

Hygienic Design Of Food Factories Woodhead Publishing Series In Food Science Technology And Nutrition

Food companies, regardless of their size and scope, understand that it is impossible to establish a single division devoted to "quality", as quality is the responsibility and purpose of every company employee. Applying this theory demands the cooperation of each employee and an understanding of the methodology necessary to establish, implement, and evaluate a Quality Assurance program. *Quality Assurance for the Food Industry: A Practical Approach* provides in-depth coverage of all aspects of quality assurance. It identifies the basic concepts and principles behind Total Quality Management and presents examples of Quality Assurance programs that can be applied to the food industry using simple, proven formats. The author discusses the role of Quality Assurance in product manufacturing, emphasizing the need for interactions among an organization's Quality Assurance, Quality Control, Product Development, Marketing, Sales, and Consumer Affairs departments. He analyzes the characteristics of a quality audit and the purpose of a proper audit, then focuses on specific examples including product manufacturing audits, food plant sanitation audits, and product quality audits. A comprehensive examination of HACCP and its applications concludes the

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coverage. This practical, industry-oriented reference explains the fundamental role of Quality Assurance and provides the knowledge required for establishing a Total Quality Management system in your own company. The concepts and procedures discussed are the key components for attaining and maintaining the highest standards of quality in the food industry.

Cover -- Title Page -- Copyright -- Contents -- List of Contributors -- Chapter 1 Introduction and Overview -- 1.1 Introduction -- 1.2 Definition of Low-Moisture Foods (LMF) and Water Activity Controlled Foods -- 1.3 Salmonella as a Continuing Challenge and Ongoing Problem in Low-Moisture Foods -- 1.4 Foodborne Outbreaks of Salmonella spp. and Other Implicated Microbial Pathogens in Low-Moisture Foods -- 1.5 Major Safety Concerns in Low-Moisture Foods -- 1.6 Content and Brief Book Chapter Review -- 1.7 Goal of the Book -- 1.8 How to Use the Book -- References -- Chapter 2 Regulatory Requirements for Low-Moisture Foods - The New Preventive Controls Landscape (FSMA) -- 2.1 Introduction -- 2.2 FSMA Sanitation and cGMPs -- 2.3 FSMA Preventive Controls -- 2.4 Process Controls -- 2.5 Sanitation Controls -- 2.6 Supplier Controls -- 2.7 Summary of Requirements for Low-Moisture FSMA Regulated Products -- References -- Chapter 3 Potential Sources and Risk Factors -- 3.1 Introduction -- 3.2 Raw Ingredients Control and Handling -- 3.2.1 Identifying Vulnerable Ingredients -- 3.2.2 Supplier Management -- 3.2.3 Receiving and Transport -- 3.2.4 Segregation/Isolation of Raw, Vulnerable Ingredients -- 3.2.5 Assessment of

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Remediation Practices after Loss of Control (Potential Contamination of Facility) or Assessing Sanitation Practice Effectiveness -- 3.3 Pest Control -- 3.3.1 Integrated Pest Management -- 3.3.2 Web Resources for More Information -- 3.3.3 Choosing a Pest Control Partner -- 3.4 Salmonella Harborage in the Facility -- 3.4.1 Sanitation Practices that may Lead to the Spread of Pathogens -- 3.4.2 Equipment Sources -- 3.4.3 Hygienic Sources -- 3.4.4 Management Practices for Cleaning Equipment -- 3.4.5 Rolling Stock -- 3.4.6 Raw Materials -- 3.5 Conclusions -- References

Food safety is vital for consumer confidence and the sanitary design of food processing facilities is central to the manufacture of safe products. This book provides an essential overview of hygiene control in the design, construction and renovation of food processing factories. Opening chapters consider the business case for hygienic facilities design and the requirements of different stakeholders. Following parts then focus on site selection and plant layout, external and internal sanitary plant design, considerations for high hygiene zones and cleanrooms and the management of building work. Table of Contents Business case assessment and design essentials for food factory building projects Determining equipment and process needs and how this affects food factory design PART 1 REGULATORY ISSUES AND RETAILER REQUIREMENTS: EU food hygiene law and implications for food factory design; Regulations on the hygienic design of food processing factories in the United States; Regulation relevant to the design and construction of food factories in Japan;

