International Commission on Microbiological Specifications for Foods (ICMSF)

# Microorganisms in Foods 7

Microbiological Testing in Food Safety Management

Second Edition



# <u>Microorganisms In Foods 7 Microbiological Testing In</u> <u>Food Safety Management</u>

International Commission on Microbiological Specifications for Foods Staff

# **Microorganisms In Foods 7 Microbiological Testing In Food Safety Management:**

Microbiological Testing in Food Safety Management International Commission on Microbiological Specifications for Foods, 2002 The latest book in this excellent series describes the role of microbiological testing in modern food safety management systems It explores how risk assessment and risk management can be used to establish goals for use in controlling food borne illness and provides guidelines for establishing effective management systems to control specific hazards in foods This groundbreaking book will interest food microbiologists researchers and others in the food industry regulatory agencies and academia worldwide Microorganisms in Foods 8 International Commission on Microbiological Specifications for Foods (ICMSF), 2011-06-02 Microorganisms in Foods 8 Use of Data for Assessing Process Control and Product Acceptance is written by the International Commission on Microbiological Specifications for Foods with assistance from a limited number of consultants The purpose of this book is to provide guidance on appropriate testing of food processing environments processing lines and finished product to enhance the safety and microbiological quality of the food supply Microorganisms in Foods 8 consists of two parts Part I Principles of Using Data in Microbial Control builds on the principles of Microorganisms in Foods 7 Microbiological Testing in Food Safety Management 2002 which illustrates how HACCP and Good Hygienic Practices GHP provide greater assurance of safety than microbiological testing but also identifies circumstances where microbiological testing may play a useful role Part II Specific Applications to Commodities provides practical examples of criteria and other tests and is an updated and expanded version of Part II of Microorganisms in Foods 2 Sampling for Microbiological Analysis Principles and Specific Applications 2nd ed 1986 Part II also builds on the 2nd edition of Microorganisms in Foods 6 Microbial Ecology of Food Commodities 2005 by identifying appropriate tests to evaluation the effectiveness of controls Microbiological Testing in Food Safety Management International Commission on Microbiological Specifications for Foods Staff, 2002-07-25 2 11 References 42 CHAPTER 3 MEETING THE FSO THROUGH CONTROL MEASURES 45 3 1 Introduction 45 3 2 Control Measures 45 3 3 Confirm That the FSO Is Technically Achievable 48 3 4 Importance of Control Measures 49 3 5 Performance Criteria 54 3 6 Process and Product Criteria 59 3 7 The Use of Microbiological Sampling and Performance Criteria 59 3 8 Default Criteria 61 3 9 Process Validation 61 3 10 Monitoring and Verifying Control Measures 65 3 11 Examples of Control Options 66 3 12 Assessing Equivalency of Food Safety Management Systems 68 3 13 References 68 Appendix 3 A Control Measures Commonly Applied to Foodborne Diseases 71 CHAPTER 4 SELECTION AND USE OF ACCEPTANCE CRITERIA 79 4 1 Introduction 79 4 2 Equivalence 80 4 3 Establishment of Acceptance Criteria 81 4 4 Application of Acceptance Criteria 84 4 5 Determining Acceptance by Approval of Supplier 85 4 6 Examples To Demonstrate the Process of Lot Acceptance 87 4 7 Auditing Food Operations for Supplier Acceptance 90 4 8 References 97 CHAPTER 5 ESTABLISHMENT OF MICROBIOLOGICAL CRITERIA FOR LOT ACCEPTANCE 99 5 1 Introduction 99 5 2 Purposes and Application of Microbiological Criteria for Foods 10 1 5 3 Definition of Microbiological

