into two main groups, namely: (i) foods which are potentially hazardous and (ii) foods that are not potentially hazardous

- (i) Potentially hazardous foods are foods that might contain food poisoning bacteria and are capable of supporting growth of these or formation of toxins (poisonous chemicals produced by some types of bacteria) to levels that are unsafe for consumers if the foods are not stored or kept under temperature control. This means that these foods have to be stored at correct temperatures. Potentially hazardous foods include the following:
- Seafood (excluding live seafood)
  - Cooked rice and pasta
  - Foods containing eggs, beans, nuts or other protein rich foods like soy products
  - Raw and cooked meat or foods containing meat, such as casseroles, curries
  - Dairy products e.g. milk, custard and dairy based desserts
  - Processed food/vegetables e.g. salads
- (ii) Foods which are not potentially hazardous are foods which do not contain food poisoning bacteria. Many preserved foods may be found in this group. Bacteria will not grow in some types of food; examples include canned and bottled food, dried fruit, salted dried meats, fermented dried meats, yoghurts, hard cheeses, spreads, some sauces, dried pasta, breads and dried foods.

On the other hand, there are some foods that are not potentially hazardous but can become potentially hazardous if you alter the food in some ways. For example dry custard powder is not potentially hazardous but when milk or water is mixed with the powder to make custard, the custard is potentially hazardous. Some food may not be potentially hazardous but they need refrigeration to stop them from spoiling and becoming hazardous.

### **3.2 Careful Management of Temperature**

Right temperature is one of the fundamental five of safe food service which includes clean hands, clean service, clean food and healthy personnel. Careful management of temperature is important in the prevention of food contamination.

Cold temperatures slow or stop the growth of germs, heat kills them. Cold food should be kept cold; hot foods should be kept hot. Prepared food should never be left standing at room temperature except during necessary periods of preparation and service. Below are several ways by which food temperature can be managed to prevent contamination and to get the best from the food.

#### **a. Rapidly cool foods to 41 degrees or less**

Food that are cooked and then cooled must get from 135 degrees down to 41 degrees quickly to prevent bacterial growth. The temperature 135 degree is



known as the danger zone since it is the range of temperature that bacteria can grow in. Temperatures below 41 degrees are too cold for bacteria to reproduce and temperature above 135 are too hot. When cooling foods down after cooking, there is a time frame of 2hours for food to go from 135 down to 70 degrees and an additional 4hours to get from 70 down to 41 degrees. Kitchen workers however help to speed up this process by breaking food into smaller or thinner portions by putting it in an ice bath, leaving lids off during cooling and a host of other methods. When large quantity of food is left sitting for extended periods of time at room temperature and then put in a container to cool down in the cooler, if you go back to that food after some hours, you may be feasting on some bacteria.

**b. Rapidly reheat to 165 degrees or greater**

When reheating, the quickest methods are usually the microwave, an oven at higher temperature, the stove or the grill. The reheating process is to reduce the amount of the time food spends in the danger zone (41 to 135 degrees). The final temperature of 165 degrees is reached to make sure any bacteria that may have grown during the cooling or reheating process are killed as 165 is hot enough to kill even the most stubborn bacteria. It is therefore necessary that the cook or chef tries to get foods heated to 165 in a maximum of 2hours, however, the faster the better.

**c. Hot hold at 135 degrees or greater**

Once a food has reached its proper cook temperature, such as 165 for reheated foods, it needs to be hot- held at a temperature of 135 degrees or greater. The proper cook temperature will kill any bacteria that may have been present in the food and the hot holding at or above 135 will prevent any new bacteria from growing on the food.

**d. Required cooking temperature**

Certain foods have different required cook temperatures to ensure that they are safe to eat. These temperatures are based on the bacteria that are associated with each food; for example, E-coli that are found in beef and vegetables and the salmonella or campylobacter found in chicken. These foods need to be cooked to 165 degrees for these bacteria to be destroyed. 165 degrees internal temperature will kill all food borne bacteria but it is good to know the proper cook temperature for each food so they do not wind up being overcooked.

Below are suggested proper cooking temperatures;

- ✓ Poultry 165°F
- ✓ Ground Beef 155°F
- ✓ Pork 145°F
- ✓ Eggs/Fish 145°F
- ✓ Rare Roast Beef 130°F

**e. Cold hold at 41 degrees or less**

Foods that are held under refrigeration need to be maintained at 41 degrees or less to prevent bacterial growth. Refrigeration temperatures are a main focus during restaurant inspections and you should pay close attention to them at home too. Leave a thermometer in the refrigerator and make sure your home unit is holding 41 degrees or less. In addition to safer food, colder temperatures also help to prolong shelf life.

**f. Food thermometer**

A food thermometer is the only sure way to check food temperatures and is the only way to know if a restaurant or your home kitchen is in compliance with proper cooking, cooling, cold holding and hot holding temperatures discussed above. Food temperatures are available at grocery stores. It is important that restaurants have these thermometers to check food temperatures.

**g. Adequate equipment to maintain food temperatures**

A violation of this section means that a facility does not have enough refrigeration or hot- holding equipment for the foods that they are serving. This can be as a result of equipment that has broken down and has not been fixed or an expansion of the menu (more food or perhaps an additional meal, adding breakfast service). This determination is made if foods are sitting out at room temperature because there is not room for them in the coolers or hot holding devices.

**SELF-ASSESSMENT EXERCISE**

What are the fundamental five of safe food service?

**3.2 The role of temperature in keeping food safe**

Bacteria exist everywhere in nature. They are in the soil, air, water and the foods we eat. When bacteria have nutrients (food), moisture, time and favourable temperatures, they grow rapidly, increasing in numbers to the point where some cause illness. Understanding the important role temperature plays in keeping food safe is critical. If we know the temperature at which food has been handled, we can then answer the question, “is it safe?”

- The “Danger Zone” (40 degrees Fahrenheit to 140 degrees Fahrenheit)
- Cooking
- Storing leftovers
- Reheating
- Cold storage temperatures

➤ **The “Danger Zone” (40°F to 140 °F)**

Bacteria grow most rapidly in the range of temperature between 40 degrees and 140°F, doubling in number in as little as 20 minutes. This range of temperature is often called the “Danger Zone”. Food should never be left out of refrigeration over two hours. If the temperature is above 90° F, food should not be left out more than 1 hour.

If you are transporting cold food to another location, bring an insulated container packed with plenty of ice, frozen gel packs or another cold source. It is always best to cook foods, cool them and transport them cold.

➤ **Cooking**

Raw meat and poultry should always be cooked to a safe minimum internal temperature. When roasting meat and poultry, use an oven temperature no lower than 325 °F. Use a food thermometer to assure that meat and poultry have reached a safe minimum internal temperature.

- Cook all raw beef, pork, lamb and veal steaks chops and roasts to a minimum internal temperature of 145° F as measured with a food thermometer before removing meat from the heat source.
- Cook all raw ground beef, pork, lamb and veal to an internal temperature of 160 ° F as measured with a food thermometer.
- Cook all poultry to a safe minimum internal temperature of 165°F as measured with a food thermometer.

➤ **Storing leftovers**

One of the most common causes of food borne illness is improper cooking of cooked foods. Because bacteria are everywhere, even after food is cooked to safe internal temperature, they can be reintroduced to the food and then reproduce. For this reason, leftovers must be put in shallow containers for quick cooling and refrigerated within 2 hours.

➤ **Reheating**

Foods should be reheated thoroughly to an internal temperature of 165° F or until hot and steaming. In the micro wave oven, cover food and rotate so it heats evenly.

### ➤ **Cold storage temperatures**

Properly handled food stored in a freezer at 0° F will be safe. Freezing keeps food safe by slowing the movement of molecules, causing bacteria to enter a dormant stage. Once thawed, these bacteria can again become active and multiply to levels that may lead to food borne illness. Because bacteria on these foods will grow at about the same rate as they would on fresh food, thawed foods should be handled as any other perishable food.

A temperature of 40° F should be maintained in the refrigerator. In contrast to freezer storage, perishable foods will gradually spoil in the refrigerator. Spoilage bacteria will make themselves known in a variety of ways. The food may develop an uncharacteristic odour, colour and or may become sticky or slimy. Moulds may also grow and become visible. Bacteria capable of causing food borne illness either do not grow or grow very slowly at refrigerator temperatures. An appliance thermometer should always be used to verify that the temperature of the unit is correct.

## **4.0 CONCLUSION**

Inadequate food temperature controls are common factors contributing to food borne illness. Foods should be properly handled when purchased, stored, prepared and served to prevent contamination. The most important factors to put into consideration in maintaining food safety is cooking foods to appropriate temperatures and keeping perishable food products out of the temperature danger zone.

## **5.0 SUMMARY**

The first step in food safety temperature control is to identify the kind of foods that require to be kept under temperature control. There are different requirements to prepare and serve hot meals at food service centres. Foods and other products such as the utensils and dinner ware must be packaged and delivered in a manner that prevents contamination and maintains proper food temperatures. State of the art food carrier and transport systems can safely deliver cold and hot food items and or meals at proper temperatures within acceptable time frames.

## **6.0 TUTOR-MARKED ASSIGNMENT**

1. What do you understand by the term “potentially hazardous foods”? Give four examples of such foods.
2. Give a full description of the best way to cook meat and poultry through careful management of temperature.

3. Describe three ways that food temperature can be managed to avoid contamination.

## **7.0 REFERENCES/ FURTHER READINGS**

Van- Hoof H.B., Vallen G.K., McDonald M.E.,& Wiener P.J. (2007) A Host of Opportunities: An Introduction to Hospitality Management (2nd Edition) PEARSON Prentice Hall, Upper Saddle River, New Jersey, USA.

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## **UNIT 5 FOOD CONTAMINATION AND POISONING CONTENT**

1.0 Introduction

2.0 Objectives

3.0 Main Content

3.1 Causes of food Poisoning

3.1.1 Pathogenic Bacteria

3.1.2 Poisonous Vegetables and Tubers

3.2 Control and Prevention of Food Contamination and Food Poisoning

4.0 Conclusion

5.0 Summary

6.0 Tutor-Marked Assignment

7.0 References/Further Readings

### **1.0 INTRODUCTION**

Food contamination and poisoning occurs when we eat food that has gone bad and is infected by bacteria. Food contamination and poisoning is a serious issue because it results in food-borne diseases. It is the occurrence of chemical, biological, physical, or other substances in food that make it unsafe for consumption. Chemical contamination includes detergents, sprays, etc. Biological substances include yeasts, moulds, and bacteria. Physical contamination includes hair, insects, band-aid, etc.

Although many types of bacteria are harmless, some are definitely harmful and cause diseases. These disease-producing bacteria multiply rapidly in favourable conditions and cause food poisoning.

There are various groups of disease-producing or pathogenic bacteria which may be found both inside and on the surface of the body; which may be transferred to food by people who handle it if precautions are not taken. Such infection may be spread during food manufacture and during preparation and cooking in restaurants, in

schools and in the home. Food must therefore be stored and prepared in conditions that are unfavourable to the growth of bacteria.

## **2.0 LEARNING OBJECTIVES**

By the end of this unit, you should be able to:

1. Identify the various disease causing micro organisms and how they are spread.
2. Identify poisonous vegetables that cause food poisoning and avoid them.
3. Develop procedures for controlling and preventing food contamination and food poisoning.

## **3.0 MAIN CONTENT**

### **3.1 Causes of Food Poisoning**

There are several causes of food poisoning which includes pathogenic bacteria and poisonous vegetables.

#### **3.1.1 Pathogenic Bacteria**

Pathogenic bacteria may be sub divided into:

- (i) The salmonella group
- (ii) The staphylococcus group and
- (iii) The Clostridium group

- (i) The salmonella group- These bacteria are mainly spread by:
  - (a) Infected people who handle food especially without washing their hands after using the toilet.
  - (b) Infected rats and mice depositing their droppings on food.  
Ducks' eggs and hens' eggs are also a possible source of food poisoning caused by salmonella group of bacteria.

The effects of food poisoning by this group

The effects of food poisoning by this group include diarrhoea, vomiting, stomach pains, and sometimes in severe cases, death may occur.

- (ii) The staphylococcus group- These bacteria produce their poison in food. They are mainly spread through:
  - (a) Coughing and sneezing by infected people. The mouth and the nose must be covered when sneezing or coughing

- (b) The handling of food by infected people with open septic cuts, scratches, and boils. Kitchen staff suffering from such ailments should not handle food.

The effects of food poisoning by this group

The effects of food poisoning by this group include extreme weakness, severe vomiting, and stomach pains.

- (iii) The Clostridium group- These thrive in the absence of oxygen and produce spores that can survive normal cooking processes. If canned meat or vegetables are not properly preserved, the spores of these bacteria can germinate inside the can and produce poisons. This form of food poisoning (botulism) is severe and can be fatal. Personal hygiene is of very great importance when handling food and it is essential that every aspect of food storage, handling and preparation should be carried out in a hygienic way.

### **3.1.2. Poisonous Vegetables and Tubers**

There are some kinds of poisonous plants and fruits which are sometimes mistaken for edible varieties. It is important that these vegetables are recognized and avoided, for example, some species of spinach, garden eggs, mushrooms and berries are poisonous.

Some species of tubers like yams, coco yams, and cassava are poisonous and could cause instant death if and when eaten. There have been cases of a whole family being wiped out after a meal of yam, cassava or cocoyam. It is therefore very advisable to buy tubers from well known dealers or to make sure that only the non-poisonous species are produced.

Certain species of cassava are poisonous if not properly prepared. Such species are usually soaked in water for a few days to allow some of the poisonous substance to dissolve in the water where it is neutralized during the process of fermentation, for further processing.

Cassava leaves contain glycoside or prussic acid which is very poisonous. If the leaves are not prepared in the proper way (pounded and cooked by boiling or stewing), food poisoning may occur.

The effects of food poisoning from plants and fruits.

The effects of food poisoning from plants and fruits include drowsiness, skin rashes, and inflammation of the mouth, stomach pains, vomiting, diarrhea, and sometimes death.

## **3.2 Control and Prevention of Food Contamination and Food Poisoning.**

1. **In the home**, the rules of kitchen hygiene should be observed at all times (refer to Module 3, Unit 1, 3.2. Hygiene in the Kitchen)

## 2. In the Shops

- (a) Purchase food stuff from shops that are clean and well ventilated
- (b) Buy from shops where sale is brisk and stocks do not stay for a long time
- (c) Inspect tinned foods carefully for dents, bulges, rusts and blown tins, which indicates the presence of botulism bacteria
- (d) Buying frozen foods where the freezer is in good working condition.

## 3. In the Market

- (a) Buy from clean stalls
- (b) Avoid buying uncovered fresh and perishable or cooked foods.
- (c) Foods that do not need washing before cooking should be clean
- (d) Select food carefully before buying, they should be free of maggots, worms and slugs from oil.

### **SELF-ASSESSMENT EXERCISE**

What is botulism and how can it be detected in canned food?

## **4.0 CONCLUSION**

Food contamination and poisoning is a serious issue as it can lead to death if adequate care is not taken when purchasing, storing, preparation and serving of food. Food can be contaminated at any one of these stages. Food can be contaminated through biological (micro organisms), chemical (cleaning compounds), Physical (unhygienic particles in the atmosphere). Food can be contaminated and poisonous if it is poisonous naturally from the farm.

## **5.0 SUMMARY**

Pathogens and poisonous produce from the farm like vegetables and tubers which contain some poisonous acids are basically the main source of food contamination and poisoning. The effect of food poisoning ranges from drowsiness, vomiting, diarrhea, stomach pains and most cases instant death. Certain preventive measures can be taken to guard against food contamination and food poisoning and these include adequate kitchen hygiene, proper food preparation methods to remove excess acid in food like tubers, avoiding poisonous vegetables, buying food stuffs from reputable shops that stock good products in good hygienic conditions.

## **6.0 TUTOR-MARKED ASSIGNMENT**

1. Enumerate the causes of food poisoning and how they can be Prevented.
2. Where do you think is the right place to start in the prevention and control of food contamination and food poisoning?



3. What is food contamination and food poisoning?
4. List and explain some of the symptoms of food poisoning

### **7.0 REFERENCES / FURTHER READINGS**

Mill, R.C.(2007) Restaurant Management: Customers, Operations And Employees (2007) Pearson Prentice Hall, Upper Saddle River, New Jersey, USA.

Food Contamination  
Food Poisoning

[www.analyrics.com/lyrics](http://www.analyrics.com/lyrics)  
[www.streetdirectory.com/](http://www.streetdirectory.com/)

### **MODULE 2 Operation Of The Kitchen Facility**

- Unit 1 Kitchen Safety
- Unit 2 Kitchen Equipments and Interiors
- Unit 3 Kitchen Hygiene
- Unit 4 Importance of Hygiene
- Unit 5 Pest Control

## **UNIT 1 KITCHEN SAFETY**

### **CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 Importance of Kitchen Safety
  - 3.2 Designing Safe Industrial Kitchens
  - 3.3 Essential Safety Tips
  - 3.4 Food Safety
- 4.0 Conclusion
- 5.0 Tutor-Marked Assignment
- 6.0 References

### **1.0 INTRODUCTION**

Restaurant kitchens can be treacherous places, with sharp knives in perpetual use and scalding ingredients cooking on multiple stove-top burners. A thoughtful design can help to reduce many potential dangers. Restaurant kitchens can also be breeding grounds for food-borne illnesses, but you can take steps when you create your kitchen to facilitate cleanliness and sanitation. These design features should not be a substitute for regular cleanup, but they can make it easier to perform basic cleaning tasks

There is significant potential for danger in restaurant kitchens from wet slippery floors, which become doubly hazardous when employees are carrying hot, heavy pots and pans, and working with sharp knives. Choose slip-resistant tiles for your flooring to minimize the risk of injury.