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Regulation and non-regulatory guidance in Australia and New Zealand with implications for food factory design; Regulatory requirements for food factory buildings in South Africa and other Southern African countries; Retailer requirements for hygienic design of food factory buildings; Food factory design to prevent deliberate product contamination; Minimum hygienic design requirements for food processing factories

PART 2 SITE SELECTION AND FACTORY LAYOUT: Aspects to be considered when selecting a site for a food factory; The impact of factory layout on hygiene in food factories; Hazard control by segregation in food factories; Managing airflow and air filtration to improve hygiene in food factories

PART 3 HYGIENIC DESIGN OF WALLS, CEILINGS AND FLOORS: Hygienic wall finishes for food processing factories; Hygienic design of ceilings for food factories; Hygienic floor finishes for food processing areas; Hygienic design of floor drains in food processing areas

PART 4 HYGIENIC DESIGN OF SELECTED FIXTURES, UTILITY SYSTEMS AND PROCESS SUPPORT SYSTEMS: Hygienic supply of electricity in food factories; Hygienic design of lighting in food factories; Hygienic design of piping for food processing support systems in food factories; Hygienic design of exhaust and dust control systems in food factories; Managing steam quality in food and beverage processing; Hygienic design of walkways, stairways and other installations in food factories

PART 5 HYGIENIC DESIGN OF SPECIFIC FACTORY AREAS: Hygienic design of entries, exits, other openings in the building envelope and dry warehousing areas in food factories;

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Effluents from the food industry; Design of food storage facilities; Design, installation and operation of cleaning and disinfectant chemical storage, distribution and application systems in food factories; Design of food factory changing rooms PART 6 MANAGING BUILDING WORK AND ADDITIONAL FACTORY DESIGN CONSIDERATIONS:

Managing a factory building project: from development of a construction brief to commissioning and handover; Inspecting hygienic design, hygiene practices and process safety when commissioning a food factory; An insurance industry perspective on property protection and liability issues in food factory design

Food microbiology is a fascinating and challenging science. It is also very demanding with a constantly changing sea of guidelines, regulations and equipment. Public concerns over food safety issues can overemphasize certain risks and detract from the normal hygienic practice of food manufacturers. This new edition aims to update anyone concerned with the hygienic production of food on key issues of HACCP, food microbiology and the methods of microbe detection. I have taken a 'crystal ball' approach to certain topics. The use of rapid techniques such as lux gene technology and polymerase chain reaction (DNA probes) are progressing so rapidly in the research laboratory that when this book is in print the techniques may be more readily available. New methods for investigating viral gastroenteritis due to small round structured viruses (SRSV) have been developed past the 'research' stage and may become more standard in the next few years. Undoubtedly this will alter our understanding of the

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prevalence of viral food poisoning. I have also included issues such as new variant CJD (associated with BSE infected cattle) which at the time of writing has only caused the deaths of 20 people, but due to the uncertain incubation time could be a far more serious problem. In the UK there has been a much publicised outbreak of *Escherichia coli* 0157:H7 which has resulted in a government inquiry and the recommendation of the generic HACCP approach. Hence this approach to HACCP implementation has been included.

In the 21st Century, processing food is no longer a simple or straightforward matter. Ongoing advances in manufacturing have placed new demands on the design and methodology of food processes. A highly interdisciplinary science, food process design draws upon the principles of chemical and mechanical engineering, microbiology, chemistry, nutrition and economics, and is of central importance to the food industry. Process design is the core of food engineering, and is concerned at its root with taking new concepts in food design and developing them through production and eventual consumption. Handbook of Food Process Design is a major new 2-volume work aimed at food engineers and the wider food industry. Comprising 46 original chapters written by a host of leading international food scientists, engineers, academics and systems specialists, the book has been developed to be the most comprehensive guide to food process design ever published. Starting from first principles, the book provides a complete account of food process designs, including heating and cooling,

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pasteurization, sterilization, refrigeration, drying, crystallization, extrusion, and separation. Mechanical operations including mixing, agitation, size reduction, extraction and leaching processes are fully documented. Novel process designs such as irradiation, high-pressure processing, ultrasound, ohmic heating and pulsed UV-light are also presented. Food packaging processes are considered, and chapters on food quality, safety and commercial imperatives portray the role process design in the broader context of food production and consumption.