Criterion 10 1 5 4 Types of Microbiological Criteria 102 5 5 Application of Microbiological Criteria 103 5 6 Principles for the Establishment of Microbiological Criteria 104 5 7 Components of Microbiological Criteria for Foods 106 5 8 Examples of Microbiological Criteria Microorganisms in Foods 7 International Commission on Microbiological Specifications for Foods, 2018-02-22 The second edition of Microorganisms in Foods 7 Microbiological Testing in Food Safety Management updates and expands on information on the role of microbiological testing in modern food safety management systems After helping the reader understand the often confusing statistical concepts underlying microbiological sampling the second edition explores how risk assessment and risk management can be used to establish goals such as a tolerable levels of risk Appropriate Levels of Protection Food Safety Objectives or Performance Objectives for use in controlling foodborne illness Guidelines for establishing effective management systems for control of specific hazards in foods are also addressed including new examples for pathogens and indicator organisms in powdered infant formula Listeria monocytogenes in deli meats enterohemorrhagic Escherichia coli in leafy green vegetables viruses in oysters and Campylobacter in poultry In addition a new chapter on application of sampling concept to microbiological methods expanded chapters covering statistical process control investigational sampling environmental sampling and alternative sampling schemes The respective roles of industry and government are also explored recognizing that it is through their collective actions that effective food safety systems are developed and verified Understanding these systems and concepts can help countries determine whether imported foods were produced with an equivalent level of protection Microorganisms in Foods 7 is intended for anyone using microbiological testing or setting microbiological criteria whether for governmental food inspection and control or industrial applications It is also intended for those identifying the most effective use of microbiological testing in the food supply chain For students in food science and technology this book provides a wealth of information on food safety management principles used by government and industry with many references for further study. The information was prepared by the International Commission on Microbiological Specifications for Foods ICMSF The ICMSF was formed in response to the need for internationally acceptable and authoritative decisions on microbiological limits for foods in international commerce The current membership consists of fifteen food microbiologists from twelve countries drawn from government universities and food processing and related industries Microbiological Testing in Food Safety Management International Commission on Microbiological Specifications for Foods Staff, 2012-12-06 2 11 References 42 CHAPTER 3 MEETING THE FSO THROUGH CONTROL MEASURES 45 3 1 Introduction 45 3 2 Control Measures 45 3 3 Confirm That the FSO Is Technically Achievable 48 3 4 Importance of Control Measures 49 3 5 Performance Criteria 54 3 6 Process and Product Criteria 59 3 7 The Use of Microbiological Sampling and Performance Criteria 59 3 8 Default Criteria 61 3 9 Process Validation 61 3 10 Monitoring and Verifying Control Measures 65 3 11 Examples of Control Options 66 3 12 Assessing Equivalency of Food Safety Management Systems 68 3 13 References 68 Appendix 3 A Control Measures Commonly Applied

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Motarjemi, G.G. identifying appropriate tests to evaluation the effectiveness of controls Moy, P.J. Jooste, L.E. Anelich, 2013-11-01 In many countries of the world the dairy industry is one of the most important food sectors and it has by and large been very successful in providing safe products Nevertheless the dairy sector like other food sectors also has its challenges as from farm to the point of consumption dairy products can become contaminated with a broad range of microbial and chemical hazards The sources of contamination are multiple and the pathways are complex Contamination of milk can occur directly by dairy animals shedding pathogens into the milk or indirectly by contamination of the milk during the milking process collection and transportation Infected animals or asymptomatic carriers can shed the organisms in the feces and contaminate the milk through the environment Other sources of environmental contamination are water pests soil feces pets and contaminated feed Infected farmers not respecting hand hygiene are also a potential source of contamination of milk During milking collection and transportation milk can be subjected to further contamination by the equipment and or be subjected to time temperature abuse creating optimum conditions for microbial growth Hence ensuring safety of milk and dairy products starts on the farm with animal health quality of feed a hygienic environment and in general good animal husbandry Nevertheless pasteurization of milk is necessary to kill any surviving organisms and reduce the risk of illness to an acceptable level Provided that hygienic measures are taken to prevent any post process contamination milk and dairy products can be produced and consumed safely The present chapter reviews risks and control measures all along the production chain Einführung in die Lebensmittelhygiene Hans-Jürgen Sinell, 2004 Parey im MVS Food Safety Management Tim Jackson, 2013-11-01 Microbiological testing programs play an important role in the verification of the effectiveness of control measures for many food products Such programs may include monitoring of the production environment and processing equipment and testing of raw materials in process and finished products The relevance and application of testing programs depend upon the design of the product and process the hygienic status of the processing

