Lecture 1: Food Safety – Definition, Importance, Scope and Factors affecting Food Safety.

Food safety: is a scientific discipline describing handling, preparation and storage of food in ways that can prevent food borne illness. This includes a number of routine that should be followed to avoid potentially severe health hazards. Food Safety measures assures that the food will not cause harm to the consumer when it is prepared and/or eaten according to its intended use.

Importance of food safety

Food hygiene is important for the following reasons:

1. If food or drink is not safe to eat, you cannot eat or drink. The easiest example of this is safe drinking water. We would never drink water that did not come from a reputable source. The very same principle applies to food.
2. Every day, people worldwide get sick from the food or drink they consume. Bacteria, viruses and parasites found in food can cause food poisoning.
3. There is no immediate way of telling if food is contaminated because you cannot see, taste or smell anything different from the norm.
4. Food poisoning can lead to gastroenteritis and dehydration or potentially even more serious health problems such as kidney failure and death.
5. This risk is especially significant for those in the high-risk category: *Small children/ babies, pregnant moms, the elderly and immunocompromised, especially HIV infections and cancer patients.*
6. Food hygiene and safety prevent germs from multiplying in foods and reaching dangerous levels.
7. Ensures daily healthy family living.
8. Keeping one healthy and preventing the additional cost of buying medication and medical check-ups. This is especially important is business. Companies worldwide loss Billions of Dollars per year due to staff downtime.
9. Hand washing accounts from 33% of all related food poisoning cases. It is therefore important to maintain good personal hygiene practice. This is something we are taught early in our childhood, yet hand washing is still a critical problem in the kitchen

Scope of food safety

- To provide an idea and vision about nature of food product and the way this is going to be processed that includes all the Raw materials, utilities, manpower, environment and other factors those are going to be assessed to get an safe end product.
- Identifying critical points in food processing and handling required for safe food production
- Identification of food safety hazards by use of scientific method.
- Acquaint with implementation of measures to control these hazards where significant
- Better use of resources
- Standardization of hazard management allowing for easier auditing and inspection.

Factors Influencing the Safety of Food

Stories of foodborne illness have become much more prevalent throughout the world. Is food less safe than it used to be, and if so, what factors account for this? Some threats to food safety have been around since ancient times, while others are newer, the result of changing demographics and lifestyles, production practices, and even evolution of microorganisms themselves.

1. **Food contamination**
   The diseases caused by food, or the foodborne diseases, are described as the illnesses with which people are infected by the foods they eat. These diseases are a widespread public health issue and are expensive to treat. Foodborne diseases result from the consumption of contaminated foods and products. Contamination of the food at any stage, from production to consumption, produces bacteria, viruses, parasites, chemical agents and toxins, which eventually cause the foodborne diseases.

2. **Demographics**

People who are at higher risk of becoming seriously ill include infants, young children, the elderly, pregnant women, those taking certain medications, and those with diseases such as acquired immunodeficiency syndrome (AIDS), cancer, and diabetes that weaken their immune systems. In one survey, 89 percent of deaths with diarrhea as an underlying cause were for elderly people or children under the age of five (Morris, 1997).

Very young infants and aging adults produce fewer or less acidic, gastric juices than younger, healthy adults. This leads to their higher succeptibility towards bacterial infections. Finally, the human immune system, not fully developed at birth, gradually reaches maturity in puberty and then slowly begins to decline after about fifty years of age.

3. **Consumer Lifestyles and Demand**

As the pace of life quickens, we often eat meals on the run, and spend less time on food preparation, preferring instead restaurants, convenience foods, or already prepared meals. This means that by the time you eat your food, it may have been transported, cooked,

cooled, stored, transported again, reheated, and touched by numerous individuals. Each processing step introduces new hazards that could allow for the survival and growth of pathogens.

Add to this the mishandling of food that occurs after a consumer purchases food and takes it home, and the likelihood of illness increases. Approximately 20 percent of reported foodborne illness cases occur from food cooked at home. Experts believe that this number is actually much higher, but that most people do not report cases of illness caused by foods cooked at home (Knabel, 1995; Doyle, 2000).

4. **Food Production and Economics**

In the past, outbreaks of food borne illness were relatively small and local. Illness could be traced back to local events such as weddings, public dinners, and other gatherings where a large number of people ate the same food. Today's food is produced in vastly different ways from those of even several decades ago. Food used to be grown, produced, and distributed on a local basis. Food production is now centralized and on a larger scale than in the past. Products made in a single processing plant in mass quantities are shipped all over the country, sometimes throughout the world. A mistake made in the processing will be felt nationwide instead of just locally. Even the manner in which farmers raise animals can contribute to an increase in food safety problems. A large number of animals are often crowded together, increasing their stress levels and weakening their immune systems. This crowding also facilitates the spread of disease from one animal to another. In the old days a sick animal would be fairly isolated and if it became sick it would not pass on illness to the rest of the flock or herd. But with closer animal-to-animal contact, disease can quickly spread throughout the whole group.

5. **New and Evolving Pathogens**

As recently as fifty years ago scientists had identified four foodborne pathogens. Today five times that number is on the list. Twenty years ago scientists did not even recognize three of the four pathogens that the Centers for Disease Controlconsiders the most important in causing foodborne illness—*Campylobacter jejuni*, *Listeria monocytogenes*, and *E. coli. C. cayetanensis* first appeared in 1979 and is still not well understood. It is likely that scientists will discover new foodborne pathogens as laboratory techniques improve. As living organisms, pathogens are constantly evolving. With better ability to trace outbreaks, scientists are discovering that some bacteria survive in environments previously thought safe. For example, *E. coli* associated with meat products has shown up in foods as diverse as salami, apple cider, raw milk, and lettuce. It also survives in lower pH conditions than originally thought, leading to the outbreaks in acidic foods such as salami and apple cider. It is now known that *Yersinia enterocolitica* and *L. monocytogenes* can survive and multiply at refrigeration temperatures.