Large volume food processing and preparation operations have increased the need for improved sanitary practices from processing to consumption. This trend presents a challenge to every employee in the food processing and food preparation industry. Sanitation is an applied science for the attainment of hygienic conditions. Because of increased emphasis on food safety, sanitation is receiving increased attention from those in the food industry. Traditionally, inexperienced employees with few skills who have received little or no training have been delegated sanitation duties. Yet sanitation employees require intensive training. In the past, these employees, including sanitation program managers, have had only limited access to material on this subject. Technical information has been confined primarily to a limited number of training manuals provided by regulatory agencies, industry and association manuals, and recommendations from equipment and cleaning compound firms. Most of this material lacks specific information related to the selection of appropriate cleaning methods,

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equipment, compounds, and sanitizers for maintaining hygienic conditions in food processing and preparation facilities. The purpose of this text is to provide sanitation information needed to ensure hygienic practices. Sanitation is a broad subject; thus, principles related to contamination, cleaning compounds, sanitizers, and cleaning equipment, and specific directions for applying these principles to attain hygienic conditions in food processing and food preparation are discussed. The discussion starts with the importance of sanitation and also includes regulatory requirements and voluntary sanitation programs including additional and updated information on Hazard Analysis Critical Control Points (HACCP).

Comprehensive and accessible, this book presents fundamental principles and applications that are essential for food production and food service safety. It provides basic, practical information on the daily operations in a food processing plant and reviews some of the industry's most recent developments. Formerly titled Food Plant Sanitation, this

"The main message emerging from this new comprehensive global assessment is that premature death and disease can be prevented through healthier environments--and to a significant degree. Analysing the latest data on the environment-disease nexus and the devastating impact of environmental hazards and risks on global health, backed up by expert opinion, this report covers more than 130 diseases and injuries. The analysis shows that 23% of global deaths (and 26% of deaths among children under five) are

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due to modifiable environmental factors--and therefore can be prevented. Stroke, ischaemic heart disease, diarrhoea and cancers head the list. People in low-income countries bear the greatest disease burden, with the exception of noncommunicable diseases. The report's unequivocal evidence should add impetus to coordinating global efforts to promote healthy environments--often through well-established, cost-effective interventions. This analysis will inform those who want to better understand the transformational spirit of the Sustainable Development Goals agreed by Heads of State in September 2015. The results of the analysis underscore the pressing importance of stronger intersectoral action to create healthier environments that will contribute to sustainably improving the lives of millions around the world."--Page 4 of cover.

One important element of FAO's work is building the capacity of food control personnel, including government authorities and food industry personnel carrying out food quality and safety assurance programmes. Such programmes should include specific food risk control procedures such as the Hazard Analysis and Critical Control Point (HACCP) system. FAO has prepared this manual in an effort to harmonize the approach to training in the HACCP system based on the already harmonized texts and guidelines of the Codex Alimentarius Commission. The manual is structured to provide essential information in a standardized, logical and systematic manner while adhering to effective teaching and learning strategies. Also published in English, Russian and Spanish. Packed with case studies and problem calculations, Handbook of Food Processing:

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Food Safety, Quality, and Manufacturing Processes presents the information necessary to design food processing operations and describes the equipment needed to carry them out in detail. It covers the most common and new food manufacturing processes while addressing rele

A New York Times Notable Book The inspiration for PBS's AMERICAN EXPERIENCE film The Poison Squad. From Pulitzer Prize winner and New York Times-bestselling author Deborah Blum, the dramatic true story of how food was made safe in the United States and the heroes, led by the inimitable Dr. Harvey Washington Wiley, who fought for change By the end of nineteenth century, food was dangerous. Lethal, even. "Milk" might contain formaldehyde, most often used to embalm corpses. Decaying meat was preserved with both salicylic acid, a pharmaceutical chemical, and borax, a compound first identified as a cleaning product. This was not by accident; food manufacturers had rushed to embrace the rise of industrial chemistry, and were knowingly selling harmful products. Unchecked by government regulation, basic safety, or even labelling requirements, they put profit before the health of their customers. By some estimates, in New York City alone, thousands of children were killed by "embalmed milk" every year. Citizens--activists, journalists, scientists, and women's groups--began agitating for change. But even as protective measures were enacted in Europe, American corporations blocked even modest regulations. Then, in 1883, Dr. Harvey Washington Wiley, a chemistry professor from Purdue University, was named chief chemist of the