environment and the availability of other verification information about a product lot The design and implementation of environmental monitoring programs consider the areas of product exposure and the potential impact of the movement of people materials and product on product contamination Raw material testing programs consider the inherent risk of the material its use in the process and the confidence in the supplier determined by supplier audits and ongoing performance Finished product testing programs consider customer and regulatory requirements and the hygienic status of the process and production environment Due to statistical and temporal limitations microbiological testing programs are most effective when used along with risk based preventive controls such as HACCP hygienic zoning and other prerequisite programs and when they work together with other verification activities to assess the condition of a food safety system Food Safety Management John N. Sofos, 2013-11-01 Microbial contamination of meat and meat products is unavoidable as microorganisms are present on animals and in their environment Thus raw and not fully heated commercially processed or otherwise processed preserved e g frozen fermented dried high hydrostatic pressure processed irradiated meat and meat products are prone to spoilage and compromised safety due to microbial presence and growth Raw meat products although few consumers eat certain meat products raw or undercooked intentionally or accidentally a practice not recommended need further processing and or cooking before consumption This makes them shelf stable or semi perishable and safe for consumption or ready to eat In general the shelf life quality and safety of meat and meat products are extended and improved through adequate processing appropriate marketing storage and preparation for consumption under properly clean sanitary and hygienic conditions following an integrated approach throughout all sectors of the food supply web including producers processors distributors retailers as well as consumers The strategy for hazard control should include 1 good animal production practices on the farm 2 slaughtering of animals that are disease free 3 processing of carcasses and meat in properly designed and maintained facilities and under sanitary and hygienic conditions 4 use of decontamination intervention strategies if approved to reduce microbial levels when needed 5 thermal processing freezing drying fermentation acidification use of approved antimicrobials in certain products and packaging 6 maintenance of proper cold chain conditions during distribution 7 proper storage and preparation procedures by food service and consumers and 8 management of every segment of this common sense but complex system with well validated verified and documented programs such as the hazard analysis critical control point HACCP system Microbiological Examination Methods of Food and Water Neusely da Silva, Marta Hirotomi Taniwaki, Valéria Christina Junqueira, Neliane Silveira, Maristela da Silva do Nascimento, Renato Abeilar Romeiro Gomes, 2012-12-18 Microbiological Examination Methods of Food and Water is an illustrated laboratory manual that provides an overview of current standard microbiological culture methods for the examination of food and water adhered to by renowned international organizations such as ISO AOAC APHA FDA and FSIS USDA It includes methods for the enumeration of indicator microorganisms of general contamination indicators of hygiene and sanitary conditions