### **2.0 LEARNING OBJECTIVES**

By the end of this chapter, you should be able to:

1. Outline the importance of kitchen safety
2. Identify the factors involved in designing safe kitchens
3. State kitchen safety tips
4. Describe issues in food safety.
5. Develop a procedure for avoiding accidents in the kitchen

### **3.0 MAIN CONTENT**

#### **3.1 Importance of Kitchen Safety**

Safety in the kitchen is very important. In order to avoid accidents in the kitchen, it is very important to take precautions.

Many fires in our commercial premises are started in the kitchen out of negligence and lack of proper knowledge about kitchen safety.

Another major danger in the kitchen is accidents caused by knives. How many times have you cut yourself whilst chopping onions or tomatoes? Although accidents cannot be

planned, they can easily be prevented. Outlined below are some simple steps to take when it comes to kitchen safety.

### **Kitchen Knives Safety**

We cannot do without knives in the kitchen so kitchen knives safety is a must. Simple rules have to be followed when it comes to handling and storing knives.

- Always point away when using knives
- Do not mix knives with other cutlery in the drawers; you can accidentally cut yourself when trying to reach a knife amongst other cutlery.
- Wash knives separately and take much attention to the sharp blade when washing your knives.
- Do not try and catch a knife when it drops down. Where possible, try and move your feet away to allow the knife to fall down. Trying to catch a knife mid-air can slice your hand unless you are a professional juggler.
- Sharpen your knives regularly. Keeping your knives sharp makes them easier to use because less force is required to cut through tough food.

### **Use a Magnetic Knife Holder.**

Wall mounted stainless steel magnetic knife holders are preferably the best. They are designed to allow you easy reach and access to your knives whilst securely holding the knives in place away from danger.

Another advantage of using a magnetic knife holder is the fact that the magnetic board enables the knives to be securely held and displayed when not in use. So not only will you have solved one kitchen safety problem but you will also add style into your kitchen.

### **Use a Drawer.**

If you do not have a Magnetic Knife Holder, the use of a drawer can be very effective when used properly. Make sure you designate one drawer for storing your knives. Also do not forget to use a secure divider in your drawer to prevent the knives from sliding and accidentally causing physical injury.

### **Use a Knife block.**

Traditionally knives have been stored in the kitchen on knife blocks. These can be made of wood, metal or plastic and they all have different size shape insertions that knives can slide in for proper storage.

### **How to open a pot lid**

Hot steam can cause scalds to your hands and face so safety comes first when taking off a lid from your pot.

The proper way to open a lid is to lift open the side that is opposite to you first and let the steam out before removing the whole lid. Where no plastic handle is available, use a kitchen towel or oven clothes to lift the lid; never lift the side that is nearest to you first, hot steam will escape out and you can easily get scalded. This is part of kitchen safety.

### **3.2 Designing Safe Industrial Kitchens**

As well as being a place where healthy and nutritious food may be prepared, the working environment in the commercial kitchen must be safe and comfortable, while meeting the increasing demands for energy efficiency and sustainable operation. There is a continuous need for risk assessment in the kitchen that requires appropriate staff training and a robust maintenance regime. However, to ensure both minimum risks to personnel and maximum operational effectiveness, appropriate and properly informed design is necessary

In terms of the services and system design; particular consideration should be given to the specific areas of gas safety as well as overall ventilation requirements.

The science of commercial kitchen ventilation includes both exhausting air as well as providing replacement air within the cooking area. Whether a restaurant is a small free-standing site or a large institutional kitchen, managing and balancing airflow is a complex issue. It is a challenge to properly ventilate commercial kitchens, as they require moving large volumes of air through duct-work and equipment placement in very restricted spaces.

Overall design, construction, installation coordination, and maintenance are required to get optimum performance and an energy-efficient air balance from the system. To better understand why a kitchen ventilation system needs to be designed and constructed in a very specific manner, the principles behind air movement must be understood. Buildings are required to adhere to indoor air quality regulations and, depending upon the jurisdiction, sometimes exhaust air quality regulations. The food service industry must meet higher air quality regulations than standard building exhausts due to the type of contaminated air produced by cooking food.

#### **Height of Appliances**

A kitchen should be safe and accessible no matter the age or state of mobility of the people who spend time in it. In terms of universal design and aging-in-place, one of the most important safety considerations is the specific height of appliances, particularly ovens and microwaves. Design the position of these appliances to be at a safe height so that you are never pulling hot pots and pans down, towards your body. By the same token, you do not want appliances too low where it maybe be difficult to get to if mobility is an issue.

## **Task**

## **Lighting**

It might be obvious but the appropriate amount of overhead and under-cabinet lighting is required to fully illuminate the surfaces where you are preparing and cooking food.

### **3.3 Essential Safety Tips**

The kitchen is the busiest room in the home, as well as one of the most frequently remodeled spaces. Unfortunately, the kitchen also can be the most dangerous room in the house, according to the National Kitchen & Bath Association.

However, the association has developed a few simple guidelines to keep kitchens safe. Following these rules will help keep your clients and their families safe for years to come:

1. Provide proper lighting. Good general lighting, supplemented with proper task lighting that is clearly focused on work surfaces, will greatly decrease the chance of injury while preparing a meal. The lighting should be glare-free and even, without producing any shadows on the work surface.
2. Install slip-resistant flooring. Recommend a slip-resistant material for the floor. Some good choices are matte-finished wood or laminate, textured vinyl or a soft-glazed ceramic tile. If the client chooses tile, suggest that a throw rug with a non-skid backing is a good idea, especially around areas that get wet.
3. Provide safe storage for a fire extinguisher. A fire extinguisher should be visibly located near a room exit, away from cooking equipment. Never locate an extinguisher near or under a cook top or range, the most likely sources of a fire. An extinguisher stored in that area would be unreachable if a fire occurs in those areas.
4. Keep electrical switches, plugs and lighting fixtures away from water sources and wet hands. Building codes require that every electrical receptacle be grounded and protected with ground-fault circuit interrupters. In addition, all wall-mounted room controls should be 15 inches to 48 inches above the finished floor.
5. Install water-temperature regulators. Faucets with anti-scald devices to prevent water temperature from rising to dangerous levels; pressure-balanced valves equalize hot and cold water. Faucets also can be preprogrammed to the client's desired temperature setting. (These faucets are good in bathrooms, too.)
6. Recommend a safe cook top. Point out to your client that cook tops with burners in a staggered layout or one straight row can help prevent scalds from reaching over boiling pots. For the same reason, cook top controls should be along the side or in the front.
7. Design a safe floor plan. Think about how traffic will flow through the kitchen, and design the floor plan to keep that traffic out of the cooking area. For example, avoid putting a range near an entrance or exit.
8. Put the microwave at a convenient height. Locate microwaves at heights that do not require reaching to retrieve food.

9. Offer your client the option of slide-out trays and bins. Such features in base cabinets make their contents more accessible, and they minimize reaching and twisting to pull out the right item.

It is important to integrate the following actions into daily kitchen activities.

- Keep fridge/freezer organized and not overly stocked to prevent objects from falling when the door is opened. Same for the pantry and cupboards, especially the upper shelves.
- Keep the underside of your stove range hood clean, and follow the manufacturer's guidelines for changing and/or cleaning the filter regularly to avoid a grease fire.
- Always chop on a stable, non-slip surface. Professional's TIP: Place a damp dish towel or rag under your cutting board to prevent it from shifting about on the counter.
- Position pot & pan handles inwards and not protruding out from the stove, where they could be bumped or grabbed by little hands

### **How to Avoid Accident in the Kitchen**

- Clean up spills the moment they happen.
- Always check that small appliances are switched to 'Off' before plugging in.
- Unplug appliances as soon as you are finished using them.
- Never try to catch a falling knife.
- Use equipment for its intended purpose only.
- Position oven racks correctly before preheating the oven—it is much easier to do when they are cold.
- Never adjust an oven rack while there is a casserole or tray of food on it.
- Never place a dirty knife in soapy dishwater where it becomes hidden and can be a hazard for the dishwasher's hands.
- Stay close to the stove when cooking over high heat.
- Keep a pot-holder or towel over the handle of a pot or pan that has just come out of the oven in case you forget the handle is hot and try to grab it.
- Keep knives and other sharp objects away from the kitchen counter's edge where they can fall or be reached by children.
- If you must walk with a knife, keep it tip down, at your side.

Print this list and keep it visible for a few weeks in the kitchen as a reminder. Share the list with anyone else who is regularly in the kitchen, such as older children or your partner.

### **SELF-ASSESSMENT EXERCISE**

Mention at least five ways to avoid accidents in the kitchen.

### **OTHER SAFETY TIPS**

Safe

When using knives you should be careful and always follow our safety tips.

Cutting:

## Safety

## Tips:

If you are under ten you should always be supervised by an adult when cutting. Always use the appropriate size knife for the task. Always use a cutting board to prevent scratches to the counter. Wash the board with soapy water after you use it. Slice away from your fingers that are holding the food, not toward them. Make sure the knife is sharp, but not too sharp. When you're done using the knife, clean it and put it away where you got it.

## Safe

## Microwaving:

Using a microwave is quick and easy, but there are some important safety rules to follow. To prevent injuries follow our safety tips.

## Safety

## Rules:

Use oven mitts or potholders to remove the container from the microwave. Never use foil or other metal items inside the microwave because they can start a fire. Only use containers that are safe for microwave use, otherwise the container could melt. Always cover your items but leave a little space for breathing. Don't stand close to the microwave. This may hurt you.

## Using

a

## Toaster

## Oven

## Safely:

Using a toaster oven is quick, easy, and convenient. Here are some safety tips for using a toaster oven.

## Safety

## Tips:

Do not touch metal parts without a mitt or potholder. Before you clean the toaster oven let it cool so you would not burn yourself. When cleaning the toaster oven, the crumbs and pieces of food that broke off are in the bottom, so make sure you get those out.

## Cleaning

up

## Messes:

When you cook it is possible to spill, break things, or make messes, so here are some clean up tips.

## Clean

up

## Tips:

If you break or spill anything clean it up right away. If a glass or dish is broken, sweep up all pieces with a broom. Do not sweep up broken pieces with your hands, they could cut you. Sweep broken items into a dustpan or a separate bag, and then throw it away. Wipe the area with a damp paper towel to pick up small pieces of glass that may be left over. If you spilled oil or gravy wipe it up and then clean with soap and water until the surface is oil-free. If soap doesn't work, use cornstarch and rinse with water. If you have spilled lemonade or soda clean it up with a dry paper towel then use a wet paper towel to get the sticky stuff off. Then dry off the surface.

When you wash your hands make sure they are really dry, otherwise if you unplug something you could get an electrical shock. Do not put too many plugs into one socket or use an extension cord. Keep children away from anything in use to prevent them from getting hurt. Don't let children play around in the kitchen. If children are around do not leave chairs around the stove. They could start a fire or get burned.

## **How to put Out a Kitchen Fire:**

For grease fires in a pan or in an oven, use a lid or plate to smother the flames. With small paper, rubbers, or plastic fires, douse the object in water. If possible put the small object in the sink and run water on it.

### **3.4 FOOD SAFETY**

Canteen management is responsible for serving food that is nutritious, appeals to the senses, and is safe to eat. A restaurant manager is responsible for the following:

- Identify health hazards in the daily operation of the restaurant
- Develop and implement policies, procedures, and standards to prevent food borne illness
- Coordinate training, supervision, and direction of food handling and preparation while taking corrective action as required to protect the health of customers and employees
- Inspecting the operation periodically to ensure that policies and procedures are being followed correctly.

To assist them in taking a proactive stance in assuring sanitary procedures, managers should have some knowledge of the following:

1. Properties of food: The amount of available moisture and the pH level that strengthens or represses the growth of bacteria together with a list of potentially dangerous foods
2. Food processing/preparation: Processes the food will undergo.
3. Volume of food prepared: The larger the quantity of food to be fixed, the greater the potential danger.
4. Type of customer: Acknowledging the fact that certain people (the very old, very young, infirm, and those who are sick) are more susceptible to food-borne illness than the rest of the population.

## **MAJOR SANITATION PROBLEMS**

### **Food borne illnesses**

Food borne illnesses occur because of the following:

1. Inadequate cooling and cold holding
2. Preparing food ahead of planned service
3. Inadequate hot holding
4. Poor personal hygiene /infected persons
5. Inadequate reheating
6. Inadequate cleaning of equipment
7. Cross-contamination
8. Inadequate cooking or heat processing
9. Contaminated raw materials



10. Unsafe sources  
(Mill, 2007)

#### **4.0 CONCLUSIONS**

There are three basic rules to remember when working in the kitchen. Be on the lookout for potential hazards. They are always present. Use safe work procedures. Accidents can be prevented by doing things the right way and not taking short cuts. Use protective equipment when needed. This will also help to prevent accidents.

#### **5.0 SUMMARY**

This unit deals with kitchen safety and all the issues that lead to safe and hazard free kitchens. These issues include safety measures to be taken when handling kitchen knives like using a magnetic knife holder, a drawer, knife block etc. Other safety tips include safe cutting, safe microwaving, using a toaster oven safely, ways to put out kitchen fire and dealing with sanitation problems.

#### **6.0 TUTOR-MARKED ASSIGNMENT**

1. What is kitchen safety?
2. Discuss the importance of kitchen safety.
3. Explain the factors that should be put into consideration when designing an industrial kitchen

#### **7.0 REFERENCES / FURTHER READINGS**

Mill, Robert Christie (2007), Restaurant management: Customers, Operations and Employees, 3rd edition, New Jersey: Pearson Education Inc.

## **UNIT 2: KITCHEN EQUIPMENT AND INTERIOR CONTENT**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content

- 3.1 Equipment Selection
- 3.2 Equipment Maintenance
- 3.3 Energy Management
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References

## **1.0 INTRODUCTION**

Kitchen Equipment refers to the utensils and other materials used in the kitchen for the preparation of food for consumption. It is important to carefully select equipment that guarantees safety and convenience of the users. It is imperative to design the layout of the kitchen such that will allow enough space for those using the kitchen and minimize accidents. This unit takes us through the selection, maintenance and energy management of the kitchen.

## **2.0 LEARNING Objective**

By the end of this unit you should be able to:

1. Identify the basic criteria involved in the selection of kitchen equipment
2. State basic equipment found in the kitchen
3. Compare and contrast the relative advantages of various materials used in the kitchen interiors and equipment constructions
4. Identify the most important concepts in cleaning and maintaining kitchen equipment
5. Design a comprehensive energy management program

## **3.0 MAIN CONTENT**

### **3.1 Equipment Selection**

**3.1.1 Basic Considerations:** - In selecting kitchen equipment, several basic considerations are made. Khan (1987) suggests that management should consider capacity, need, cost, functional attributes, and sanitation and safety.

**3.1.2 Capacity:** - it is critical to determine the capacity of each type of equipment to be used in an operation before deciding on how many pieces of which equipment to purchase.

Khan (1987) further presents the following determinants of the capacity of kitchen equipment.

1. An analysis of each food item on the menu to estimate the number of portions to be prepared for every meal period

2. Determination of the portion size for every menu item
3. Multiplication of the projected number of portions by the portion size will give the total volume of food to be prepared at each meal period.
4. Selection of the method of preparation and production for each item on the menu
5. Determination of batch size for those items to be prepared in batches.
6. Estimation of the number of portions to be prepared at any one time based on projected number of customers for items prepared to order
7. Consultations of equipment catalogs to determine the number of pieces of equipment to be ordered.

### **Need**

Equipment should only be acquired when they are needed. Equipment are said to be needed if they improve the quality of food being prepared, produces product and or labour cost savings results in increased quality of finished products and or contribute to profitability of the operation (Mill, 2007)

### **Cost**

Acquiring kitchen equipment involves various cost elements; some of these costs include purchase price, installation cost, cost of insurance, maintenance and repair and operation cost. Khan (1987) suggests the following formula as a method of calculating the value of a piece of equipment:

$$H = \frac{L(A+B)}{C+L(D+E+F) - G}$$

Where,

H = Calculate value

L = Expected life of equipment in years

A = Savings in labour per year

C = Cost of the equipment & installation cost

D = Cost of utilities per year

E = Cost of maintenance and repair per year

F = Annual projected interest on money in C

G = Turn – in value at the end of the life of the equipment

If H is greater than, 1.0, the equipment should not be purchased. The higher the value of H, the more attractive the purchase becomes. This equation requires an estimate of expected life of the equipment. The normal life of kitchen equipment varies from 9 to 15 years.

### **Functional Attributes**

Before equipment is purchased it is important to consider the performance of the equipment relative to the cost and compared to the performance of other equipment.

Also, consideration should also be given to likely changes in menu that render an expensive piece of equipment obsolete.

### **Sanitation and Safety**

Safety and sanitation are important consideration in purchasing equipment. All materials used should be non-toxic. Parts should also be easily disassembled for easy cleaning, moving and sharp parts needed to be protected and safety locks are desirable on all equipment.