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agriculture department, and the agency began methodically investigating food and drink fraud, even conducting shocking human tests on groups of young men who came to be known as, "The Poison Squad." Over the next thirty years, a titanic struggle took place, with the courageous and fascinating Dr. Wiley campaigning indefatigably for food safety and consumer protection. Together with a gallant cast, including the muckraking reporter Upton Sinclair, whose fiction revealed the horrific truth about the Chicago stockyards; Fannie Farmer, then the most famous cookbook author in the country; and Henry J. Heinz, one of the few food producers who actively advocated for pure food, Dr. Wiley changed history. When the landmark 1906 Food and Drug Act was finally passed, it was known across the land, as "Dr. Wiley's Law." Blum brings to life this timeless and hugely satisfying "David and Goliath" tale with righteous verve and style, driving home the moral imperative of confronting corporate greed and government corruption with a bracing clarity, which speaks resoundingly to the enormous social and political challenges we face today.

Food-borne diseases are major causes of morbidity and mortality in the world. It is estimated that about 2.2 million people die yearly due to food and water contamination. Food safety and consequently food security are therefore of immense importance to public health, international trade and world economy. This book, which has 10 chapters, provides information on the incidence, health implications and effective prevention and control strategies of food-related diseases. The book will be useful to undergraduate

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and postgraduate students, educators and researchers in the fields of life sciences, medicine, agriculture, food science and technology, trade and economics. Policy makers and food regulatory officers will also find it useful in the course of their duties. Widely regarded as a standard work in its field, this book introduces the range of processing techniques that are used in food manufacturing. It explains the principles of each process, the processing equipment used, operating conditions and the effects of processing on micro-organisms that contaminate foods, the biochemical properties of foods and their sensory and nutritional qualities. The book begins with an overview of important basic concepts. It describes unit operations that take place at ambient temperature or involve minimum heating of foods. Subsequent chapters examine operations that heat foods to preserve them or alter their eating quality, and explore operations that remove heat from foods to extend their shelf life with minimal changes in nutritional quality or sensory characteristics. Finally, the book reviews post-processing operations, including packaging and distribution logistics. The third edition has been substantially rewritten, updated and extended to include the many developments in food technology that have taken place since the second edition was published in 2000. Nearly all unit operations have undergone significant developments, and these are reflected in the large amount of additional material in each chapter. In particular, advances in microprocessor control of equipment, 'minimal' processing technologies, genetic modification of foods, functional foods, developments in 'active'

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or 'intelligent' packaging, and storage and distribution logistics are described. Developments in technologies that relate to cost savings, environmental improvement or enhanced product quality are highlighted. Additionally, sections in each chapter on the impact of processing on food-borne micro-organisms are included for the first time. Drawing from the expertise of the prestigious European Hygienic Equipment Design Group (EHEDG) and other experts in the field, this major new collection represents the standard on the issue of good hygiene practice in food processing. The work covers hygiene regulation in both the USA and Europe. It opens with an examination of the general principles of hygiene, then moves on to plant design and construction, as well as hygiene principles and methods. The book also provides a complete overview of the food supply chain, from farm to consumer.

Developments such as the demand for minimally-processed foods have placed a renewed emphasis on good hygienic practices in the food industry. As a result there has been a wealth of new research in this area. Complementing Woodhead's best-selling Hygiene in the food industry, which reviews current best practice in hygienic design and operation, Handbook of hygiene control in the food industry provides a comprehensive summary of the key trends and issues in food hygiene research. Developments go fast: results of the R&D meanwhile have been applied or are being implemented as this book goes to print. Part one reviews research on the range of contamination risks faced by food processors. Building on this foundation, Part two