sporeforming spoilage fungi and pathogenic bacteria Every chapter begins with a comprehensive in depth and updated bibliographic reference on the microorganism's dealt with in that particular section of the book The latest facts on the taxonomic position of each group genus or species are given as well as clear guidelines on how to deal with changes in nomenclature on the internet All chapters provide schematic comparisons between the methods presented highlighting the main differences and similarities This allows the user to choose the method that best meets his her needs Moreover each chapter lists validated alternative quick methods which though not described in the book may and can be used for the analysis of the microorganism's dealt with in that particular chapter. The didactic setup and the visualization of procedures in step by step schemes allow the user to quickly perceive and execute the procedure intended This compendium will serve as an up to date practical companion for laboratory professionals technicians and research scientists instructors teachers and food and water analysts Alimentary engineering chemistry biotechnology and biology under graduate students specializing in food sciences will also find the book beneficial It is furthermore suited for use as a practical laboratory manual for graduate courses in Food Engineering and Food Microbiology Quantitative Microbiology in Food Processing Anderson de Souza Sant'Ana, 2017-02-06 Microorganisms are essential for the production of many foods including cheese yoghurt and bread but they can also cause spoilage and diseases Quantitative Microbiology of Food Processing Modeling the Microbial Ecology explores the effects of food processing techniques on these microorganisms the microbial ecology of food and the surrounding issues concerning contemporary food safety and stability Whilst literature has been written on these separate topics this book seamlessly integrates all these concepts in a unique and comprehensive guide Each chapter includes background information regarding a specific unit operation discussion of quantitative aspects and examples of food processes in which the unit operation plays a major role in microbial safety. This is the perfect text for those seeking to understand the quantitative effects of unit operations and beyond on the fate of foodborne microorganisms in different foods Quantitative Microbiology of Food Processing is an invaluable resource for students scientists and professionals of both food engineering and food microbiology **Improving the Safety of Fresh Meat** J Sofos, 2005-07-30 The safety of fresh meat continues to be a major concern for consumers As a result there has been a wealth of research on identifying and controlling hazards at all stages in the supply chain Improving the safety of fresh meat reviews this research and its implications for the meat industry Part one discusses identifying and managing hazards on the farm There are chapters on the prevalence and detection of pathogens chemical and other contaminants A number of chapters discuss ways of controlling such hazards in the farm environment The second part of the book reviews the identification and control of hazards during and after slaughter There are chapters both on contamination risks and how they can best be managed The range of decontamination techniques available to meat processors as well as such areas as packaging and storage are examined With its distinguished editor and international team of contributors Improving the safety of fresh meat is a standard reference for the meat industry

Learn how to identify and control hazards at all stages in the supply chain An authoritative reference on reducing microbial and other hazards in raw and fresh red meat Understand the necessity for effective intervention at each production process

Rapid Detection, Characterization, and Enumeration of Foodborne Pathogens J. Hoorfar, 2011-04-18 Detect foodborne pathogens early and minimize consumer exposure Presents the latest guidelines for fast easy cost effective foodborne pathogen detection Enables readers to avoid common pitfalls and choose the most effective and efficient method assemble the necessary resources and implement the method seamlessly Includes first hand laboratory experience from more than 85 experts from research centers across the globe Microbiological Risk Assessment in Food Processing M. Brown, M Stringer, 2002-09-26 The chilling and freezing of meat remains an essential way of extending shelf life and maintaining quality Based on the work of the internationally renowned Food Refrigeration and Process Engineering Centre FRPERC Meat refrigeration provides an authoritative guide both to the impact of refrigeration on meat and best practice in using it to maximise meat quality for the consumer Part one considers the impact of refrigeration on meat quality There are chapters on the microbiology of refrigerated meat and its influence on shelf life drip production weight loss and the effect of refrigeration on colour and texture Part two looks at best practice in managing the cold chain from carcass to consumer The authors discuss primary chilling freezing thawing and tempering transport storage retail display and consumer handing Part three of the book looks at aspects of process control including chapters on such issues as temperature measurement the design and optimal use of refrigeration systems Both authoritative and practical Meat refrigeration is a standard work for all those wishing to maximise the quality of refrigerated meat The standard work on meat refrigerationCovers both individual quality issues and the management of the cold chain from carcass to consumer Handbook of Food Science. Technology, and Engineering - 4 Volume Set Y. H. Hui, Frank Sherkat, 2005-12-19 Advances in food science technology and engineering are occurring at such a rapid rate that obtaining current detailed information is challenging at best While almost everyone engaged in these disciplines has accumulated a vast variety of data over time an organized comprehensive resource containing this data would be invaluable to have The Federal Register, 2014-02 Control of Foodborne Microorganisms Vijay K. Juneja, John N. Sofos, 2001-09-27 Presents the latest research in the control of foodborne pathogens Emphasizes traditional and emerging techniques as well as current applications for the inactivation of microorganisms to reduce illness and enhance food safety and quality

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