### **Materials Used**

The cost of a piece of equipment depends to a large extent on the materials used to construct it. Some of the most common are:

- a. Wood: the disadvantages of using wood for constructing kitchen equipment outweighs its advantages because wood absorbs moisture; it tends to crack, thereby making it unsafe from the view point of sanitation. However, it is high in weight, can be designed into various shapes, cushions noise, it is all attractive and relatively inexpensive.
- b. Metal: - a variety of metals are used as kitchen equipment, but the most common among them are alloys which is a combination of one or metals, for example stainless steel, brass, etc. Another commonly used metal is aluminum which is popular for utensils equipment both inside and out and steam jacketed kettles. Aluminum is light, a good conductor of heat and electricity, does not corrode easily and is durable. Stainless steel is easily cleaned, is attractive, resists rust and stain formation and can because of its surfaces show dirt easily, be kept sanitary, but can be expensive depending on its thickness.
- c. Plastics: - various plastics are used in making kitchen equipment in foodservice operations. They are very versatile, durable and capable of being molded into different shapes (Mill, 2007).
- d. Coatings: - interior surfaces are usually lined with coatings to give them additional properties. For example silicone makes a non-sticking surface.

### **Equipment Types**

#### **A) Dry-Heat Cooking Equipment**

- Ranges: - this could either be gas or electric. They are generally mounted on the floor with cooking done in pots directly on the range top. A heavy frame is preferred because of the heavy use that ranges receive.

- Conventional ovens: - conventional ovens should be durable since they are used a great deal. The ease of cleaning and energy conversion should also be considered.
- Convection oven: - unlike conventional ovens, convection ovens are designed to allow for consistent distribution of heat inside the oven.
- Infrared ovens: - they are relatively new and take less space than conventional ovens while using less energy because they cook at higher temperatures for relatively short periods.
- Other heat-cooking equipment: - include mechanical pizza ovens, microwave ovens, deck ovens, broilers, griddles etc.

**B) Steam Equipment: - steam equipment include the following**

- Steam jacketed kettles
- Steamers
- Fryers: Deep-fat fryers, tilting skillets

Small Equipments: - these include food cutters, slicers, mixers, vertical cutter/mixers, vegetable peelers, etc.

**Refrigeration Equipment**

According to Kotschevar and Terrell (1985) refrigeration equipment may be either mobile or fixed reach-in specialised units, or ice- making equipment. This equipment may either be upright or chest type. Refrigerators are generally used to either preserve or display items at cold temperatures.

**Interior Surfaces**

Materials: - materials for interior walls, floors and ceilings should be selected not only based on attractiveness, but also on such things as ease of cleaning, ease of maintenance and safety.

Flooring: the most important factors to consider when selecting floor coverings are resiliency and porosity of material. Resiliency refers to the ability of the material to withstand shock, while porosity identifies the extent to which the material can be penetrated by liquids. Good kitchen floors need to be nonslip, sanitary and able to handle spills and constant cleaning. Preferred materials are marble, terrazzo, natural quarry tile, asphalt tile or sealed wood.

Walls and ceiling: clean-ability, location, noise reduction and colour are to be considered in selecting wall and ceiling materials. Some of the popular wall covering include ceramic tiles, stainless steel, also painted plaster or cinder-block walls if selected properly can be used successfully in dry areas.

**3.2 Kitchen Equipment Maintenance**

Proper maintenance of kitchen equipment is often neglected by catering organizations. This is why kitchen equipment manufacturers and suppliers recommend an approach called Planned Preventive Maintenance (PPM). Planning the maintenance function for kitchen equipment will help assure lower costs through reduced maintenance while ensuring continued high sanitation standards throughout the life of the equipment. Mill

(2007) presents the following important concepts involved in cleaning and maintenance of kitchen equipment:

1. Minimize soil, dirt, and food build-up.
2. Remove build-up immediately.
3. Avoid as many soil-collecting surfaces and recesses as possible.
4. Select smooth, non-porous surfaces.
5. Provide easy access to areas that have to be cleaned frequently.
6. Streamline electrical, gas, and plumbing connections.
7. Use coved corners on equipment and building surfaces.
8. Provide adequate drains and cleanouts.
9. Use automated cleaning and sanitizing systems.

The purpose of PPM is to reduce the risk of a breakdown by spotting a looming problem before it happens. This makes double sense in the efficient running of a kitchen. With a PPM scheme in place, a routine visit by a service engineer will fine-tune equipment so it is performing at its best. This can be as straightforward as cleaning partly blocked gas jets for fuel efficiency or using computer diagnostics to test electronic circuitry on combi-ovens.

And just as a dentist keeps case notes from every check-up of things to keep an eye on, so does a PPM engineer during a visit.

The second huge benefit of PPM is that as part of the routine inspection and adjustments the engineer can spot trouble ahead. For example, a fridge might appear to be running well to the chef, but the engineer might spot excessive compressor wear, which could lead to a breakdown or a failure to maintain a safe temperature.

### **SELF-ASSESSMENT EXERCISE**

Mention at least six of the important concepts presented by Mill (2007) that are involved in the cleaning and maintenance of kitchen equipment

#### **Preventative maintenance check list**

This is a breakdown of some of the jobs which need to be done through a PPM scheme and the engineer qualifications a kitchen manager should check before signing up for a PPM agreement.

#### **Electrical Equipment**

Specialist testing is required for most equipment that is hard-wired into the kitchen. It is important to check that the engineer servicing the electrical components of kitchen equipment has tested the equipment recommended by the manufacturer. Regular maintenance of electrical components is essential, since heat, water and electricity need

keeping well apart for safety reasons.

### **Gas equipment**

only engineers approved by the manufacturers of the equipment can work on gas appliances in a restaurant kitchen. These are the certification categories an engineer working on kitchen gas equipment must have:

Category 1 Boiling tables, open and solid-top ranges, convection ovens, combi-ovens and bains-marie.

Category 2 Water boilers, boiling pans, steamers and dishwashers.

Category 3 Deep-fat fryers, bratt pans, griddles and grills.

Category 4 Fish and chip ranges.

Category 5 Forced-draught burner appliances, such as impingers and conveyor ovens.

### **Water**

Only accredited plumbers can connect equipment to the mains supply to ensure that its connection and use satisfies the Water Regulations Guide. With kitchen equipment connected to the water mains there is the risk of accidental backflow of dirty water into the clean water supply. If this happens through lack of maintenance, then the premises responsible is liable for a hefty fine. Scale in equipment caused by poor or no water treatment or filtering will invalidate warranty terms and cause premature breakdown, especially in combi-ovens, beverage equipment and dishwashers. As part of a PPM scheme, equipment using water will be checked for build-up of lime scale in tanks and pipes.

### **Microwave testing**

Microwave emission testing is essential to spot potentially harmful leakage. This is a specialist job requiring specific testing equipment and must be done every six months.

Broilers: Broiler grates and other movable parts should be cleaned daily. With gas broilers it is important to check the flame. A yellow-tipped flame indicates insufficient air. The burners can be adjusted to give a blue flame. Gas ports should be kept clean. With electric broilers heating elements can be replaced when they burn out.

### **An energy management programme would ensure that**

1. Burner orifice is checked and cleaned.
2. Pilot lights are cleaned and adjusted.
3. Air shutters are checked to ensure that the air gas- mixture is correct.

4. Ceramic and metal radiant units are checked for deterioration and replaced with new chips if blackened or cracked (Minor and Cichy 1984).

Coffee Urns: two problems with coffee urns ruin the taste of the coffee. First, the minerals in the water can be deposited. Second, deposits will accumulate on surfaces that are exposed to brewed coffee or coffee vapour solution is to clean the urn after making each batch of coffee. This is done by rinsing out the urn to remove any remaining urn and deposits, adding a gallon or so of hot water, brushing the interior of the urn, then rinsing the urn. Twice a week the urn can be cleaned with a manufacturer-recommended product to remove stubborn deposits.

Dish Washers: the power should be turned off before cleaning a dishwasher. Tanks have to be drained and cleaned, wash arms removed, and lime or hard-water deposits eliminated from the rinse jets. The exterior can be cleaned with a detergent solution, rinsed, and dried. Periodic checks are necessary for leaks, and belts and conveyors are examined for wear and lubricated.

Fryers: fryers should be cleaned daily or at least twice weekly, depending on the use. The fat must be removed and the interior wiped out and filled with water and a fryer cleaner solution. The interior is then rinsed and dried after removal of the cleaning solution. Since different temperatures are needed for different foods, it may be necessary to maintain two or more fryers to cook various food items- one for seafood, another for vegetables (Minor and Cichy 1984).

**Refrigerators:** the inside of reach in refrigerators should be cleaned once a week. Shelves are removed and cleaned at the pot sink or run throughout the dish washer. Condenser coils need to be watched for dirt build-up, which cut down the transfer of heat and causes the unit to run excessively. Coils dusted and wiped free of dust and dirt.

Food Cutters, Choppers and Slicers: choppers and cutters should be rinsed after each use. They should be unplugged before cleaning. Special care must be taken with slicer blades, which should be sanitized and allowed to dry after cleaning.

Mixers: mixers should be cleaned right after use.

Tables: Table-tops can be scrubbed with a hot detergent solution before being rinsed, sanitized, and allowed to dry. Drawers should be emptied and washed weekly.

### **3.3 Energy Management**

One of the major problems in controlling energy cost is that a significant part of the cost is fixed. Refrigerators and fans are in operation regardless of sales volume, and most appliances are designed for high-volume operation. A reduction in number of meals prepared will not result to a reduction in energy costs. To get costs under control it might



be possible to plan less energy-intensive meals –prepared foods and salads plates-during low-business periods.

Top management commitment. Employees pay attention to what management pays attention to. Getting support of top management is an essential first step in a successful programme. Top management's responsibilities are to define the goals and standards for program. Basic goals might include the following:

- Reduce the consumption and cost of energy and water utilities by 20 percent per year.
- Improve the quality of the operation such that guest satisfaction is increased.

Standard methods to track and minimize energy consumption must also be developed to monitor the programme. A base level should be established to serve as a measure of progress made Period prior to implementation of programme (Mill 2007).

#### **4.0 CONCLUSION**

From the foregoing, it is clear that kitchen equipment and indeed the entire interior of the kitchen are most important to the effective running of the canteen. Adequate planning of kitchen equipment will enable canteen operators keep pace with growth in customer base of the canteen.

In making estimates for the future growth of the canteen, managers should also make plans for the increase in the capacity of kitchen equipment to cope in increased demands for meals.

#### **5.0 SUMMARY**

So far, this chapter has dealt with kitchen equipment and interior. It began with the identification of factors to be put into consideration in the selection of kitchen equipment in terms of capacity, need, cost, functional attributes, and sanitation and safety. Next, we identified different types of equipment found in the kitchen and the different materials used in manufacturing them, their advantages and disadvantages. Further, we identified the most important concepts in cleaning and maintaining kitchen equipment. Finally, we delved into energy maintenance.

#### **6.0 TUTOR MARKED ASSIGNMENT**

1. What factors should be considered when choosing kitchen equipment?
2. Why is choosing the right equipment necessary for the kitchen?
3. Identify some kitchen equipment and the mode of cleaning them?

## **7.0 REFERENCES/TUTOR-MARKED ASSIGNMENT**

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## **UNIT 3                    KITCHEN HYGIENE**

### **CONTENT**

1.0 INTRODUCTION

2.0 OBJECTIVES

3.0 MAIN CONTENT

3.1 DEFINITION OF HYGIENE

3.2 THE CONCEPT OF KITCHEN HYGIENE

3.3 FOOD POISONING

3.4	PREVENTING FOOD POISONING
4.0	CONCLUSION
5.0	SUMMARY
6.0	TUTOR MARKED ASSIGNMENT
7.0	REFERENCES

## **1.0 INTRODUCTION**

Hygiene as defined by the World Health Organization refers to conditions and practices that help to maintain health and prevent the spread of diseases. Medical hygiene therefore includes a specific set of practices associated with this preservation of health, for example environmental cleaning, sterilization of equipment, hand hygiene, water and sanitation and safe disposal of medical waste.

Kitchen hygiene refers to routine cleaning of “contact” (hand, food and drinking water) sites and surfaces (door and tap handles, work surfaces, and basin surfaces) in the kitchen, reducing the risk of spread of germs. Food hygiene is a broad term used to describe the preservation and preparation of foods in a manner that ensures the food is safe for human consumption. This process of kitchen safety includes proper storage of food items prior to use, maintaining a clean environment when preparing the food, and making sure that all serving dishes are clean and free of bacteria that could lead to some type of contamination.

The food storage aspect of food hygiene is focused on maintaining the quality of the food, so that it will be fresh when used in different recipes. With dry goods, proper food hygiene calls for placing items such as sugar or flour in airtight containers that are clean and dry. The containers are then placed into a pantry or reside on a kitchen counter where they are relatively safe from humidity and extreme temperatures.

In like manner, meats must be stored properly as part of proper food hygiene. Many people choose to use containers especially designed for use in a freezer in order to preserve raw meats for later use. Freezing helps to slow the process of decay, thus minimizing the chances for food poisoning when the meat is used at a later date. It is important therefore that hygiene measures are strictly put in place and adhered to in the kitchen environment in order to ensure safe and healthy food is prepared for customers that visit the restaurant.

## **2.0 LEARNING OBJECTIVES**

By the end of this chapter, you should be able to:

1. Explain the meaning of hygiene
2. Understand the implication of food poisoning
3. Know how to keep a hygienic kitchen
4. Identify measures to prevent contamination

## **3.0 MAIN CONTENT**

### **3.1 Definition of Hygiene**

Hygiene as defined by the World Health Organization refers to conditions and practices that help to maintain health and prevent the spread of diseases. Medical hygiene therefore includes a specific set of practices associated with this preservation of health, for example environmental cleaning, sterilization of equipment, hand hygiene, water and sanitation and safe disposal of medical waste.

Kitchen hygiene therefore, refers to routine cleaning of “contact” (hand, food and drinking water) sites and surfaces (door and tap handles, work surfaces, and basin surfaces) in the kitchen, reducing the risk of spread of germs. Food hygiene is a broad term used to describe the preservation and preparation of foods in a manner that ensures the food is safe for human consumption.

### **3.2 The Concept of Kitchen Hygiene**

To avoid making yourself ill through breeding bugs and accumulated germs in your kitchen, you need to be aware of routine cleaning and also to practice it to ensure a hygienic environment for the restaurant. Follow these tips to keep your kitchen free of germs and avoid getting food poisoning:

- Wipe down the surfaces thoroughly with warm water and washing up liquid, or antibacterial spray, both before and after you’ve finished preparing any food.
- Keep the hobs on your stove clean by wiping off any spills as soon as possible and scrape off anything burnt onto them with a plastic scraper. The surfaces of hobs are susceptible to scratches, so don’t use anything abrasive to clean them – a dishcloth or sponge is fine. Your basic oven cleaner should be adequate for removing most stains.
- Empty the bins in the kitchen before they overflow, otherwise you’ll be encouraging rodents to move in! If you are able to, recycle all your plastic, glass and cardboard.
- Do the washing up after every meal – if you can, soak and wash pots and pans as you prepare your meal. This way, you only have to clean the plate(s) and cutlery you used to eat your food with afterwards.
- Always wash your hands before you start preparing a meal, and afterwards too, especially if you’ve been handling raw meat.
- Any cooked leftovers should be kept in the fridge and eaten within 2 days. Make sure they are heated through properly when you eat them, and do not reheat anything that has been frozen.
- As well as cleaning out your fridge and freezer with soap and water, make sure you throw away any items that look like they might have gone off or are well past their use by date.

- Throw Your Tea Towels In The Wash A Couple Of Times A Week To Stop Bacteria Growing On Them.

## **SELF-ASSESSMENT EXERCISE**

Mention five things you can do to keep your kitchen free of germs.

### **Refrigerator**

Take out the shelves and any compartments in the fridge once a month and wash them with soap and warm water. Rinse and dry them before putting back.

The inside of the fridge can be wiped down with a mixture of bicarbonate of soda and water. Make sure to wipe down the outside of the fridge too, especially the handle!

Once or twice a year, pull the fridge out and vacuum the cooling elements at the back. This will make your fridge more efficient.

### **Freezer**

When ice starts building up in the freezer, you will need to defrost it. Take out all the items and put them in cool bags (or ideally, borrow someone else's freezer space for a little while!).

Put a bowl of hot water inside to help the ice thaw, and once it starts melting, chisel out all the ice with an ice scraper (or can just leave it to melt on its own, but this will take longer). Make sure you have put down some newspaper or towels to soak up all the water!

Once all the ice is gone, take out all the shelves and compartments and wash them in warm soapy water. Rinse and replace.

Once or twice a year, pull the freezer out and vacuum the cooling elements at the back to make the appliance more efficient.

### **Oven**

Wipe out the oven with a cloth and warm water after every use. It might seem tedious, but it is important if you want to avoid a horribly dirty oven that you then have to attack with chemicals.

If your oven does happen to become particularly dirty, mix a thick paste of bicarbonate of soda, smear it all over the oven and leave it to do its stuff overnight. In the morning, get a scourer and some warm water and scrub away all the dirt with a good bit of elbow grease!

## **Sink**

Try to wipe down the sink at least once a day. Disinfect it every week by filling it up with warm water and a small amount of bleach. Scrub it round with a scourer afterwards, not forgetting the plug chain and the inside of the plug.