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discusses current trends in the design both of buildings and types of food processing equipment, from heating and packaging equipment to valves, pipes and sensors. Key issues in effective hygiene management are then covered in part three, from risk analysis, good manufacturing practice and standard operating procedures (SOPs) to improving cleaning and decontamination techniques. The final part of the book reviews developments in ways of monitoring the effectiveness of hygiene operations, from testing surface cleanability to sampling techniques and hygiene auditing. Like Hygiene in the food industry, this book is a standard reference for the food industry in ensuring the highest standards of hygiene in food production. Standard reference on high hygiene standards for the food industry Provides a comprehensive summary of the key trends in food hygiene research Effective hygiene management strategies are explored Food safety awareness is at an all time high, new and emerging threats to the food supply are being recognized, and consumers are eating more and more meals prepared outside of the home. Accordingly, retail and foodservice establishments, as well as food producers at all levels of the food production chain, have a growing responsibility to ensure that proper food safety and sanitation practices are followed, thereby, safeguarding the health of their guests and customers. Achieving food safety success in this changing environment requires going beyond traditional training, testing, and inspectional approaches to managing risks. It requires a better understanding of organizational culture and the human dimensions of food safety. To improve the food

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safety performance of a retail or foodservice establishment, an organization with thousands of employees, or a local community, you must change the way people do things. You must change their behavior. In fact, simply put, food safety equals behavior. When viewed from these lenses, one of the most common contributing causes of food borne disease is unsafe behavior (such as improper hand washing, cross-contamination, or undercooking food). Thus, to improve food safety, we need to better integrate food science with behavioral science and use a systems-based approach to managing food safety risk. The importance of organizational culture, human behavior, and systems thinking is well documented in the occupational safety and health fields. However, significant contributions to the scientific literature on these topics are noticeably absent in the field of food safety.

With the unprecedented increase in the world's population, the need for different foodprocessing techniques becomes extremely important. And with the increase in awareness of and demand for food quality, processed products with improved quality and better taste that are safe are also important aspects that need to be addressed. In this volume, experts examine the use of different technologies for food processing. They look at technology with ways to preserve nutrients, eliminate anti-nutrients and toxins, add vitamins and minerals, reduce waste, and increase productivity. Topics include, among others: • applications of ohmic

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heating • cold plasma in food processing • the role of biotechnology in the production of fermented foods and beverages • the use of modification of food proteins using gamma irradiation • edible coatings to restrain migration of moisture, oxygen, and carbon dioxide • natural colorants, as opposed to synthetic coloring, which may have toxic effects • hurdle technology in the food industry • the unrecognized potential of agro-industrial waste

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As trends in foodborne disease continue to rise, the effective identification and control of pathogens becomes ever more important for the food industry. With its distinguished international team of contributors, Foodborne pathogens provides an authoritative and practical guide to effective control measures and how they can be applied in practice to individual pathogens. Part One looks at general techniques in assessing and managing microbiological hazards. After a review of analytical methods, there are chapters on modelling pathogen behaviour and carrying out a risk assessment as the essential foundation for effective food safety management. The following chapters then look at good management practice in key stages in the supply chain, starting with farm production. There are chapters on hygienic plant design and sanitation, and safe process design and operation which provide the foundation for a discussion of what makes for

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effective HACCP systems implementation. There is also a chapter on safe practices for consumers and food handlers in the retail and catering sectors. This discussion of pathogen control then provides a context for Part Two which looks at what this means in practice for key pathogens such as *E. coli*, *Salmonella*, *Listeria* and *Campylobacter*. Each chapter discusses pathogen characteristics, detection methods and control procedures. Part Three then looks at non-bacterial hazards such as viruses and parasites, as well as emerging potential 'hazards' such as *Mycobacterium paratuberculosis* and the increasingly important area of chronic disease. Foodborne pathogens will be widely welcomed as an essential and authoritative guide to successful pathogen control in the food industry. Food safety is now seen to be managed and controlled by three fundamental requirements. HACCP programmes control hazards associated with the process, processing environmental prerequisites control hazards associated with the processing environment, and quality systems (e.g. ISO 9000) manage quality-related prerequisites, e.g. supplier approval and control, control of non-conforming products, customer complaints, traceability and recall, etc. This chapter focuses on processing environmental prerequisites and covers the design of the food manufacturing infrastructure (the factory, the process lines and services, the equipment and the food operatives) and the hygienic practices to

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keep the infrastructure in optimum condition (maintenance, pest control, cleaning and disinfection and personal hygiene). The management of environmental prerequisites initially involves ensuring that all generic prerequisites (such as cleaning and disinfection) are undertaken to best practice and appropriately validated. Further to this, any remaining sources of environmental hazards, and the transfer vectors by which they can contaminate food products, are assessed and appropriate controls installed. If controls are identified such that any failings in these controls would most likely result in product contamination, such controls are termed operational prerequisites (OPs). OPs are managed in a similar way to HACCP critical control points (CCPs) so that in the same way as CCPs are the major focus of attention in the control of the food process, OPs are the major focus in the control of the processing environment.

