

Sanitation and microbiological quality

Microbiological standards and criteria

Control on the microbiological quality of food is ensured by the regulatory agencies and food industry. This is done to ensure the safe of food to consumers, extend shelflife and to ensure product consistency from one batch to another in terms of safety and shelflife. Distinguishing the food of acceptable quality from food of non – acceptable quality is made possible with the application of microbiological criteria.

The purpose of microbiological criteria

The purposes of microbiological criteria for foods are to give assurance that;

- The foods will be acceptable from the public health stand point. That is, the food will not be responsible for the spread of infectious diseases or for food poisoning.
- The foods will be of satisfactory quality. That is, the food will consist of good original materials that have not deteriorated or become contaminated during processing, packaging, storage, handling etc.
- The foods will be acceptable from aesthetic view point. That is, it is free from extraneous material such as hair, scales, plastics etc.
- The foods will have keeping quality that should be expected of product.

Establishing microbiological criteria for a food product is based on factors such as total number of organisms, number of indicator organisms and number or absence of pathogens.

Types of microbiological criteria

Three types of microbiological criteria have been defined by the International Commission on Microbiological Specifications for Food (ICMSF). They are;

- Microbiological standard
- Microbiological specification
- Microbiological guideline

Microbiological standard

Microbiological standard is a criteria specified in a law or regulation for a specific food. It is a legal requirement that foods must meet and is enforceable by the appropriate regulatory

agency.

Microbiological standard is that part of the law or administrative regulation designating maximum acceptable number of microorganisms or specific types of microorganisms as determined by prescribed methods in a food produced, packed or stored or imported into the area of jurisdiction of an enforcement agency.

Microbiological specifications

Microbiological specification is the maximum acceptable number of microorganisms or of specific types of microorganisms as determined by prescribed methods in a foods being purchased by a firm or agency for its own use.

Microbiological specification is the criteria applied in commerce. It is a contractual condition of acceptance that is applied by a purchaser. Failure to meet the condition by supplier will result in rejection of the batch or a lower price.

Microbiological guideline

A microbiological guideline is that level of bacteria in a final product that requires identity and correction of causative factors in current and future production or handling after production.

It is used to monitor microbiological acceptability of a product or process. It differs from standard and specification in that it is advisory in nature rather than mandatory.

Factors to be included in suggesting a microbiological criteria (ICMSF)

- A statement of the food to which the criteria applies. As foods of different origins, composition and processing provide different microbial habitats; different foods pose different spoilage and public health problems.
- A statement of the microorganisms or toxin of concern. These include spoilage and health aspects. A realistic decision has to be made based on microbial ecology of food in question.
- Details of the analytical methods to be used to detect and quantify microorganisms/toxins. Methods elaborated by international agencies, and scientific methods that confirm the compliance with guidelines to be used.
- The number and size of the samples to be taken from a batch of food or from source of concern such as a point in a processing line.
- The microbiological limits appropriate to the product and the number of sample results which must conform with these limits for the product to be acceptable.

Fish plant sanitation

Consumers expect the foods to be pure, safe and processed, handled and served in a sanitary manner. Sanitary food is defined as one that is free of agents that cause disease or illness and free from objectionable extraneous material like insect fragments. Therefore, sanitation is concerned with the food and also the environment and conditions under which the food is handled.

Fish plant sanitation is defined as the controlling of all conditions or practices within the plant so that the fish processed is free from disease-producing microorganisms and foreign matter.

Requirements for an effective sanitation programme

Implementation of effective sanitation programme becomes necessary in any food processing industry. For a workable sanitation programme the following requirements have to be met.

- Management must be aware of the need for good sanitation.
- The processing unit should be suitably located and constructed.
- The processing unit must have required quantity of good quality water supply.
- The processing unit must have adequate washing facility for whole fish.
- The processing unit must have smooth working surfaces.
- The processing unit must have a sound clean-up policy.
- The processing unit must have adequate sanitary facilities.
- The processing unit must ensure good personal hygiene habits of employees.
- The processing unit must have effective rodent and insect control programme.

Need for hygienic practices

Practicing of proper hygienic practices by food handlers is of critical importance as they serve as fundamental sources of many microorganisms responsible for foodborne illnesses. Pathogens such as *Staphylococcus aureus* is naturally associated with humans, and will contaminate the food unless proper care is taken. Production of toxin by this organism in any food is responsible for staphylococcal food poisoning.

The food handlers could also serve as carriers for many of the pathogenic microorganisms responsible for typhoid fever, dysenteries, salmonellosis, hepatitis etc. So, there is a need for acceptable hygienic practices by food handlers to prevent microbial contamination to food. Compliance to proper hygienic practices by the food handlers can be achieved only by educating them on the importance and need for personal hygiene practices.