It would not take long to follow these simple rules, and will lead to a healthier time in the kitchen. Try to arrange a cleaning roster with your fellow students so the chores are equally shared, and all the cleaning is not left up to one or two people.

## **Kitchen Sanitation**

Kitchen Sanitation also extends to keeping the preparation area clean and relatively germ-free. Mixing bowls, spoons, paring knives and any other tools used in the kitchen should be washed thoroughly before use. Kitchen countertops and cutting boards should also be cleaned and sterilized from time to time. Keeping a sanitary workplace will also cut down on the chances of some type of food borne illness from developing when people consume the prepared food.

Preventing cross contamination is also an important aspect of food hygiene. Cross contamination can occur when cooking and preparation utensils are used with more than one type of food at a time. For example, if the knife used to debone a raw chicken breast is also used to chop lettuce for a salad, there is a good chance that contamination will occur and possibly lead to food poisoning. Many cooks choose to run a sink full of hot soapy water as part of the preparation process, dropping each utensil into the water after use. This not only facilitates the cleanup after preparation, but also prevents the use of that same utensil with other food items that are being prepared.

One aspect of food hygiene that many people do not address is cleaning serving dishes before taking the food to the table. Far too often, the dishes are removed from the cupboard and not washed before use. While the dishes are likely to be relatively clean, a quick rinse with hot water and a small amount of dish washing liquid will prevent stray bacteria from transferring from the dish to the food.

## **Food Handling and Kitchen Hygiene**

However carefully you select your food, you must remember to store it and handle it hygienically at all times. Your kitchen and storage areas should be kept scrupulously clean. This does not mean they have to be sterile, a certain amount of bacteria are everywhere. Many people are concerned that we are living in a too clean environment.

However there is a balance to be reached and where you are dealing with food, then it has to be agreed that a good level of cleanliness will help to prevent a case of food

poisoning. Modern kitchens and the materials used have helped make cleaning much easier than it used to be, but cleaning still has to be done.

### **CLEANING CHEMICALS**

Detergent – e.g. washing up liquid. This is used with hot water to remove grease and dirt from equipment or surfaces.

Disinfectant – this is a chemical which reduces bacteria to a safe level. It is important to check that there is no grease or dirt present before using a disinfectant.

Anti-bacterial products – these are often a combination of cleaners and disinfectants, but check on the instructions usage advice.

### **A Cleaning Checklist**

- Always clean your worktops before preparing food.
- Clean your worktops thoroughly after you have prepared food, particularly if you have been using raw meat, poultry, fish or unwashed vegetables.
- Dishwashers are a very effective way of disinfecting dishes, utensils and you will probably find that most chopping boards can be washed this way.
- Dishcloths can be a perfect place for bacteria to multiply, so get into the habit of cleaning them often, then rinsing in very hot water, squeezing them dry, and then allowing them to air dry. Do not leave them in a damp bundle on the sink.
- Disposable kitchen towels are very useful and can be used to dry down surfaces that have been cleaned, and the papers thrown away.
- Tea towels can harbour bacteria if allowed to be stored in a damp state. There will be little need for them if you rinse your dishes in very hot water and allow them to air dry.

Keep your hands clean, they are an effective way of passing on bacteria from one food to another. The best advice would be to Clean As You Go.

### **STORAGE OF FOOD**

The importance of placing chilled and frozen food into the fridge or freezer without delay after you have brought the shopping home had been mentioned earlier. In this section we will discuss how to store this food.

#### **Refrigerators**

It is advisable to have a fridge thermometer which should show that the temperature inside your fridge is below 5 Degrees Centigrade. This will in most cases stop the growth of bacteria, and certainly slow it down so they will not multiply to dangerous numbers.

- Do not have too much food in the fridge, this will not allow the air to circulate properly and the fridge will then not operate efficiently.

- Always keep raw food on the lower shelves and the cooked food above, this way any 'drips' cannot contaminate ready to eat food.
- Never put hot food into the fridge. This will cause the temperature of the fridge to rise, and the refrigerated food already in there will begin to warm up.
- Cover food well, to prevent it from becoming contaminated and it will also prevent it from drying out so that the quality will be maintained.
- Check the contents often, to ensure you are not keeping foods for too long, remember all of those jars etc. will have recommendations on the label, e.g. once opened, refrigerate and use within 3 days, or weeks etc.
- Never put open tins into the fridge, any contents left should be put into a suitable container, covered and then refrigerated – the reason being that it is a possibility that the food could become contaminated by the aluminum in the can.
- Get into the habit of always closing the fridge door immediately after you remove anything. This will help to maintain the correct temperature in the fridge.
- Clean your fridge often, paying particular attention to the handle. Use an odourless cleaner – bicarbonate of soda is highly recommended even though this is seen as old fashioned – anything strong smelling will linger in the fridge and possibly taint foods which are stored there (Foskett and Ceserani, 2007)

### **Freezers**

The temperature which your freezer should be operating at is  $-18^{\circ}\text{C}$ . You may consider that a thermometer would be useful in your freezer as well.

Never re-freeze foods which have been thawed and not used. This is because the food will have risen in temperature which could allow bacteria on it to become more active and begin to grow and multiply.

You must wrap food well for the freezer. Remember cross contamination can still occur in the freezer. Also, foods not wrapped adequately could suffer from freezer burn, which, in effect, dries up the surface of the food which particularly reduces the quality of the food, but also can result in the food becoming 'spoiled' and a reduction of the nutritional quality.

This point relates more to the efficiency of the freezer, but it is best to keep it fairly full. Only allow the quantities to run down if you are expecting to do a major shop, or you grow your own produce and you are expecting to have a glut of fruit and vegetables.



When freezing your own food, always remember to label it with the date and what it is, otherwise you will end up trying to guess a few weeks later – the food can look totally different sometimes in its frozen state.

When thawing food, follow manufactures advice if there is any. Produce like raw meat or poultry should be placed in a container and placed in the fridge. You could defrost in the microwave, but if so, cook it straight away.

### **Rules of Kitchen Hygiene**

Rule 1: Clean kitchen surfaces after every stage of preparing your recipe. Try to 'clean as you go'. This may sound a little obsessive, but it is not.

Raw meat, poultry, fish, eggs and many other raw foods are the most common sources of germs, but they can easily cross-contaminate other foods. After handling these foods, always wash your hands, utensils and surfaces thoroughly before you touch anything else.

Rule 2. One important way of stopping cross-infection is to make sure that you always use a different chopping-board for your raw meat and everything else. If you keep one for raw meat and fish, and another for all your other chopping, you will be making a major contribution to your health and kitchen safety.

Rule 3. After use, wash all your dishes and utensils with hot water and dish washing liquid. (Do not just run them under the water faucet!) Change the water regularly, then rinse in clean, hot water. When possible, leave everything to drain until dry.

Rule 4. Use paper towels whenever possible, if you can afford to buy them. Dish towels can be a source of cross-contamination so use them sparingly and change them regularly. Be sure to wash them in a hot-wash cycle.

Rule 5: Use the "sani-rinse" cycle on your dishwasher if anyone in your household has a cold or the flu. This is a REALLY hot cycle that totally annihilates germs and bacteria.

### **3.3 Food Poisoning**

There are strict laws and regulations which control the standard of food. These deal with the production, distribution and sales, ensuring that the food is safe for us to buy. It is then our responsibility to choose, store, handle and prepare food in a safe and hygienic way to keep it safe for customers to enjoy.

Food poisoning is a very unpleasant illness for which the main symptoms are stomach pain, vomiting and diarrhoea. It usually occurs between 1 and 36 hours of eating the contaminated or poisonous food and the illness usually lasts between 1 day and a week. In some cases the illness can cause permanent disability or can even be fatal, particularly to those groups of people that are known to be vulnerable i.e. the elderly, the very young, pregnant or nursing mothers or those who are already ill or may be immune deficient.

**Food poisoning is caused by:**

Bacteria or their poisons Viruses Metals Chemicals Poisonous plants

Remember, food poisoning does not just happen – it is caused – and this is due to something going wrong in the chain of events before the food is eaten. It is thought that many food poisoning incidents occur in people's own homes, as was mentioned earlier.

Food poisoning caused by bacteria is most common.

Foods, which have been contaminated by these harmful pathogens, look, smell and taste quite normal.

One of the main reasons for food poisoning is the storage of high risk foods at room temperature for too long e.g. sandwiches made up in advance and not chilled.

**Other reasons are:**

- Undercooking foods
- Cross contamination between raw and cooked foods
- Poor hygiene practices of the person handling the food
- Careless use of left-over
- Not reheating food thoroughly

**Bacteria**

They are microscopic organisms which are found everywhere and are invisible to the human eye, although they can be seen through a microscope.

Not all bacteria are harmful – in fact the majority is harmless, many are beneficial, for example those naturally present in milk which are responsible for the production of yogurt and cheese. We also require bacteria in our bodies to help us digest food.

Then there are some harmful bacteria which cause food spoilage and then the pathogens which cause illness like food poisoning.

Bacteria need certain conditions to multiply and grow – these are Warmth and Moisture  
Time

In perfect conditions these bacteria can multiply very quickly – every 10 to 20 minutes. They multiply by dividing in two and this is known as binary fission. In effect, this means that in perfect conditions 1 bacterium could become more than 1 million in less than 4 hours.

Bacteria thrive in warm temperatures; 37°C would be perfect. This is why it is recommended that those foods which are most at risk from bacterial growth are kept refrigerated, below 5°C. If you are cooking food and keeping it to eat later, either keep it

hot – above 63°C, or cool it quickly and refrigerate it. Then reheat it quickly and thoroughly.

Bacteria prefer foods with high protein content. Examples would be:

Cooked meat and poultry

Homemade stocks – gravies and soups

- Dairy foods and dishes made with them
- Egg dishes
- Fish dishes
- Rice and pasta dishes

All of these foods should be refrigerated whilst they are being stored.

Moisture is also needed, but any of the foods listed above would contain sufficient moisture to support the bacterial growth.

### **The Bacteria**

Salmonella - There are many different species of salmonella and all in all they account for a very large proportion of the reported cases of food poisoning. Typical incubation time would be between 12 and 48 hours, but this could differ to be less or more time. The symptoms would be diarrhoea, vomiting, fever and stomach pain. The usual sources would be raw poultry and meat, raw eggs and cross contamination from faeces, rodents, insects, birds and maybe even your pets.

To prevent these bacteria from causing food poisoning:

Cook foods thoroughly – salmonella are readily destroyed by heat

Avoid raw foods coming into contact with cooked foods

Thorough cleaning and disinfecting

High standards of personal hygiene – WASH YOUR HANDS OFTEN

Staphylococcus Aureus - About 40% of the population are carriers of this type of bacteria. It is carried in the nose, throat and mouth and also present around septic cuts, wounds boils and grazes. The symptoms are severe but only for a short period. You would be vomiting within hours of eating the contaminated food, but it rarely lasts longer than 24 hours. It is therefore extremely important for food handlers to remember to wash their hands thoroughly – often.

When it gets on to food it produces a toxin, which makes the food poisonous.

**To prevent this type of food poisoning:**

- High standards of personal hygiene should be observed.
- Handle food as little as possible, using tongs or other suitable equipment

- Never use your fingers to taste food, and if you use a utensil, thoroughly wash and disinfect before using again.
- If the food is not going to be eaten immediately, refrigerate it or if it is hot food, keep it hot.

**Clostridium Perfringens** - This is different from the previous 2 types of bacteria in that it is not completely destroyed by heat. At higher temperatures it can form spores which can withstand extremes of temperature and cannot be destroyed by normal cooking.

If the contaminated food is then allowed to stand at room temperature the outer shell is dissolved and growth and multiplication starts again. Symptoms of this type of food poisoning would be stomach pain and diarrhoea and these would begin 12 to 48 hours after eating the contaminated food. It is found in raw meat, vegetables, soil and dust. It is quite often associated with reheated foods like casseroles or meat pies.

**To help prevent this from happening:**

- Always keep your raw foods and cooked foods separate, including vegetables
- Cool cooked foods quickly, then refrigerate
- Avoid reheating food, but if necessary bring it to a high temperature as quickly as possible and serve as quickly as possible.
- Never reheat foods more than once.

**Bacillus Cereus** - This is another type of bacteria which is a spore former and therefore is not destroyed by normal cooking. The symptoms of vomiting and stomach pain usually occur a few hours after eating the contaminated food. The most common foods associated with this type of food poisoning would be cooked rice, pasta and sauces made from corn flour.

**To avoid this type of food poisoning:**

Avoid reheating – certainly do not reheat more than once (a common problem is reheated rice)

Chill foods rapidly and refrigerate if not eating straight away e.g. rice and pasta salads, custards. If you do reheat, then do it quickly and to a high temperature.

**E.Coli (Escherichia Coli)** - This is a bacterium naturally found in the intestines of man and animals. Only certain strains are known to cause food poisoning – these can cause severe abdominal pain and diarrhoea, being particularly dangerous to those who are vulnerable to illness. The particular strain which has been involved in recent outbreaks is known as E.Coli 0157 and is classed as a food borne infection – this means that it is carried on the food and then when you eat the food you become ill.

**To prevent this causing food poisoning:**

Thoroughly cook the food – remember it is carried on the surface of food like raw meat, so make sure that the surface reaches a high temperature. This is often associated with minced meat products because the meat is all chopped and minced, and therefore what was once on the surface could now be in the centre, so thoroughly cook – all the way through – for dishes made with minced meat, e.g. burgers and sausages

Make sure you completely separate raw meat and cooked

Thoroughly wash your hands before preparing food

**Campylobacter** - There are many different types of this, *Campylobacter Jejuni* is the one linked with many outbreaks of food poisoning in this country. It causes diarrhea and is generally thought of as a food or water borne infection rather than food poisoning.

If these bacteria are present in food or water they do not tend to multiply in it, however, once swallowed the bacteria can multiply in the gut causing illness. They are easily killed by heating. As they are often found on chickens, this emphasizes the need for thorough cooking and washing hands after handling raw poultry. However it has also been associated with milk, which is often used as it is.

One particular way that milk has been known to become contaminated is by birds pecking at the foil top. If you suspect that this has happened, do not use the milk for safety – or only use it for cooking.

**3.4 Preventing Food Poisoning**

Food poisoning, also called food borne illness, is a common, distressing, and sometimes life-threatening problem for millions of people in the U.S., and throughout the world. People infected with food borne organisms may be symptom-free or may have symptoms ranging from mild intestinal discomfort to severe dehydration and bloody diarrhea.

Depending on the type of infection, people can even die as a result of food poisoning. That is why it is very important to take steps to prevent food poisoning. Follow these general guidelines to avoid contracting a food borne illness.

**General Guidelines to Prevent Food Poisoning**

1. Make sure that food from animal sources (meat, dairy, eggs) is cooked thoroughly or pasteurized. Using a thermometer is recommended.
2. Avoid eating raw or undercooked meats and eggs. Check expiration dates on meats before purchasing and again before preparing.
3. Carefully select and prepare fish and shellfish to ensure quality and freshness.
4. If you are served an undercooked meat or egg product in a restaurant, send it back for further cooking. You should also ask for a new plate.
5. Be careful to keep juices or drippings from raw meat, poultry, shellfish, or eggs from contaminating other foods.

6. Do not leave eggs, meats, poultry, seafood, or milk for extended periods of time at room temperature. Promptly refrigerate leftovers and food prepared in advance.
7. Wash your hands, cutting boards, and knives with antibacterial soap and warm to hot water after handling raw meat, poultry, seafood, or eggs. Wooden cutting boards are not recommended since they can be harder to clean completely.
8. Avoid unpasteurized milk or foods made from unpasteurized milk.
9. Do not thaw foods at room temperature. Thaw foods in the refrigerator and use them promptly. Do not refreeze foods once they have been completely thawed.
10. Wash raw vegetables and fruits thoroughly before eating, especially those that will not be cooked. Avoid eating alfalfa sprouts until their safety can be assured. Methods to decontaminate alfalfa seeds and sprouts are being investigated.
11. Be aware of proper home-canning procedures. Instructions on safe home-canning can be obtained from county extension services or from the U.S. Department of Agriculture.

#### **4.0 CONCLUSION**

Food poisoning is a serious health problem. It can cause severe illness and even death.

Food poisoning can seriously damage the reputation of a business, damage the reputation of the food industry, and damage the jobs of many workers.

As a person who handles food – whether you are a kitchen hand, a food process worker, a shop assistant or a waiter – you have an important responsibility to handle food safely.

#### **5.0 SUMMARY**

In this unit, we have been learning about Kitchen hygiene and the implications of not keeping the kitchen sanitized at all times. Kitchen hygiene is concerned with the general environmental conditions of the kitchen. When the kitchen is not kept clean, it may lead to contamination of kitchen equipment and consequently, the meals being prepared in the kitchen. Food contamination has serious implications on the health of our customers and as a result may ruin the reputation of businesses. This unit has treated in details issues involved in general hygiene of the kitchen, food contamination, and ways to prevent it.

#### **6.0 TUTOR- MARKED ASSIGNMENT**

1. Briefly discuss the concept of food hygiene.
2. List and explain five causes of food poisoning.
3. In what ways can food poisoning be prevented?
4. Discuss the five rules of kitchen hygiene.

#### **7.0 REFERENCES**

Foskett, David, and Ceserani Victor (2007), The theory of catering, London: Holder Arnold.