This timely reference utilizes simplified computer strategies to analyze, develop, and optimize industrial food processes and offers procedures to assess various operating conditions, engineering and economic relationships, and the physical and transport properties of foods for the design of the most efficient food manufacturing technologies and eq

Comprehensive and accessible, Food Plant Sanitation presents fundamental principles and applications that are essential for food production safety. It

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provides basic, practical information on the daily operations in a food processing plant and reviews some of the industry's most recent developments. The book is unique from others on the topic in th

Food manufacturing has evolved over the centuries from kitchen industries to modern, sophisticated production operations. A typical food factory includes the food processing and packaging lines, the buildings and exterior landscaping, and the utility-supply and waste-treatment facilities. As a single individual is unlikely to possess all the necessary skills required to facilitate the design, the task will undoubtedly be undertaken by an interdisciplinary team employing a holistic approach based on a knowledge of the natural and biological sciences, most engineering disciplines, and relevant legislation. In addition, every successful project requires a competent project manager to ensure that all tasks are completed on time and within budget. This Handbook attempts to compress comprehensive, up-to-date coverage of these areas into a single volume. It is hoped that it will prove to be of value across the food-manufacturing community. The multi-disciplinary nature of the subject matter should facilitate more informed communication between individual specialists on the team. It should also provide useful background information on food factory design for a wider range of professionals with a more peripheral interest in the subject: for example, process

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plant suppliers, contractors, HSE specialists, retailers, consultants, and financial institutions. Finally, it is hoped that it will also prove to be a valuable reference for students and instructors in the areas of food technology, chemical engineering, and mechanical engineering, in particular.

Food Protection and Security: Preventing and Mitigating Intentional and Unintentional Contamination of Food and Beverage presents the latest information on our need to protect our food supply from accidental contamination, economically motivated adulteration, and contamination with intent to harm (bioterrorism or agro-terrorism). This book covers all three branches of food protection, providing a comprehensive overview of the methods and strategy involved. Part one covers the need for food protection, looking at potential hazards in the production, processing, and supply chain. Part two looks at detection methods for contaminants in food, with the final section addressing food contamination incidents and prevention and response strategies. Explores the need for food protection, from natural disasters to contamination in food processing facilities Examines techniques used to detect contaminants in food, such as microbiological testing and fingerprinting Provides key ways to address food contamination issues

Sanitation in Food Processing is a guide to food process sanitation, which illustrates the

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principles with timely examples. It discusses the importance of training in food-plant sanitation programs, as well as regulatory programs relating to all aspects of food plant sanitation, including Hazard Analysis Critical Control Point (HACCP), the construction and design of food plants, and prevention of food-borne diseases. Comprised of 19 chapters, this volume begins with an overview of sanitation in food processing, good sanitation practices, and the ways to establish a successful food sanitation program. It then discusses factors to consider in the design and construction of food plants; sanitary design and operation of food processing and service equipment; microbial growth in foods; the importance of personal hygiene; and significant insects in the food industry. The reader is also introduced to ways of controlling insects, rodents, and birds in the food environment, while other chapters address sanitation in food packaging, storage, and transport. The book concludes with a summary of food laws and regulations. This book is a valuable resource for undergraduate and postgraduate students, food sanitarians, and others in the food-processing industry who want to learn more about the ways and means of ensuring the quality and safety of the food we eat.

Food Safety Management: A Practical Guide for the Food Industry with an Honorable Mention for Single Volume Reference/Science in the 2015 PROSE Awards from the Association of American Publishers is the first book to present an integrated, practical approach to the management of food safety throughout the production chain. While many books address specific aspects of food safety, no other book guides you through the various risks associated with each sector of the production process or alerts you to the measures needed to mitigate those risks. Using practical examples of incidents and their root causes, this book highlights pitfalls in food safety management and provides key insight into the means of avoiding them.

