

# Preface

## ICMSF and the Evolution of Food Safety Management

*Microorganisms in Foods 8: Use of Data for Assessing Process Control and Product Acceptance* was written by the International Commission on Microbiological Specifications for Foods (ICMSF) with assistance from a limited number of expert consultants. The purpose of this book is to provide guidance on appropriate testing of ingredients, food processing environments, processing lines and finished products to enhance the microbiological safety and quality of the food supply.

ICMSF books represent an evolution in microbiological food safety management principles. In the 1970s and 1980s, food safety control was primarily accomplished through inspection, compliance with hygiene regulations and end product testing. *Microorganisms in Foods 2: Sampling for Microbiological Analysis: Principles and Specific Applications* (1974, 1986) put forward a sound statistical basis for microbiological testing through the use of sampling plans. Sampling plans remain useful at ports of entry when there is no information on the conditions under which a food has been produced or processed.

At an early stage, the Commission recognized that no single sampling plan could ensure the absence of a pathogen in food. This led the Commission to publish *Microorganisms in Foods 4: Application of the Hazard Analysis Critical Control Point (HACCP) System to Ensure Microbiological Safety and Quality* (1988). The value of HACCP for enhancing food safety is recognized globally. *Microorganisms in Foods 4* illustrated the procedures to identify microbiological hazards in food production, to identify the critical points to control the hazards and to establish systems to monitor the effectiveness of control.

Effective implementation of HACCP requires knowledge of hazardous microorganisms and their responses to conditions in foods (e.g., pH, water activity, temperature, preservatives etc.). The Commission's *Microorganisms in Foods 5: Characteristics of Microbial Pathogens* (1996) is a thorough but concise review of the literature on growth, survival and death responses of foodborne pathogens. It is intended as a quick reference to assist in making judgments on the growth, survival or death of pathogens in support of HACCP plans and to improve food safety.

Microbiological food safety management requires an understanding of the microbial ecology of the food being produced. *Microorganisms in Foods 6: Microbial Ecology of Food Commodities* (1998, 2005) is intended for those concerned with the applied aspects of food microbiology. It describes the initial microbiota, pathogen prevalence, effects of processing, spoilage patterns, foodborne illness outbreaks and control measures for 17 food commodities. The updated version of *Microorganisms in Foods 6* builds on *Microorganisms in Foods 7* by identifying controls that influence the initial level, increases, and decreases in the microbial population.

*Microorganisms in Foods 7: Microbiological Testing in Food Safety Management* (2002) illustrates how HACCP and Good Hygienic Practices (GHP) provide greater assurance of safety than microbiological testing, but also identifies circumstances in which microbiological testing may play a useful role. It introduces the reader to a structured approach for managing food safety using control measures in three categories: (1) those that influence the initial level of the hazard, (2) those that cause reduction of the hazard and (3) those that prevent increase of the hazard during processing and storage. The concepts of

a Food Safety Objective (FSO) and a Performance Objective (PO) are recommended to industry and control authorities to translate risk into a definable goal for establishment of food safety management systems that incorporate the principles of GHP and HACCP. FSOs and POs provide the scientific basis for industry to design and implement measures to control the hazards of concern in a specific food, for control authorities to develop and implement inspection procedures to assess the adequacy of control measures, and for countries to quantify the equivalence of inspection procedures. In addition, the information on sampling plans presented in *Microorganisms in Foods 2* is updated and expanded.

This new book, *Microorganisms in Foods 8: Use of Data for Assessing Process Control and Product Acceptance*, consists of two parts. Part I, Principles of Using Data in Microbial Control, builds on the principles of *Microorganisms in Foods 7*. Part II, Application of Principles to Product Categories, provides practical examples for a variety of foods and processing environments. This material updates and replaces similar information presented in *Microorganisms in Foods 2*. Part II also builds on the second edition of *Microorganisms in Foods 6: Microbial Ecology of Food Commodities* (2005) by identifying additional tests to evaluate the effectiveness of controls.

*Microorganisms in Foods 5, 6, 7 and 8* are intended for those involved in microbiological testing or engaged in setting microbiological criteria. These texts are useful for food processors, food microbiologists, food technologists, public health workers and regulatory officials. For students in food science and technology, the ICMSF series offers a wealth of information on food microbiology and food safety management, with many references for further study.

Microbiological testing can be a useful tool in the management of food safety. However, microbiological tests should be selected and applied with knowledge of their limitations, benefits, and the purposes for which they are used. In many instances other means of assessment are faster and more effective than microbiological testing for food safety assurance. The need for microbiological testing varies along the links of the food system, from primary production, to processing, to distribution and sale, to preparation, to point of consumption. Points in the food system should be selected where information about the microbiological status of a food will prove most useful for control purposes.

## References

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