## **UNIT 4 IMPORTANCE OF HYGIENE**

### **CONTENT**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 Personal Hygiene
    - 3.1.1. Importance of Personal Hygiene
  - 3.2 Kitchen Hygiene
  - 3.3 Food Hygiene
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References /Further Readings

### **1.0 INTRODUCTION**

It has become very necessary to stay as hygienic as possible due to the kind of health risks that are posed to the human race today. In fact most of the new-world diseases like bird flu and swine flu have been attributed to lack of hygiene and if this issue of lack of hygiene is tackled seriously today, it will

Impact positively on the generation after us. Hygienic practices are essential and failure to exercise sound hygienic principles could result to ill health. It is very important to have a healthy positive attitude and to practice high standards of hygiene which should not be restricted to our bodies alone but should be practiced and maintained in the handling of food and in our surroundings as well.

### **2.0 LEARNING OBJECTIVES**

By the end of this unit, you should be able to:

1. State why personal hygiene is essential
2. Describe how hygienic standards are achieved
3. Explain why premises or food operation surroundings must be kept clean
4. Discuss why those employed in the catering industry should acquire good hygienic habits.

### **3.0 MAIN CONTENT**

#### **3.1 Personal Hygiene**

Personal hygiene is about keeping your body clean and healthy. It keeps you from getting sick as staying clean helps fight disease-causing germs. Good personal hygiene keeps your co-worker healthy since bacteria are spread easily from one person to another or from a person to food through personal contact. Personal hygiene reduces the chances of getting skin problems like dermatitis; it also makes the work site more pleasant for everyone including co-workers and visitors or customers.

Self respect is necessary in every food handler because a pride in one's appearance promotes a high standard of cleanliness and physical fitness. Persons suffering from ill-health or who are not clean about themselves should not handle food. Good personal hygiene entails:

- ✓ Regular bathing at least once a day
- ✓ Frequent washing of hands, particularly after using the toilet, before commencing work and during the handling of food.
- ✓ Keeping fingernails clean and short
- ✓ Keeping the hair clean and covered when and where food is handled.
- ✓ Not touching the nose when food is being handled and if handkerchief is used, preferably paper handkerchief, it should be thrown away and the hand should be washed afterwards.
- ✓ Taking good care of the feet by washing them regularly. Food handlers, due to the nature of their job tend to stand for many hours and tired feet can cause general tiredness and this result in a lowering of the standards of hygiene.
- ✓ Not coughing over food and working areas as germs are spread long distances if not trapped in handkerchief.
- ✓ Keeping the teeth clean as they are essential to good health. Regular visits should be made to the dentist to keep the teeth in good repair.
- ✓ Keeping all cuts, burns, scratches and similar openings of the skin covered with a waterproof dressing.
- ✓ Using cosmetics in moderation and washing the hands well after application.
- ✓ Not smoking where there is food or when handling food because when a cigarette is taken from the mouth, germs from the mouth can be



transferred to the fingers and so on to food, also ash on food is most objectionable.

- ✓ Wearing clean whites (protective clothing) and clean underclothes at all times. Dirty clothes enable germs to multiply and if dirty clothing comes in contact with food, the food may be contaminated.

### **3.1.1. Importance of Personal Hygiene**

Maintaining personal hygiene is necessary for many reasons and these are personal, social, health reasons, psychological or a way of life. Essentially, keeping a good standard of hygiene helps to prevent the development and spread of bad odours, illnesses and diseases.

#### **1. Personal Reasons**

- Many people, women in particular are very conscious of their hygiene need and practices. This can be as a result of being taught of the importance at an early age, from being picked- on at school for head lice or similar case or as a way of making themselves more attractive to the opposite sex.
- Self esteem, confidence and motivation can all be altered by our body image, often reflected on our ability to care for ourselves and keep good hygiene practices.
- A bright white smile with clean and healthy teeth can endear people to us, while the opposite can cause embarrassment and can alter our sense of well being.
- Healthy hair, skin and nails are signs of a good well-balanced diet and can give us confidence in everyday life.

#### **2. Social Reasons**

- Most people hate to be talked about especially in a negative manner. By ensuring that our body is clean and well presented, we are more assured of projecting a positive image that reflects our personalities.
- Children should be taught the importance of hygiene and how to achieve good hygiene very early to keep themselves and others healthy and to reduce the risk of being bullied at school.

#### **3. Health Reasons**

- If a person is due to go into hospital, sometimes that person becomes very aware of their hygiene. The thought of being vulnerable and exposed to strangers can cause the person to become very strict on their hygiene needs.
- If you have cut yourself, the wound should be cleaned and dressed suitably, this can help reduce the risk of infection and pain.

Conditions such as head lice, athlete's foot etc should be treated immediately.

- Hand washing cannot be overemphasized as this simple action can prevent a plethora of illnesses and disorders developing. Many people forget to wash their hands after using the toilet or before handling foods, this can cause a great deal of illness and even death.

#### **4. Psychological Issues**

- By being well presented, clean and tidy, people can feel more confident, especially in social situations.
- Many job interviews and such like are highly dependent of hygiene as many decisions are made by first impressions within the first few minutes of meeting; these decisions are often made in the subconscious.
- Our chances of succeeding either in work or social settings or even with the opposite sex can be altered by our maintenance of hygiene.
- Maintaining hygiene practices helps to reduce the risks of ill health, but equally important, affects how we and others perceive ourselves and can influence our levels of confidence and self-esteem which can affect many aspects of our lives.

#### **SELF –ASSESSMENT EXERCISE**

Some new- world diseases have been attributed to lack of hygiene. Give some examples of these new-world diseases.

### **3.2 Kitchen Hygiene**

Kitchen hygiene is all about keeping the kitchen clean and free of things that carry bacteria and germs. It is a common saying that “cleanliness is next to godliness”. This saying applies to all aspects of our lives and most especially, the kitchen, where we prepare the food we take into our bodies.. Common breeding grounds for bacteria are kitchen towels, dish rags and brushes, cutting boards, kitchen sinks, doors, drawers and refrigerator handles.

Neglect in the care and cleaning of any part of the premises and equipment could lead to a risk of food infection.

#### **Kitchen hygiene is of very great importance to:**

1. Those who work in the kitchen- because clean working conditions are more agreeable to work in than dirty conditions.
2. The owners of business- because patronage would increase when the public know the kitchen is clean.

3. The customer – no one would want to eat food prepared in a dirty kitchen.  
(Refer to Unit 3, Kitchen Hygiene, for more notes on the importance of kitchen hygiene)

### **3.3 Food Hygiene**

The most delicious food into which has gone all the skill and art of the world's best chefs, using the finest possible ingredients, may look, taste and smell superb, and yet be unsafe to eat because of harmful bacteria.

Good hygiene is not just for restaurants to worry about, whether you are a budding chef or more at home with microwave meals, it is important to know how to prepare food safely and hygienically. Hygiene is the study of health and the prevention of disease, and because of the dangers of food poisoning, it is of utmost importance that everyone who handles food or works in the catering industry should know that food must be both clean and safe. Germs are everywhere, particularly in and our bodies and some of these germs if transferred to food can cause illness and in some cases can cause death.

#### **Importance of Food Hygiene**

- Every day people get ill from the food they eat. Micro organisms including bacteria, viruses and moulds found in food can cause food poisoning leading to a whole lot of unpleasant symptoms such as stomach pains, diarrhea and vomiting.
- Food poisoning can sometimes lead to Gastroenteritis (inflammation of the stomach and bowel) or more serious health problems such as blood poisoning (Septicemia) and kidney failure.
- Anyone can get food poisoning but some people, including babies, children and older people are more likely to have serious symptoms. It's important to eat healthy if you are pregnant and you need to be particularly careful not to get food poisoning.

### **4.0 CONCLUSION**

Hygienic practices are essential in everyday life and activities and failure to adhere to sound hygienic principles may lead to ill health. Hygienic practices should not be restricted to our bodies alone but also in the way we handle and prepare what we eat and our surroundings as well.

Personal, kitchen and food hygiene are very important issues in the food service management and any food service operation that cannot implement and sustain good hygienic practices will be repelling patronage and sending a wrong message to NAFDAC Officials.

### **5.0 SUMMARY**



### 3.3 Government Role in Pest Control

#### 3.3.1 Legislation on Pest Control

#### 3.3.2 The Importance of Pest Control in Agriculture

### 4.0 Conclusions

### 5.0 Summary

### 6.0 Tutor-Marked Assignment

### 7.0 References/Further Readings

## **1.0 INTRODUCTION**

Pest control refers to the regulation or management of species defined as a pest usually because it is perceived to be detrimental to a person's health, the ecology or the economy. The most frequent pest problems, for instance in a restaurant, comes from rats, mice, flies, and cockroaches. A good pest control programme uses both environmental sanitation and chemical or blockage control. Control for rats and mice begin with disposing garbage in a sanitary manner.

## **2.0 LEARNING OBJECTIVES**

At the end of this unit, you should be able to:

1. Identify most common pests which are usually controlled.
2. Identify the process of controlling pests in homes and factories
3. Identify elements and chemicals used in pest control

## **3.0 MAIN CONTENT**

### **3.1 Pest Control**

Rodents, cockroaches and flies are always seeking access to food in homes and other materials in factories. Removing the trash and keeping storage areas clean will eliminate hiding places. Rodents can be killed with poison or traps. Slow killing poisons are better because they allow the rodents to leave the premises before they die.

Rodent-proofing the building consists of ensuring that doors are tightly closed. Windows less than three feet from the ground are fitted with extended wire net. Concrete rather than wooden basement at the ground floor is better. All holes within the foundation areas are covered with hard concrete.

#### **3.1.1 Pest Control at Home**

To control rodents in the residential areas begin with controlling the flies, cockroaches and rats and eliminating breeding places for them. This entails not allowing food to accrue and spoil and removing garbage quickly. Screens help keep flies out. Sprays, insecticides and poisons eliminate flies, but their use should be monitored carefully to ensure that food is not affected by them. An electric fly catcher draws flies to an electric element, which kills them.

Cockroaches need moisture to survive. Most commonly, they enter an operation from deliveries. Hence crates and boxes should be inspected and disposed of as soon as possible. Frequent cleaning will reduce the number of new cockroaches. Once their hiding places are known, a qualified exterminator can lay poison to kill them all.

### **3.1.2 Pest Control in the Office**

The same approach as in the home is applied in controlling of pest in the office. The only difference is that direct food items may not be available in the office. Cockroaches and rats find their place in book shelves, drawers and file racks.

In general, the following practices will help in solving the problem of rodents in the offices:

- \* Use a reputable supplier of chemical and poison suppliers for killing rodents
- \* Dispose of garbage properly and promptly
- \* Store all foods and supplies properly
- \* Dispose of mop and cleaning water properly, and mop up spilled water at once
- \* Clean and sanitize the operation thoroughly.

## **3.2 Chemicals used in Pest Control**

In the 20th century, the discovery of several synthetic insecticides, such as DDT, and herbicides boosted the development pest control items. However, chemical pest control is still the predominant type of pest control in current usage.

Pest control is at least as old as agriculture, as there has always been a need to keep crops free from pests. In order to maximize food production, it is advantageous to protect crops from competing species of plants, as well as from herbivores competing with humans. Chemicals and gadgets used in killing pests include special industrial chemicals, poisons, and traps.

### **3.2.1 Kinds of Creatures being attacked**

It has been mentioned that the most common pests in our environment are rats, rabbits, cockroaches and flies. Many pests have only become a problem because of the direct actions of humans. Modifying these actions can often substantially reduce the pest problem. Sometimes pests cause a nuisance by tearing open refuse sacks. Many householders introduced bins with locking lids, which deterred the rodents from attacking garbage bins. House flies tend to accumulate wherever there is garbage and this is a global phenomenon, especially where food or food waste is exposed.

## **SELF-ASSESSMENT EXERCISE**

In what ways can the problem of rodents in the offices be tackled?

### **3.2.2 Problems in Pest Control**

Some of the problems inherent in pest control include:

- \* Inability to procure the right chemicals for attacking the pests
- \* Danger of getting human food contaminated with rodent poisons. In some occasions, people have been found to die as a result of careless food poisoning
- \* Peasant farmers in the rural areas cannot afford to purchase pest control chemicals.
- \* Even where local farmers are willing to obtain the chemicals, they may not be available for procurement.

### **3.3 Government Role in pest Control**

In the developed world, the government plays prominent role in pest control. It makes available chemicals for pest control either free of charge or by heavily subsidizing procurement.

Government effort in pest control dates back to 1840s when the United States started encouraging the development of sulfur compounds as insecticides. It also assisted in recommending the use of poisonous plants for pest control. It was only with the industrialization and mechanization of agriculture in the 18th and 19th century, and the introduction of the insecticides pyrethrum and derris that chemical pest control became widespread.

#### **3.3.1 Legislation on Pest Control**

Governments all over the world have not taken interest in enacting laws about pest control. The effort ends in ensuring that homes, offices and factories are embarking on proper waste management and drainage of still water to eliminate the breeding ground of many pests.

Garbage provides food and shelter for many unwanted organisms, as well as an area where still water might collect and be used as a breeding ground by mosquitoes. Communities that have proper garbage collection and disposal, have far less of a problem with rats, cockroaches, mosquitoes, flies and other pests than those that do not.

Open air sewers are ample breeding ground for various pests as well. By building and maintaining a proper sewer system, this problem is eliminated.

#### **3.3.2 The Importance of Pest Control in Agriculture**

Apart from the fact that pest control helps to preserve homes, offices and factories, making them free from rodents, flies, cockroaches, etc. There is the fact that the absence of pests makes life safe for humans. There will be no danger of getting food poisoned by bacteria and other forms of germs.

Pest control is as old as agriculture itself and there has always been a need to keep crops free from pests. In order to maximize food production, it is advantageous to protect crops from competing species of plants, as well as from herbivores competing with humans.

## **4.0 CONCLUSION**

Pest control refers to the regulation or management of pests usually because it is perceived to be detrimental to human health.

Pest control is at least as old as agriculture itself and there has always been a need to keep crops free from pests. In order to maximize food production, it is advantageous to protect crops from competing species of plants, as well as from herbivores competing with humans.

## **5.0 SUMMARY**

In this unit, we studied pest control and the various methods employed in the control of the various types of pests. Some of the various problems inherent in pest control were also discussed. We also looked at the chemicals, poisons and traps used in the control and killing of pests. It is of utmost importance that chemicals and poisons used for pest control should be kept away from food meant for humans. The chemicals are deadly and can adversely affect human life. The role of government in pest control was also discussed and the importance of pest control in Agriculture was also discussed.

## **6.0 TUTOR-MARKED ASSIGNMENT**

1. Discuss the various ways by which pests can be killed
2. What is the importance of pest control?
3. What is the role of Government in pest control?

## **7.0 REFERENCES / FURTHER READINGS**

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## **MODULE 3 Managerial Issues In Food Service Operation**

- Unit 1 Health and Safety for New Catering Premises
- Unit 2 The Physical Facility
- Unit 3 Employee Selection
- Unit 4 Implementing Healthy Catering Services
- Unit 5 Control of Waste and Recyclable Materials

## **UNIT 1 HEALTH AND SAFETY FOR NEW CATERING PREMISES**

### **CONTENT**



1.0	Introduction
2.0	Objectives
3.0	Main Content
3.1	Health and Safety
3.1.1	Health and Safety at Work
3.1.2	Health and Safety in the Kitchen Premises
3.1.3	Cleanliness of Toilets and Sinks
3.2	Hygiene in the Kitchen, Premises and Equipment
3.2.1	Normal Cleaning Materials
3.2.2	Cleaning of Large Electrical Equipment
3.3	Health and Food Hygiene
3.3.1	Food Poisoning
3.3.2	Causes of Food Poisoning
4.0	Conclusion
5.0	Summary
6.0	Tutor-Marked Assignment
7.0	References/Further Readings

## **1.0 INTRODUCTION**

Every year in this country, more than a thousand people are killed at work; a million people suffer injuries; 10 million working days are lost annually because of industrial injury and disease. As catering is one of the largest employers of labor, the industry is seriously concerned with health and safety of workers.

## **2.0 OBJECTIVES**

After studying this unit, the student should be able to:

- \* Describe the preventive measures to keep good health
- \* State safety precautions at Home and in the Workplace
- \* Discuss how to maintain Cleanliness in the Kitchen and in the Toilets

## **3.0 MAIN CONTENT**

### **3.1 Health and Safety**

Due to the importance of maintaining good health and ensuring safety of family members and workers, law-making bodies in every country make laws affecting this issue. In 1974, the Health and Safety at Work Act of Parliament was passed. Nigeria's National Assembly has also passed a number of bills affecting health, safety of people in their homes and safety of Nigerians travelling by road, sea and air.

#### **3.1.1 Health and Safety at Work**

Such law made on health and safety may impose a general duty on an employer to ensure so far as is reasonably practicable, the health, safety and welfare at work of all his employees. The law may be extended to impose a duty on every employee while at work to:

- (a) Take reasonable care for the health and safety of himself/ herself and of other persons who may be affected by his acts or omissions at work.
- (b) To co-operate with his employer so far as is necessary to meet or comply with any requirements concerning health and safety.
- (c) Avoid interference with, or misuse of anything provided in the interest of health and safety.

It can be clearly seen that both health and safety at work is everybody's concern and responsibility.

Furthermore, the Law or Act protects the members of the public who may be affected by activities of those at work.