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Each section addresses its subject in terms of relevance and application to food safety and, where applicable, spoilage. It covers all types of risks (e.g., microbial, chemical, physical) associated with each step of the food chain. The book is a reference for food safety managers in different sectors, from primary producers to processing, transport, retail and distribution, as well as the food services sector. Honorable Mention for Single Volume Reference/Science in the 2015 PROSE Awards from the Association of American Publishers Addresses risks and controls (specific technologies) at various stages of the food supply chain based on food type, including an example of a generic HACCP study Provides practical guidance on the implementation of elements of the food safety assurance system Explains the role of different stakeholders of the food supply

This guideline has been created to help food and construction industry personnel to identify and consider the main hygiene-related factors that need to be taken into account when designing, building and refurbishing food production premises. It draws on the combined expertise of food manufacturers, construction professionals, food factory service providers and insurers to provide a harmonised approach to factory design. Taking a systematic approach, the guideline considers a wide range of key factors including building siting and construction, segregation of work areas to control hazards, the flow of raw materials and product, and the movement and control of people. Contents include: Define project and business plan Site location assessment and risk management philosophy Determine process and mass flow Determine the required level of segregation Determine the equipment and factory layout Estimate the size of factory required and consider new build or refurbishment alternatives Prevention of food borne illnesses, reduction of product spoilage, and improvements to product

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quality are ongoing concerns in the food manufacturing industry. Providing broad but practical information, *Food Plant Sanitation: Design, Maintenance, and Good Manufacturing Practices* shows how to effectively remove soil and microorganisms from the process.

A high standard of hygiene is a prerequisite for safe food production, and the foundation on which HACCP and other safety management systems depend. Edited and written by some of the world's leading experts in the field, and drawing on the work of the prestigious European Hygienic Engineering and Design Group (EHEDG), *Hygiene in food processing* provides an authoritative and comprehensive review of good hygiene practice for the food industry. Part one looks at the regulatory context, with chapters on the international context, regulation in the EU and the USA. Part two looks at the key issue of hygienic design. After an introductory chapter on sources of contamination, there are chapters on plant design and control of airborne contamination. These are followed by a sequence of chapters on hygienic equipment design, including construction materials, piping systems, designing for cleaning in place and methods for verifying and certifying hygienic design. Part three then reviews good hygiene practices, including cleaning and disinfection, personal hygiene and the management of foreign bodies and insect pests. Drawing on a wealth of international experience and expertise, *Hygiene in food processing* is a standard work for the food industry in ensuring safe food production. An authoritative and comprehensive review of good hygiene practice for the food industry. Draws on the work of the prestigious European Hygienic Engineering and Design Group (EHEDG). Written and edited by world renowned experts in the field.

Although chemical engineering and food technology are subject areas closely related to food processing systems and food plant design, coverage of the design of food plants is often

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sporadic and inadequately addressed in food technology and engineering books. Some books have attempted to treat food engineering from this dual point of view but, most have not achieved balanced coverage of the two. Focusing on food processing, rather than chemical plants, Food Plant Design presents precise design details with photos and drawings of different types of food processing plants, including food processing systems, refrigeration and steam systems, conveying systems, and buildings. The authors discuss the subject in an ordered format that gives you the tools to produce food products with minimum cost. Including modeling procedures for food processing systems and auxiliary systems, they elucidate synthesis techniques and procedures. Using a clear structure for different levels of information and data on different food processing alternatives, the book outlines solutions to plant design problems in the context of overall optimization of an agro-industrial system and corresponding food chain. It provides the work procedures and techniques for solving the design problems of a food processing plant and in making a defined food product.

This particular guide looks at the issues associated with building, adapting or refurbishing a food factory as a whole. In a step-wise manner, it addresses issues ranging from site location, estimating the size of the factory required and planning the flow of materials and people within the finished, working factory, through to developing the construction brief and considerations for undertaking the building work. Written with the close involvement of specialists from the food and construction industries, it provides practical guidance and essential advice to help food manufacturers and constructors to avoid costly mistakes by building it right first time. Innovation and Future Trends in Food Manufacturing and Supply Chain Technologies focuses on emerging and future trends in food manufacturing and supply chain technologies,

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examining the drivers of change and innovation in the food industry and the current and future ways of addressing issues such as energy reduction and rising costs in food manufacture. Part One looks at innovation in the food supply chain, while Part Two covers emerging technologies in food processing and packaging. Subsequent sections explore innovative food preservation technologies in themed chapters and sustainability and future research needs in food manufacturing. Addresses issues such as energy reduction and rising costs in food manufacture Assesses current supply chain technologies and the emerging advancements in the field, including key chapters on food processing technologies Covers the complete food manufacturing scale, compiling significant research from academics and important industrial figures

