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Introductory Chapter: Food Safety Concepts

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1. Introduction

On a global scale, there has been a notable elevation in the extent of foodborne diseases, in addition to disturbances in the international food trade resulting from recurrent disputes with regards to food safety requirements. In order for improvements to be recognized in food safety systems, most of these systems need to be reviewed and further developed. It is especially crucial at the present time, for both developed and developing countries, to create and propagate food safety systems in accordance with the principals of risk-based thinking and risk assessment. Therefore, it is important to be equipped with important knowledge on the principles and practices of food safety systems and the trend that will take food processors away from a merely reactive approach to food safety procedures, to a more proactive one.

2. Responsibility of food safety

The responsibility of the control of food safety worldwide is shared between several different agencies and ministries of the same country. The roles and responsibilities of these bodies may be quite different but most of the time can be considered as a kind of duplication of the same regulatory activity where unnecessary routine inspection visits and a lack of coordination are common. Moreover, the expertise and resources of these different agencies are varied, which can create a conflict between the responsibilities for protecting public health and obligations toward either facilitating trade or developing an industry or a sector.

3. Development of national food safety system

Provision of information for government agencies to assist in the development of national food control systems and to promote effective collaboration between all the different agencies

involved in the management and control of food safety has become the utmost importance. The importance of developing effective relationships and mutual support among government agencies and institutions involved in the control of food safety and other interested parties, particularly the food industry and consumer associations, will enhance the establishment of effective food safety systems that positively impact the public health.

Since 1990s, food safety systems and code of practices have been developed substantially. These developments have been driven primarily by the implementation of the Hazard Analysis and Critical Control Point (HACCP) system for ensuring food safety worldwide, as well as compliance with International Organization for Standardization (ISO)-issued standards by different sectors of the food industry, including but not limited to the food chain. As a result, it has now become a necessity for students being prepared to start their career paths in the food industry to become educated about these safety systems, while still in their undergraduate programs.

The most important method for protecting public health is by promoting food safety that has long been recognized as a governmental responsibility in any country. It has improved through a series of statutory and regulatory requirements that responded to the fact that a significant proportion of human illnesses and deaths often have their origin in the food supply.

4. Objectives of food safety studies

Most of the food safety studies were to place emphasis on microbiological criteria used currently in the different food commodities, as the issues surrounding food safety criteria are common to all sectors of the food chain. The observation of foodborne disease and the monitoring of microbial contaminants of food, both from a public health standpoint and control measures of the effectiveness of food safety criteria must be practiced. The suggested science-based strategy for developing food safety criteria, including the standard operating procedures and instructions for their implementation, should be described for obtaining the best data to support this process.

Therefore, the scope of each study should cover these food safety criteria and should work to evaluate the scientific basis for existing microbiological criteria applicable to the selected food sectors, in addition to the extent to which these standards are suitable tools of ensuring the safety of such foods within any food safety systems based on the Hazard Analysis and Critical Control Point System (HACCP). The scope should follow the science-based process to set up food safety criteria and recommend guidelines as to what data are adequate and appropriate for use in developing new, or improving current criteria. The extent of the study should examine whether current criteria fulfill what they are required to achieve and the need to connect science-based criteria to public health objectives. Revision of the need for performance standards as control measures of food safety hazards and the way such criteria are implemented within HACCP system should take place to the extent that ensures processing of safe food. The recommended amendments for continual improvement should take into consideration the requirements of all the interested parties, i.e., consumer, industry, and food legislators.

Moreover, the availability of different food safety standards to agencies in charge of regulation should be oriented toward creating a connection between performance indicators and not only public health targets but also the economical aspects of food safety criteria, in addition to providing recommendations for continual development. This can be done via implementation and subsequent development of science-based criteria for food safety; criteria that include principals for managing the degree of risk for foodborne illnesses and becoming familiar with the elements that contribute to that risk.

The safety of our food products must always be given top priority in all that we do through selecting the best standards for an operation and then defining, implementing, maintaining, and continuously improving the food safety system. It is very important along all the steps of this process that food professionals monitor the specific sources related to the standard of choice along with staying up-to-date on current food safety-related news and incidents.

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