Penalties are provided by the Act which includes, prohibition notices and criminal prosecution. Health and Safety Inspectors are usually mobilized to enforce the law and the Health and Safety Commission issues codes of conduct and acts as regulator.

Responsibilities of the Employer: The responsibilities of the employer towards maintaining good health and safety of employees at work include:

- (1) Providing and maintaining premises and equipment that are safe and without risk to health.
- (2) Providing supervision, information and training.
- (3) Issuing a written statement of Safety Policy to employees which may include, general policy with respect to health and safety at work; the organization to ensure the policy is carried out; and how the policy will be made effective.
- (4) Consulting with the employees' safety representative and establishing Safety Committee.

Employees, on the other hand, are subject to the following responsibilities:

- (1) To take reasonable care to avoid injury to themselves or to others by their work activities.
- (2) To co-operate with their employer and others so as to comply with the law.
- (3) To refrain from misusing or interfering with anything provided for health and safety.

### **Enforcement of Health and Safety Act**

Health and safety inspectors and local authority inspectors (environmental health officers) have the authority to enforce the requirements of the Act. Specifically, they are empowered to:

1. Issue a prohibition notice which immediately prevents further business until remedial action has been taken.
2. Issue an improvement notice whereby action must be taken within a stated time, to an employee, employer or supplier.
3. Prosecute any person breaking the Act. This can be instead of or in addition to serving a Notice and may lead to a substantial fine or imprisonment.
4. Seize, render harmless or destroy anything that the inspector considers to be the cause of Imminent danger.

### **SELF-ASSESSMENT EXERCISE**

What are some of the responsibilities of the employee towards maintaining health and safety at the work place?

#### **3.1.2 Hygiene and Safety in the Kitchen Premises**

**Ventilation:** Adequate ventilation must be provided so that fumes from stoves are taken out of the kitchen, and stale air in the stores and still-room is extracted. This is usually effected by erecting hoods over stoves and using extractor fans.

Hoods and fans must be kept clean; grease and dirt are drawn up by the fan and, if they accumulate, can drop on to food. Windows used for ventilation should be screened to prevent entry of dust, insects and birds. Good ventilation facilitates the evaporation of sweat from the body, which keeps one cool.

**Lighting:** Good lighting is necessary so that people working in the kitchen do not strain their eyes. Natural lighting is preferable to artificial lighting. Good lighting is also necessary to enable staff to see into corners so that the kitchen can be properly cleaned.

**Plumbing:** Adequate supplies of hot and cold water must be available for keeping the kitchen clean, cleaning equipment and for staff use. For certain cleaning hot water is essential, and the means of heating water must be capable of meeting the requirements of the establishment.

There must be hand washing and drying facilities and suitable provision of toilets, which must not be close to any room in which food is prepared. Hand-washing facilities (separate from food preparation sinks) must also be available in the kitchen with a suitable means of drying the hands.

### **3.1.3 Cleaning of Toilets and Sinks**

Toilets must never be cleaned by food-handlers. Sinks and hand basins should be cleaned and thoroughly rinsed.

**Floors:** Kitchen floors have to withstand a considerable amount of wear and tear, therefore they must be: Capable of being easily cleaned; smooth, but not slippery; even; without cracks or open joints, and impervious (i.e. non-absorbent)

Quarry tile floors, properly laid, are suitable for kitchens, since they fulfill the above requirements:

Cleaning – Floors are swept, washed with hot detergent water and then dried. This can be done by machine or by hand, and should be carried out at least once a day.

**Walls:** Walls should be strong, smooth, impervious, washable and light in colour. The joint between the wall and floor should be rounded for ease of cleaning. Tiling is the best wall surface because it is easily cleaned and requires no further maintenance.

**Cleaning** – clean with hot detergent water and dry. This will probably be done monthly, but frequency will depend on circumstances.

**Ceilings:** Ceilings must be free from cracks and flaking. They should not be able to harbor dirt.

**Doors and Windows:** Doors and windows should fit correctly and be clean. The glass should be clean inside and out so as to admit maximum light.

**Food lifts:** Lifts should be kept very clean and no particles of food should be allowed to accumulate as lift shafts are ideal places for rats, mice and insects to gain access into kitchens.

## **3.2 Hygiene as it affects Kitchen Equipment**

Neglect in the care and cleaning of any part of the premises and equipment could lead to a risk of food infection. Kitchen hygiene is of great importance to those who work in the kitchen because clean working conditions provide for good health than dirty environment. Kitchen hygiene is also very important to the owners of the business because patronage will surely increase when the public observes that the kitchen and dining areas are always spick and span. And to the customers too, no one would like to eat food prepared in a dirty environment.

Failure to maintain equipment and utensils hygienically and in good repair may cause food poisoning. Materials used in the construction of equipment must be hard so that it does not absorb food materials. It must be smooth so that it can be easily cleaned. It must be resistant to dust and chipping.

Equipment must not be made from toxic materials, for example lead, or allowed to wear excessively, for example copper pans that need retaining on the inside so exposing harmful copper to food. Food must be protected from lubricants.

Easily cleaned equipment is free from unnecessary ridges, screws, ornamentation, dents, crevices, inside square corners, and has large smooth areas. Articles of equipment which are difficult to clean – for example mincers, sieves and strainers – are items where particles of food can lodge so allowing germs so multiply and contaminate food when the utensil is next used.

### **3.2.1 Normal Cleaning of Materials**

**Metals:** As a rule all metal equipment should be cleaned immediately after use. Portable items: Remove food particles and grease. Wash by immersion in hot detergent water. Thoroughly clean with a hard bristle brush or soak till this is possible. Rinse in water by immersing in the water in wire racks.

**Fixed items:** Remove all food and grease with a stiff brush or soak with a wet cloth, using hot detergent water. Clean thoroughly with hot detergent water. Rinse with clean water. Dry with a clean cloth.

Abrasives should only be used in moderation as constant scratching of the surface makes it more difficult to clean the article next time.

**Marble:** Scrub with a bristle brush and hot water and then dry.

**Wood:** Scrub with a bristle brush and hot detergent water, rinse and dry.

**Plastic:** Wash in reasonably hot water.

China, earthenware: Avoid extremes of heat and do not clean with an abrasive. Wash in hot water and rinse in very hot water.

Copper: Remove as much food as possible. Soak and wash in hot detergent water with the aid of brush. Clean the outside with a paste made of sand, vinegar and flour. Wash well, rinse and dry.

**Aluminium:** Do not wash in water containing soda as the protective film which prevents corrosion may be damaged. To clean, remove food particles. Soak, wash in hot detergent water. Clean with steel wool or abrasive. Rinse and dry.

Stainless steel: Stainless steel is easy to clean. Soak in hot detergent water. Clean with a brush. Rinse and dry.

**Tin:** Tin which is used to line pots and pans should be soaked, washed in detergent water, rinsed and dried. Tinned utensils where thin sheet steel has a thin coating of tin must be thoroughly dried; otherwise they are likely to rust.

**Zinc:** This is used to coat storage bins of galvanized iron and it should not be cleaned with a harsh abrasive

### **3.2.2 Cleaning of Large Electrical Equipment (mixers, choppers, slicers, etc.)**

For safe and effective cleaning, switch off the machine and remove the electric plug. Remove particles of food with a cloth, needle or brush as appropriate. Thoroughly clean all removable and fixed parts with hot detergent water. Pay particular attention to threads and plates with holes on mincers. Rinse all the parts thoroughly, dry them and reassemble.

While cleaning, see that exposed blades are not left uncovered or unguarded and that the guards are replaced when cleaning is completed. Any specific maker's instructions should be observed. Carry out a test at the end to make sure that the machine is properly assembled by plugging in and switching on.

### **3.3 Health and Food Hygiene**

It is of utmost importance that everyone who handles food, or who works in a place where food is handled to know that food must be both clean and safe. Hygiene is the study of health and the prevention of disease. Because of the dangers of food poisoning, hygiene requires particular attention from everyone in the catering industry.

There are germs everywhere, particularly in and on our bodies. Some of these germs, if transmitted or transferred to food can cause illness and in some cases death. These germs are so small that they cannot be seen by the naked eye. Yet food which looks clean and does not smell or taste bad may be dangerous to eat if harmful germs have contaminated it and multiplied.

The duty of every person concerned with food is to prevent contamination of food by germs and to prevent these germs or bacteria from multiplying.

Food handlers must know the Food Hygiene Regulations, but no matter how much is written or read about food hygiene, the practice of hygienic habits by people who handle food is the only way to safe food.

### **3.3.1 Food Poisoning**

More than forty thousand people each year have been found by doctors to be suffering from food poisoning in this country. This is the average number of notified cases for the last ten years, and there are thousands more who have not notified their doctor, but have suffered from food poisoning. This appalling ill-health from food poisoning can be prevented. Sometimes, failure to prevent food poisoning may be due to ignorance of the rules of hygiene. It may also be as a result of carelessness, thoughtlessness or utter neglect. Also accident and poor standards of equipment or facilities to maintain hygienic standards are also contributory factors to our inability to prevent food poisoning.

**Generally speaking, food poisoning can be prevented in the following ways:**

1. By maintaining high standards of personal hygiene
2. By paying attention to physical fitness
3. Maintaining good working conditions
4. Maintaining equipment in good repair and in clean condition.
5. Adequate provision of cleaning facilities and cleaning equipment
6. Correct storage of foodstuffs at the right temperature
7. Correct re-heating of food
8. Quick cooling of food prior to storage
9. Prevention of food from vermin and insects
10. Hygienic washing up procedure
11. Food handlers knowing how food poisoning is caused
12. Food handlers not only knowing but carrying out procedures to prevent food poisoning.

### **3.3.2 Causes of food poisoning**

Food poisoning results when harmful foods are eaten. They may be harmful because:

- (a) Chemicals have entered food accidentally during the preparation or cooking of the food.
- (b) Germs have entered the food from humans, animals or other sources and the bacteria themselves, or the toxins (poisons) produced in the food by certain bacteria, have caused the food to be harmful. By far, the greatest number of cases of food poisoning is caused by harmful bacteria.

#### **Chemical food poisoning**

Certain chemicals may accidentally enter food and cause food poisoning. For example, arsenic is used to spray fruit during growth, and occasionally fruit has been affected by this poison. Lead poisoning can occur from using water that has been in contact with lead pipes and then drunk or used for cooking.

Copper pan should be correctly tinned and never used for storing foods, particularly acid food, as the food could dissolve harmful amount of copper. Certain plants are poisonous, for example, poisonous mushrooms or fungi. Rhubarb leaves and the parts of potatoes which are exposed to the sun above the surface of the soil are also poisonous.

Prevention of chemical food poisoning

Chemical food poisoning can be prevented by using correctly maintained and suitable kitchen utensils, obtaining foodstuffs from reliable sources, and care in the use of rat poison.

### **3.3.3 Bacteria and Food Poisoning**

Bacteria are minute, single-celled organisms which can only be seen under a microscope. They are everywhere in our surroundings, and as most bacteria cannot move by themselves they are transferred to something by coming into direct contact with it.

Some bacteria form spores which can withstand high temperatures for long periods of time and on return to favourable conditions become normal bacteria again which then multiply. Some bacteria produce toxins outside their bodies so that they mix with food; the food itself is then poisonous and symptoms of food poisoning follow within a few hours.

Other bacteria cause food poisoning by virtue of large numbers of bacteria is food entering the digestive system, multiplying further and setting up an infection. Certain bacteria produce toxins which are resistant to heat; foods in which this toxin has been



produced may still cause illness, even though the food is heated to boiling-point and boiled for half an hour.

#### **4.0 CONCLUSION**

Health and safety issues, at home and at work, are very important. Every year, many people are injured and some lose their lives as a result of one accident or another. As catering is one of the largest employers of labour, the catering industry must be concerned with health and safety at work. The law imposes a general duty on an employer of labour to ensure as much as possible that employees are protected adequately at work.

#### **5.0 SUMMARY**

In this unit, we studied the importance of health and safety at work. In every country government enact laws to protect employees and compel employers of labour to maintain high standard of safety and security for the in their factories. The employer must provide and maintain premises and equipment that are safe and without risk to health. The employees, on their part, must take reasonable care to avoid injury to themselves or to others by their work activities.

#### **6.0 TUTOR-MARKED ASSIGNMENT**

1. List three major causes of accident at work
2. What are the responsibilities of the employer in an effort to have an accident-free factory?
3. What are some of the physical factors that need to be taken into consideration when dealing with hygiene and safety in the kitchen premises?

#### **7.0 REFERENCES/FURTHER READING**

Hayes, K.D., et al (2007) Operations Management (Second edition)  
Published by, Prentice Education, Inc., Upper Saddle River, New Jersey, U.S.A.

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## **UNIT 2**

## **THE PHYSICAL FACILITY**

### **CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 Kitchen Equipment
    - 3.1.1 Manufacturers of Equipment
    - 3.1.2 Large Equipment
    - 3.1.3 Convection ovens
  - 3.2 Microwave Cookers
    - 3.2.1 Combination Convection and Microwave Cooker
    - 3.2.2 Steamers
  - 3.3 Bratt Pan
    - 3.3.1 Deep fat Fryers
    - 3.3.2 Hot Air Rotary Fryers
- 4.0 Conclusions
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 Reference/Further Reading

### **1.0 INTRODUCTION**

One of the most physical equipment to be considered is the kitchen equipment which is usually expensive. In order to justify the expense it is essential that maximum use is made of it, which can only be achieved if all the equipment works efficiently and this depends on care and maintenance.

## **2.0 OBJECTIVES**

After studying this unit, the student should be able to:

- \* Identify different pieces of major equipment in use
- \* Be familiar with the material each equipment is made of
- \* Explain the functions and the cleaning process of the equipment

## **3.0 MAIN CONTENT**

### **3.1 Kitchen Equipment**

The routine use, care and cleaning of all items of equipment is important and this should be appreciated and understood. If cleaning is not done properly it could lead to many dangerous consequences such as damage to the equipment, contamination and poisoning of food.

#### **3.1.1 Manufacturers of Equipment**

Manufacturers of large and mechanical kitchen equipment issue instructions on how to keep their apparatus in efficient working order, and it is the responsibility of everyone using the equipment to follow these instructions, which should be displayed in a prominent place near the machines.

Arrangement should be made with the local gas board for regular checks and servicing of gas-operated equipment. Similar arrangements should be made with the electricity board in respect of electrical equipment. It is a good plan to keep a log-book of all equipment, showing where each item is located, when servicing takes place, noting any defects that arise, and instructing the fitter who may have carried out any work on the equipment to sign the log-book and to indicate exactly what has been done.

#### **3.1.2 Large Equipment**

##### **Stoves**

A large variety of stoves is available and operated by gas, electricity, solid fuel, oil, microwave plus microwave plus convection.

Solid tops should be washed clean, or wiped clean with a pad of sacking. When cool, the stove tops can be more thoroughly cleaned by washing and using an abrasive. Emery paper can also be used to if necessary. After any kind of cleaning a solid top should always be lightly greased.

On the open type of stove all the bars and racks should be removed, immersed in hot water with a detergent, scrubbed clean, dried and put back in place on the stove. All gas

jets should then be lit to check that none is blocked. All enamel parts of stoves should be cleaned while warm with hot detergent water, rinsed and dried.

### **3.1.3 Convection ovens**

These are ovens in which a circulating current of hot air is rapidly forced around the inside of the oven by a motorized fan or blower. As a result, a more even and constant temperature is created throughout the oven which allows food to be cooked successfully in any part of the oven. This means that the heat is used more efficiently, cooking temperatures can be lower, cooking times shortened and overall fuel economy achieved.

Forced air convection can be described as fast conventional cooking; conventional in that heat is applied to the surface of the food, but fast since moving air transfers its heat more rapidly than does static air. In a sealed oven, fast hot air circulation reduces evaporation losses, keeping shrinkage to a minimum, and gives the rapid change of surface texture and colour which are traditionally associated with certain cooking processes.

## **3.2 Microwave Cookers**

Microwave is a method of cooking and heating food by using high frequency power. The energy used is the same as that which carries television from the transmitter to the receiver but is at a higher frequency.

The waves disturb the molecules or particles of food and agitate them thus causing friction which has the effect of cooking the whole of the food, whereas in the conventional method of cooking, heat penetrates the food only by conduction from the outside. Foods being cooked by microwave need no fat or water and is placed in a glass, earthenware, plastic or paper container before being put in the over. Metal is not used as the microwaves are reflected by it.

All microwave ovens consist of a basic unit of various sizes with varying levels of power. Some feature additions to a standard model such as automatic defrosting systems, browning elements, stay-hot controls and revolving turntables.

The oven cavity has metallic walls, ceiling, and floor which reflect the microwaves. The oven door is fitted with special seals to ensure that there is the minimum of microwave leakage. A cut-out device automatically switches off the microwave energy when the door is opened.

### **3.2.1 Combination Convection and Microwave Cooker**

This cooker combines forced air convection and microwave, either of which can be used separately, but which are normally used simultaneously thereby giving the advantages of both systems; speed, colouration and texture of food. Traditionally, metal cooking pans may also be used without fear of damage to the cooker.

### **Induction Cookers**

These are solid top plates made of vitro ceramic material which provide heat only when pans are put on them and which stop the heat immediately the pans are removed.

A generator creates a two-way magnetic field at the level of the top; when a utensil with a magnetic base is placed on the top, a current passes directly to the pan. This means that a far more efficient use is made of the energy than with conventional cooking equipment. Since the ceramic top is not magnetic but merely a tray to stand the pots and pans on, it never heats up. Tests indicate more than 50% energy saving. If a pan of water is to be brought to the boil, there is no delay waiting for the top to heat up, the transmission of energy through the pan is immediate. When shallow frying, cold oil and the food can be put into the pan together without affecting the quality of the food as the speed of heating is so rapid.

### **SELF-ASSESSMENT EXERCISE**

What do you consider as the best way to clean enamel parts of cooking stove?

#### **3.2.2 Steamers**

**There are four types of steaming ovens:**

- (a) Atmospheric steamer
- (b) Pressure steamer
- (c) High compression steamer
- (d) Non-Pressure steamer

The atmospheric steamer is non-pressure in nature. It has a boiling water bath in the bottom of the steaming compartment and as vent so that the steam does not rise above atmospheric pressure. For this reason, the door can be opened safely at any time, although some steam is lost. Heat source can be gas or electricity.

The pressure steamer is constructed with a pressure safety valve which only allows steam to escape on reaching a certain pressure. Foods cooked in this type of steamer cook quickly than in the atmospheric steamer. Care must be taken when opening the door, it should be opened slowly so as to allow pressure to go down and no one should be close to the escaping steam. When opening the door stand on the hinge side.

The high compression steamer is similar in principle to the pressure steamer but works at a higher pressure, therefore the food cooks more quickly. This equipment is usually fitted with a timer and is designed to batch cook fresh or frozen vegetables in 1 – 5 minutes; however, it does not have a large capacity.

Non-pressure convection steamers cook at a low temperature with a convection fan in a non-pressure air free compartment. The steam generator is fitted under the steamer in a separate compartment and it generates, purifies steam under pressure which is introduced into the cooking compartment.

### **3.3 Bratt Pan**

The bratt pan is the most versatile piece of cooking equipment in the kitchen because it is possible to use it for shallow frying, deep frying, stewing, braising and boiling. Because of the large surface area, a bratt pan can cook many items of food at one time. A further advantage is that it can be tilted so that the contents can be quickly and efficiently poured out on completion of the cooking process. Bratt pans are heated by gas or electricity and several models are available incorporating various features to meet differing catering requirements.

#### **3.3.1 Deep Fat-Fryers**

These are among the items of equipment which are used extensively in many catering establishments. The unskilled or careless worker can cause money to be lost by food or fat being spilt through misuse of a deep fat-fryer.

Fryers are heated by gas or electricity and incorporate a thermostatic control in order to save fuel and prevent over-heating. There is a cool zone below the source of heat into which food particles can sink without burning and thus spoiling other foods being cooked. This form of heating also saves fat.

#### **3.3.2 Hot Air Rotary Fryers**

These are designed to cook batches of frozen chips or battered foods without any oil in 4 – 6 minutes. Computerized fryers are available which may be programmed to control automatically cooking temperatures and times, on and off switches, basket lifting and product holding times. Operational information is fed from a super-sensitive probe which is immersed in the frying medium and passes information about temperature and

rates of temperature change which may be caused by the initial fat temperature, amount of food being fried, fryer efficiency and capacity, fryer recovery rate, quantity and condition of fat, product temperature and water content.

With all the above information the fryer computes exact cooking times and an automatic signaling device indicates the end of a cooking period. Deep fat-fryers should be cleaned daily after use by:

1. Turning off the heat and allowing the fat to cool.
2. Draining off and straining the fat.
3. Closing the stop –cock, filling the fryer with hot water containing detergent and boiling for 10- 15 minutes.
4. Draining off the detergent water, refilling with clean water plus a litre of vinegar per 5 litres of water and re-boiling for 10-15 minutes.
5. Draining off the water, drying the fryer, closing the stopcock and refilling with clean fat.

#### 4.0 CONCLUSION

Since the kitchen is the nerve centre of operations in catering, the procurement, usage and maintenance of kitchen equipment is most essential. In order to justify the expense on catering equipment, it is essential that maximum use is made of it, which can only be achieved if all the equipment works efficiently and this depends on care and maintenance.

#### 5.0 SUMMARY

In this unit, we studied the importance of kitchen equipment and what precautions to take in keeping equipment safe and clean. The employer must ensure that handling operation and maintenance of equipment are carefully carried out.. The employees, on their part, must take reasonable care to avoid poor handling and damages to equipment. Equipments such as Steamers, Bratt Pan, Deep Fat-Fryers, Hot Air Rotary Fryers, Micro wave ovens etc should all be handled with care by kitchen staff to avoid damages as these equipments are expensive to buy and maintain.

#### 6.0 TUTOR-MARKED ASSIGNMENT

1. List three important kitchen equipments
2. What are the necessary precautions you should take in cleaning equipment?

3. Enumerate the steps you would take to clean a deep fat –fryer after use

## 7.0 REFERENCES/FURTHER READING

Hayes, K.D., (2007) Operations Management (Second edition)  
Prentice Education, Inc., Upper Saddle River, New Jersey, U.S.A.

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## UNIT 3 EMPLOYEE SELECTION

### CONTENT

1.0 Introduction

2.0 Objectives

3.0 Main Content

3.1 Careers in the Food Service Industry

3.1.1 Positions in the Food Service Operation



- 3.2 The Recruitment Process
- 3.3 Guidelines for Recruitment and Selection
  - 3.3.1 The Hiring Process
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Readings

## 1.0 INTRODUCTION

A lot of opportunities exist in the food service industry and the industry is growing more and more as more individuals are going into the food sector either as a chain food business or sole proprietorship or partnership etc Employee selection processes are critical to hiring a superior staff. A career in the restaurant and hospitality business is a profession and those who acquire professional credentials distinguish themselves as being highly skilled, trained, motivated and career-minded. They make themselves immediate candidate for better pay and better jobs.

The biggest concern for food service managers today is human resources. Managers are worried about employee skill levels, compensation, recruiting, motivating, training and retaining. The food service operations model describes steps in the production and service of the menu, however these steps are not automated ordinarily (though in recent times many food service operations have automated their purchasing, inventory, sales and human resource system) nor do they operate in a vacuum. These steps or processes involve people, a manager or supervisor directing people via instructions and this is where human resources management (policies and processes involved in the recruitment, employment, training, placement, compensation etc) comes in the food service operation. Employee selection is a critical issue in any business venture including the food service sector.

The food service industry is becoming more and more sophisticated and there is need to carefully choose employees and train them systematically in the organization's standards. The success of a food service operation depends on its employees and the success of a food service manager depends on his or her ability to manage and work well with the people.

## 2.0 LEARNING OBJECTIVES

By the end of this unit, you should be able to:

1. Outline the careers that exist in the food industry
2. Identify the steps involved in filling the positions that exists in the food service (staffing the operation)
3. Develop guidelines on how to conduct a hiring interview

### 3.0 MAIN CONTENT

#### 3.1 Careers in the Food Service Industry

A broad range of employment opportunities exist in the food service industry. The food service industry provides career opportunities for persons of almost every age, experience, and education. A career in the food service sector can be very interesting especially for individuals who are highly creative, innovative and sociable. The work offers excellent opportunities for one to use his /her initiative, express ideas, and earn the satisfaction that comes from serving one’s fellow and the advancement of social contact at the same time.

The jobs in the food service industry can be classified as;

1. Entry or first level positions which may be unskilled or semi-skilled.
2. The second level position requires some skills (skilled) and
3. The third level position which is the supervisory or the executive positions.

However, training, experience, and individual initiatives are the prerequisite for success in the executive and managerial positions in the food service industry. On the other hand, this does not mean that those with little formal education cannot perform well in the food service sector. There exist quite a number of people today who have no formal or very little education and they hold responsible, high level positions and are doing excellently well on their jobs; all the experience they would have garnered on the job while working on the job over a long period of time will make up for the lack of formal education. This is not to say that formal education is not important, acquiring a college or university training before venturing into food service industry is an added advantage, it gives one a competitive edge and the finesse required to do the job in food service operation with all the high level of sophistication in food service industry today.

Table 3.1.1 Positions in the Food Service Industry

POSITION	LEVEL	NATURE OF JOB
CEO/Business owner, Research& Development, Human Resources, Quality Assurance, Marketing	Third Level Position, Supervisory or Executive Position	Corporate

Professional, Director of training, Director of Franchising, Catering Director, Restaurant Manager, Purchasing Director, Food Production Manager, etc		
Dining Room Manager, Dining Room Supervisor, Bar Manager,	Third Level Position, Supervisory	Front of the House
Dietary Manager, Dietitian	Third Level Position, Supervisory	Specialty
Host, Head Server, Head waiter/waitress, server, Bar tender, server assistant	Second Level Position, (skilled)	Front of the House
Roast cook, fry cook, cook	Second Level Position, (skilled )	Back of the House
Vegetable preparer, kitchen helper, Dish washer, worker assistant, counter server, store -room helper, etc	First level position, (unskilled)	Back of the House

From table 3.1.1 above, one can see that a host of opportunities exist in the Food Service Industry, however this list is not exhaustive. These positions are not restricted to only the Food Service Industry but also all other places that serve food for example one can get any of these positions in a Hotel, Restaurants, Cafeteria, Hospitals, Night Clubs, Schools, Supermarkets, Cruise Lines, Stadiums, airline in-flight food service, etc.

The single largest segment in the food service industry is the fast food, though most students tend to look down on fast foods as having no career features and somewhat inferior when compared with a career in Hotel and high brow Restaurants and would willingly opt for positions in Hotels which they believe to be more challenging. However these impression students have about Fast food Service Operation cannot be said to very accurate; in fact a wide range of opportunities are available at every job level from entry to executive and responsibility comes quickly to young people in fast food who demonstrate interest and ability, which is increased as rapidly as the new employee can handle it.

It is indeed a wise decision for persons aspiring to a career in food service to consider all segments of the industry and not to disregard any segment. The fast food segment is indeed an exciting and growing segment which provides challenges and opportunities for young people.

### SELF-ASSESSMENT EXERCISE

How would you classify the jobs that exist in the food service industry?

### 3.2 The Recruitment Process

Recruitment refers to the mobilization or conscription of employable candidates from a large pool of job seekers for an organization. The objective is to systematically find, hire and retain qualified employees; this is done through clear definition of job qualifications which allows for easier identification of potential candidates.

Recruitment consists of attracting capable individuals using methods such as out sourcing and the internet. Every enterprise, business, start up and entrepreneurial firm has some well defined employment and recruitment policies and hiring procedures. The human resources departments of any organization, business, government office, etc are generally vested with this responsibility.

Professionalism in food service management is essential in today's highly competitive market. The overview of the food service management in Module 1 and unit 1 is intended to reveal the scope and seriousness of food service management and to underscore the importance of training and education for potential food service managers and also the importance of selecting and retaining well trained and motivated staff to achieve the goals and the objectives of the food service operation.

For any recruitment process to be effective, there are well defined procedures to be followed, the employment manager who coordinates the hiring process has to do a job analysis to be able to define or describe the job (job description).

- Job Analysis

Before managers can hire an employee they need to know what they should be looking for. A job analysis involves an in-depth study of a particular job,

breaking it down into different bits and pieces in order to know what it takes to do the job. A job analysis can be carried out in several ways which includes:

- a. Observation of the employee performing the job- though this method is not solely reliable as the employee may adjust the speed of their work if they are aware that they are being watched and this may distort the information required.
- b. Interview with the person doing the job- this involves asking the employee to list in chronological order, everything they do as part of their job, there may also be some distortions as the employees may tend to exaggerate the importance of the job or diminish the importance of the job with a poor attitude.
- c. Interview with the employee's supervisor- this is however the most reliable of the three methods of carrying out a job analysis, though there is the possibility that the supervisor may not be very conversant with the processes involved in the job, all the same the supervisor's contributions will make up for any loop hole in the other two methods mentioned above.

- Job Specification

When a job is completely analyzed, the manager comes with a job specification. A job specification is the listing of the knowledge, skills and abilities required to perform a job, this information is got after a thorough study of the job i.e. all what it takes to be able to do the job.

- Job Description

The job specification for a particular job comes from a document that lays out the purpose, scope and the major duties of a particular job. This document is called a job description. A job description is developed as a result of job analysis. A minimum job description should include the following:

1. Job title
2. Title of immediate supervisor
3. Job summary: 20 to 30 words identifying the purposes of the job
4. Essential functions: what should be done , time to be spent on each task, equipment used, materials to be used
5. Reporting relationships: to whom the job holder reports and vice versa
6. Qualification standards: personal professional qualifications, skills, education, experience required, physical and mental demands, amount of responsibility, personal characteristics for job success, etc.

There is need to update a job analysis from time to time. With high level of sophistication in the hospitality business, especially in the food service sector with a whole lot of innovation, a restaurant may initiate a change of theme or menu without updating the job descriptions required to perform the work. The Managers should always have it at the back of their mind that as they introduce changes in the operations, the need will also arise for them to pair the jobs with right employees needed to perform these jobs.

### **3.3 Guide lines for Recruitment and Selection**

All the information gathered from the job analysis, job specification, and job description should guide the employment manager in preparing job postings, news papers advertisements, and planning the overall selection process. Time invested in thoughtfully planning the recruitment and selection process can make the difference between good and poor hiring decision.

The guidelines for Recruitment and Selection include the following:

- Submission of Recruiting Documents
- Selection process
- Search Committee/ Interview Panel
- Interviewing
- During the Interview
- Reference Checks
- Making Hiring Decisions
- Documentation

#### **3.3.1 The Hiring Process**

Although restaurant operators cite employee referrals, walk-ins and newspaper adverts as the most effective methods for attracting new employees, additional steps can be taken in the hiring process. Each of these steps costs money but reveals more information about potential employees. These steps include:

- Preliminary interview
- Completion of application form
- Employment tests, which is made up of Personality test, Skills test, Job simulation, Assessment centre
- Interview in human resource department, i.e. structured interview
- Background investigation , which includes background check and reference check
- Medical examination, like drug test
- Preliminary selection in human resources department
- Supervisory interview
- Realistic job preview
- Hiring decision

At the end of all these steps listed above, it is important that the hiring decision be made in a timely manner and that applicants are made aware of that date. Informing both those who will receive job offers and those who will not, makes for good public relations and keeps those who did not get the job interested in applying for other opportunities within the operation in future.

In making a job offer, the following elements should be covered:

- Position title
- Person to whom to report
- Salary to pay
- Shift
- Starting date
- Starting time
- Ending time
- Days off
- Equipment needed
- Clothing required
- Meal arrangements
- Parking
- When to come for processing of document.

When all these steps are taken, the working relationship will certainly begin on the right footing.

#### **4.0 CONCLUSION**

Selecting the right people for the right position or the position they are best qualified is one of the key to success and achievement of corporate objectives. In as much as a lot of opportunities exist in the food service operation, there is the need to employ individuals who are highly motivated and ready to work and this can be discovered through proper selection methods.

#### **5.0 SUMMARY**

The Employee selection process usually starts with an analysis of the particular position for which an employee is being sought for; this is referred to as a job analysis. It is a thorough investigation or the study to know who and what it takes to do the job. When the job is completely analyzed, the manager comes up with a job specification. A job specification comes from a document that lays out the purpose, scope and the major duties of a particular job. This document is referred to as job description. The Recruitment process starts after the job has been properly described or defined. This is followed by the hiring process which involves other stages or steps.

#### **6.0 TUTOR-MARKED ASSIGNMENT**

1. Enumerate the various careers that exist in the food service operation and the levels where they belong
2. What are the necessary steps that have to be taken before the recruitment process starts?
3. List the guide lines for recruitment and selection

## **7.0 REFERENCES / FURTHER READINGS**

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Employment testing and personality services      [www.employeeselect.com](http://www.employeeselect.com)  
Employee Selection Process                              [www.managementstudyguide.com](http://www.managementstudyguide.com)

## **UNIT 4                      IMPLEMENTING HEALTHY CATERING SERVICES**

### **CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 The Role of Catering / Restaurant Manager in Sanitation.
  - 3.2 Development of Healthy Catering Practices.



- 3.3 Constraints to Policy Implementation
  - 3.3.1 Avoiding Difficulties in the Implementation of Policy
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/ Further Readings

## **1.0 INTRODUCTION**

Throughout the world's cultural and social evolution, several references have been made to the breaking of bread together. Feasts or banquets are one way to show one's hospitality. Every now and then, hosts attempted to outdo one another with the extravagance of their feasts. Preparing, supplying and making food and beverages available to guests at these gathering of family, friends, acquaintances, colleagues etc is what catering is all about.

Catering includes a variety of occasions when people may eat at varying times, for example catering departments in big hotels may service different events in just one day for example, private luncheons, a wedding or two, a fashion show, dinner party etc. Each of these events requires different and special treatment. Regardless of the kind of special treatment to be meted out to these different events, the guiding principle should always be to implement and maintain a very high level of sanitary condition at the catering premises, before, during, and after the preparation of food and the service of food to individuals.

Catering may be subdivided into on-premise and off-premise catering. In off- premise catering, the event is carried away from the hotel or the designated catering premises. The food may be prepared either at the event or the catering premises/hotel or restaurant. As mentioned earlier, it does not matter whom is being catered for or where the catering is done, the key issue here is the implementation of healthy catering services.

## 2.0 LEARNING OBJECTIVES

By the end of this unit, you should be able to:

1. Identify the role of Catering Manager/Restaurant Manager or Supervisor in sanitation.
2. Know how to develop and enforce effective sanitation policies for their catering business
3. Identify constraints on policy implementation and how to avoid them.

## 3.0 MAIN CONTENT

### 3.1 The role of Catering/Restaurant Manager in Sanitation

To ensure food safety, management has the responsibility and duty of demonstrating knowledge of food borne disease prevention by developing and implementing healthy catering services. The management's primary responsibility is to provide safe food to consumers at all times.

There is the need for management to develop policies and procedures on sanitation to be undertaken by the employees. It entails translation of policy intentions into practical actions in catering service. The employees should be involved in giving their reaction to the policies and procedures in the business; this enhances cooperation and the development of a productive organizational climate. This style of management is referred to as management by objectives. When implemented properly, a philosophy of management by objectives should take care of situations where there is discrepancy between what employees want relative to clarity, commitment and or standards and what they feel they get.

For a successful implementation of healthy catering practices, the onus lies on the management to carry the staff along and communicate clearly to them policy decisions concerning:

- Personal hygiene of food handlers
- Safety and Accident Prevention at the catering premises
- Basic rules to be observed when receiving, storing, preparation, cooking and serving of food
- Special rules for dining room waiter/ waitress
- Special rules for bartenders and bar waiters
- Protective display of food, etc

All of these healthy Practices had earlier been discussed in details in the previous units (refer to unit 1, module 1)

Following policy decisions, greater effort should be put into the implementation process and these involve:

- Consideration of training needs
- Development of effective communication
- Establishment of mechanism for feedback

For these procedures to be effective the following methods must be adopted and these are:

- The analysis of steps involved in policy formulation
- Identification of ways in which catering staff can be involved in the process
- Promotion of policy through specific training
- Assessment of the monitoring of policy effectiveness

On the other hand, implementation depends on the clarity of these decisions and commitment on the part of the employees. Commitment indicates how strongly employees feel about achieving the goals of the business, to what extent do they accept these goals, see them as realistic, get involved in setting them, and have their performance evaluated against them. Standards indicate the emphasis that management puts on high quality of performance and improvement in performance is as a result of pressure exerted on the employees by the management.

## **SELF-ASSESSMENT EXERCISE**

List and explain the sub-divisions of catering

### 3.2 Development of Healthy Catering Practices

Since the manager in a food service operation is responsible for serving food that is safe to eat, he or she is also responsible for instructing the staff in safe food handling procedures. A good manager conducts ongoing inspections to maintain the standards of sanitation required for the production of safe food and monitors the personal hygiene of all people involved in the handling of food. Written regulations, for example food safety regulations and food hygiene regulations are available and must by law be followed. State and local inspections are conducted by appropriate agencies and these agencies have the power to impose fines and to enforce compliance, for example, NAFDAC does not force people to comply, it will simply give orders for the immediate closure of the catering outfit.

Management can build effective employee hygiene habits by addressing such topics as grooming, hair restraints, clean clothes, clean aprons and overall health. Sometimes, addressing these topics may be uncomfortable for managers but what has to be done has to be done for the success of the

business. However, the following techniques may help managers talk to their employees about hygiene:

- Have employees wash their hands thoroughly, apply an appropriate chemical and shine a black (ultra violet) light that shows how many germs remain.
- Always train a group of workers using light –hearted role playing illustrations that engage everyone in a specific training program, such as ServSafe’s essentials training class for hourly employees. This group context can be used to address such hard issues as hair and body odour.
- Employees who continually show poor hygiene should be counseled one-on –one.

According to ServSafe Essentials, managers must restrict food handlers from working with or around food if they show signs of fever, diarrhea, vomiting, sore throat or jaundice. All wounds, sores, cuts and skin infections should be well covered with clean and dry bandage when the food handler is working with or around food. Employees are to wash their hands after using the rest room, before and after handling raw food, touching parts of their bodies, coughing or sneezing, taking out trash, clearing tables and dirty dishes, handling chemicals that may affect the safety of food, touching dirty work surfaces, etc.

The cleaning and sanitation standards and methods that cover all needs of the restaurant should be developed and provided to employees, for example in the cleaning of tables, chairs and booths, the standard should be that tables, booths and chairs should be free of grease, food particles, soil and dust build up. All table decorations and condiments should be clean and free of dust, grease and food.

The method to be adopted in cleaning is to remove all dirty dishes and clean tables with sanitized towels, checking underneath the tables for chewing gums and removing them. Where table cloths are used, they should be replaced with clean ones that are free of wrinkles and stains. Tables, booths and chairs should be thoroughly cleaned every week with clean water and a towel.

Cleaning and maintenance should be done on weekly basis rather than daily basis. Management and kitchen staff should compile list of items with basic cleaning directions known as the weekly cleaning and maintenance schedule and decide the day each task should be completed. To make sure the tasks are completed, they should be assigned in one of the following ways:

- Every cook must complete the item on the weekly cleaning and maintenance schedule assigned to his / her shift before clocking out.
- Each shift should have the manager or kitchen shift leader personally assign responsibilities , etc

(Students should be able to develop their own healthy catering services when their catering businesses).

### 3.3 Constraints to Policy Implementation

You will all agree that in every organization that it is one thing to make rules and regulations but a different matter to get individuals to comply or abide by these rules and regulations. But rules and regulations that borders on healthy habits, which is meant for the good of everyone should not pose a problem for those the rules are meant for. Achieving effective policy implementation requires that:

- The staff or employees should be duly informed about policy intentions (adoption of healthy catering practices for the good of all both for the health of consumers and for the positive image of the business) thereby securing their co-operation in implementation.
- The time scale should be planned and actions for implementation should be defined (refer to the previous page on cleaning and maintenance, where the task to be carried out is defined and the time the task is expected to be completed is also stated).
- The policy should be promoted by selling it to the public and this can be done by providing hand washing facilities with hot and cold running water and permanently installed detergent or soap dispenser and single use towels within the dining areas, with legible signs posted, directing customers to wash their hands when they come into the restaurant to eat.
- There should be awareness and adequate preparation for the introduction of the policy.

#### 3.3.1 Avoiding Difficulties in the Implementation of Policy

To avoid difficulties in policy implementation, it is necessary to:

1. Define success through goal and target setting

Policy statement on food and health should give explicit support for staff implementing the policy by clearly defining overall goals and targets. It may be appropriate to provide a separate document

for caterers which gives specific information expected changes in catering practices.

2. Develop the skills for success  
Relevant in-service and pr-service training for caterers should be recognized providing caterers with the skills needed for implementation is essential for successful implementation.
3. Communicate and involve  
Food and health policies must be communicated effectively to all staff. Involvement of staff in the process of policy formulation and implementation is critical for success. It should also be communicated to the public via the customers that patronize the restaurant or food service operation so that become involved in taking of their health.
4. Strive for consistency in application  
Food and health policies should apply to all foods, whether fast foods, full-service, self service, etc.
5. Review and modify  
The implementation of policy guide lines needs to be carefully planned and regularly reviewed for policies to have real impact. Target setting and review procedures should be established at the outset so that problems can be swiftly identified and obstacles to progress can be removed.

#### **4.0 CONCLUSION**

Implementing healthy catering practices and service requires the cooperation of both the management and staff. For the implementation to be more effective there is the need to also carry the consumers or the public along. Healthy catering practices are a sure way to prevent food borne diseases.

#### **5.0 SUMMARY**

The Restaurant Manager has an important role to play in developing and implementing healthy catering services, this is

because he owes it to his customers or the public to serve safe food. In fact the provision of safe food should be a phrase to be included in the mission statement of any food service operation. However, the manager cannot do this alone; he needs to carry the workers along in decision making processes because they are always the ones in charge of handling the food. The importance of good personal hygiene and healthy practices in all the stages involved in the preparation of the food should be communicated to them and they should be properly supervised to ensure the implementation of these healthy practices.

## **6.0 TUTOR-MARKED ASSIGNMENT**

1. What are the constraints that a Restaurant Manager may encounter in trying to ensure the implementation of healthy catering services?
2. Describe the way you will go about developing healthy catering practices.
3. List and explain four ways by which you, as a manager of a restaurant can avoid difficulties in the implementation of policies in your catering business.

## **7.0 REFERENCES / FURTHER READINGS**

Lattin G.W. (1985). The Lodging and Food Service Industry. The Educational Institute of the American Hotel & Motel Association .  
Mill R.C. (2007). Restaurant Management: Customers, Operations, and Employees (3rd Edition) PEARSON Prentice Hall, Upper Saddle River, New Jersey, USA.

Catering Services [www.mocality.com.ng/catering](http://www.mocality.com.ng/catering)  
Introducing healthy catering practice [hah.sagepub.com/content/7/2/](http://hah.sagepub.com/content/7/2/)

## **UNIT 5            CONTROL OF WASTE AND RECYCLABLE MATERIALS**

### **CONTENT**

1.0 Introduction

2.0 Objectives

3.0 Main Content

    3.1 Generators of Waste

    3.2 Control of Food Waste

    3.3 The Environmental Impact of Food Waste

4.0 Conclusion

5.0 Summary

6.0 Tutor-Marked Assignment

7.0 references/further Readings

### **1.0 INTRODUCTION**

One of the greatest sources of food waste occurs when excessive amounts of foods are trimmed and discarded during preparation. Generating food waste has significant economic and environmental consequences. A lot of money is being thrown away through food wastages. Whether you are an individual, family or business, a considerable portion of your budget goes towards purchasing of food because we all need food to stay alive. Many a times, simple changes in food purchasing, storage and preparation practices can lead to food wastages.

As much as possible all food purchased should be sold to customers. When food cannot be sold and must be thrown out, the manager must be notified about the



problem. Examples of such problems are when servers write down the wrong order, a wrong order is prepared by the kitchen, food is not properly cooked, etc; all of these lead to wastages.

Food waste cost- savings have even greater potential at commercial establishments. Saving food means saving money, therefore managers should acquire the habit of watching employees while they are preparing foods and checking trash cans for above normal trimming of food. Some restaurants have employees place all food trimmings in a container to be examined by a supervisor before being thrown out. This will not only reduce waste but will make the food money or the budgets go further.

## **2.0 LEARNING OBJECTIVES**

By the end of this unit, you should be able to:

1. State the importance of food waste control as a system of cost control
2. Identify the environmental impacts of food wastages
3. Give specific guide lines on food waste recovery and recycling of waste products.

## **3.0 MAIN CONTENT**

### **3.1 Generators of Waste**

Waste is generated from different sources and one of the greatest sources is from the food manufacturing and processing facilities; restaurants, food courts, supermarkets, households, institutions such as schools, prisons, hospitals etc are also large generators of food waste.

Solid Waste types may be sub divided into three types of waste, namely: (i) Food Waste,(ii) Packaging Waste and (iii) Operating Supplies Waste.

Food waste is categorized as either (i) pre-consumer waste i.e. food preparation waste or (ii) post –consumer waste i.e. left over or plate scrapings.

Packaging Waste includes food packaging and in bound supply chain waste. These refer to palettes, cans, cartons, plastic wrap and all other materials used to package supplies and food. Other packaging waste include those used for packaging and serving food to guest for example clam shells, hot and cold cups, disposable trays etc.

Operating Waste may be either (i) Front of the House i.e. front of the house operating supply waste like napkins, disposable cutlery, portion-controlled condiments, table linen etc or (ii) Back of the House i.e. back of the house operating supply waste like towels, rags, expired seasonings and paper.

Food Waste Generators may be sub divided into (i) Large Scale Generators and (ii) Small Scale Generators and Homeowners

(I) Large Scale Generators

Food service providers for example, restaurants, grocery stores, supermarkets and institutions like schools, hospitals, etc where food is prepared and served in large quantities produce a significant amount of food waste each day.

Environmental Protection Authorities encourages these large scale food waste generators to manage their surplus food and to implement a food waste diversion program by putting surplus food to good use.

(II) Small Scale Generators and Homeowners

Individuals, households and other small scale generators of food waste often do not realize just how much food they throw away everyday from uneaten leftovers to spoiled produced. By paying attention to simple steps like planning a menu, buying the right quantities needed at a time and when buying in bulk, making sure that there are storage facilities to store them to prevent spoilage, thinking of what is available to eat and not what one wants to eat and reusing leftovers for example taking leftovers from dinner to work for lunch.

### **3.2 Control of Food Waste**

There are quite a number of ways to control food wastages and one of the easiest way to do this, is by altering or making some simple changes in food purchasing, storage and preparation i.e. avoiding unnecessary expenditure and preparation that leads to wastages.

Often, wasted but edible products such as improperly or mistakenly cooked orders can be salvaged by serving them as employee meals or using them as ingredients in another menu item.

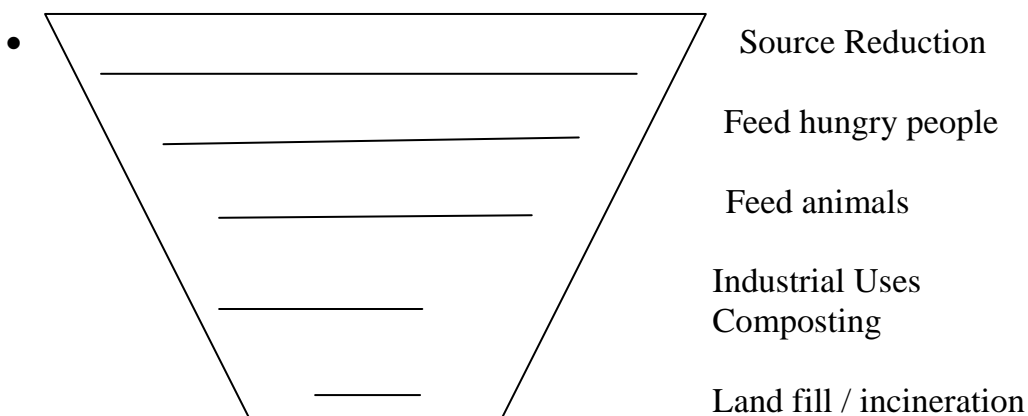
Food scraps are not necessarily wastes so to speak, they can be sent to composting facility to be used to enrich the soil for agriculture.

From the paragraph above, what easily comes to mind is this slogan that is frequently preached by environmentalist, “Reduce, Reuse, Recycle”, the “3R’s” for food. Reducing, Reusing and the Recycling of food products is referred to as Food Waste Recovery Hierarchy or Waste Management Hierarchy in Food Service.

### SELF-ASSESSMENT EXERCISE

What happens when food is disposed in a landfill?

Figure 1. Waste Management Hierarchy in Food Service



- Source Reduction ----- This involves a reduction in the amount of food waste generated during preparation.
- Feed People ----- Sometimes, there are some food that are not servable to restaurant customers but are safe to eat or when food is prepared in excess, they are donated to charitable organizations or shelters.
- Feed Animals ----- Food scraps or leftovers may be given to farmers to feed animals
- Industrial Uses----- Wastes provide fat for rendering; oil for fuel; food discards for animal feed production or anaerobic digestion combined with soil amendment production or composting of the residuals.
- Composting-----Recycle food scraps into a nutrient rich soil amendment.

### 3.3 The Environmental Impact of Food Waste

Apart from the huge economic impact of wasted valuable resources, there are also enormous and immediate environmental impacts.

1. When food is disposed in a land fill, it quickly rots and becomes a significant source of methane (a potent green house gas with 21 times the global warming potential of carbon dioxide).
2. Landfills are a major source of human-related methane, accounting for more than 20 percent of all methane emissions. Reducing, recovering and recycling food waste diverts organic materials from landfills and incinerators reducing green house gas emissions from landfills and waste combustion.
3. The use of recycled food waste (compost) has many environmental benefits like:
  - Improving soil health and structure
  - Increasing drought resistance
  - Reducing the need for supplemental water, fertilizers and pesticides.
4. An additional benefit of food waste reduction donation and composting is improved sanitation, public safety and health for both your facility and community.
5. Food wastes dumped in standard trash cans and dumpsters in the back of the house, store or restaurant can attract rodents and insects as well as generate bad odour.

### 4.0 CONCLUSION

The best way to control waste is to reduce it right from the source i.e. purchasing the right amount required at each time, cooking the quantity that is required at a particular time and serving quantities that can be finished by the consumer. Food waste has huge economic and environmental impact in the society, though some of the environmental impacts are beneficial while some have adverse effect on public health.

### 5.0 SUMMARY

Waste is generated from different sources and one of the greatest is source is the food service sector. Food waste generators may be sub divided into large scale generators and small scale generators or home owners. Food

waste is best managed by reducing, reusing and recycling waste products and this is referred to as the food waste recovery hierarchy.

#### 6.0 TUTOR-MARKED ASSIGNMENT

1. List the two main groups of waste generators and give three examples of each.
2. What are the benefits of waste in the environment?
3. Mention and explain some of the negative impacts of waste on the environment.
4. How can waste be managed in our society?

#### 7.0 REFERENCES / FURTHER READINGS

Van- Hoof, H.B., Vallen, G.K., McDonald M.E., & Wiener P.J. (2007). A Host of Opportunities: An Introduction to Hospitality Management (2nd Edition) PEARSON Prentice Hall, Upper Saddle River, New Jersey, USA.

Waste Control recycling	<a href="http://www.wastecontrolrecycling.com/recyclablem">www.wastecontrolrecycling.com/recyclablem</a>
Waste Management	<a href="http://www.vconnect.com/business-directory">www.vconnect.com/business-directory</a>