The hygienic processing of food concerns both potential hazards in food products and the regulation, design, and management of food processing facilities. This second edition of Hygiene in Food Processing gives a revised overview of the practices for safe processing and incorporates additional chapters concerning pest control, microbiological environmental sampling, and the economics of food plants. Part one addresses microbial risks in foods and the corresponding regulation in the European Union. Part two discusses the hygienic design of food factory infrastructure, encompassing the design and materials for the factory itself, as well as food processing equipment. This edition includes a new chapter on the control of compressed gases used to pneumatically operate equipment. Part three focuses on cleaning and disinfection practices in food processing. The chapter on cleaning in place also considers more cost-effective systems, and complements the additional chapter on maintenance of equipment. These chapters also explore issues such as the hygiene of workers, potential

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infection by foreign bodies, and pest control. Further, the chapter on microbiological sampling explains how to calculate the risk of contamination depending on the product's environment. This essential second edition is useful to professionals responsible for hygiene in the food industry. It provides a comprehensive, yet concise and practical reference source for food plant managers, suppliers of food processing equipment, building contractors, and food inspectors looking for an authoritative introduction to hygiene regulation, hygienic design, and sanitation. Provides a revised overview of the practices for safe processing Incorporates additional chapters concerning pest control, microbiological environmental sampling, and the economics of food plants This essential second edition is useful for professionals responsible for hygiene in the food industry

Food safety and quality are primary concerns in the food manufacturing industry. Written by an author with more than 35 years' experience in the food industry, *Food Plant Sanitation: Design, Maintenance, and Good Manufacturing Practices, Second Edition* provides completely updated practical advice on all aspects of food plant sanitation and sanitation-related food safety issues. It offers readers the tools to establish a food safety system to help control microbiological, physical, and chemical hazards. Understanding that sanitation is integral to food safety is the foundation for an effective food safety system. Beginning with that premise, this book presents some of the key components for such a system. The chapters address testing for and control of microorganisms in food manufacturing, including recent challenges in the industry due to pathogens such as *Listeria monocytogenes*. They also offer discussions on biofilms, regulatory requirements from the European Union, allergens, sanitary facility design, and describe proven best practices for sanitation as well as current sanitary requirements and

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regulatory changes from the FDA and USDA. In addition, the author presents methods for verifying sanitation. The final chapters identify good manufacturing practices for employees and present a comprehensive pest management plan, including control measures and chemical interventions. The book concludes with strategies for preventing chemical and physical food safety hazards. This reference provides a practical perspective for implementing food plant sanitation and safety processes. The author has included, wherever possible, examples of procedures, forms, and documents to help novice food safety and quality professionals develop effective food safety systems.

Food safety is vital for consumer confidence, and the hygienic design of food processing facilities is central to the manufacture of safe products. Hygienic design of food factories provides an authoritative overview of hygiene control in the design, construction and renovation of food factories. The business case for a new or refurbished food factory, its equipment needs and the impacts on factory design and construction are considered in two introductory chapters. Part one then reviews the implications of hygiene and construction regulation in various countries on food factory design. Retailer requirements are also discussed. Part two describes site selection, factory layout and the associated issue of airflow. Parts three, four and five then address the hygienic design of essential parts of a food factory. These include walls, ceilings, floors, selected utility and process support systems, entry and exit points, storage areas and changing rooms. Lastly part six covers the management of building work and factory inspection when commissioning the plant. With its distinguished editors and international team of contributors, Hygienic design of food factories is an essential reference for managers of food factories, food plant engineers and all those with an academic

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research interest in the field. An authoritative overview of hygiene control in the design, construction and renovation of food factories Examines the implications of hygiene and construction regulation in various countries on food factory design Describes site selection, factory layout and the associated issue of airflow

This text covers the design of food processing equipment based on key unit operations, such as heating, cooling, and drying. In addition, mechanical processing operations such as separations, transport, storage, and packaging of food materials, as well as an introduction to food processes and food processing plants are discussed. Handbook of Food Processing Equipment is an essential reference for food engineers and food technologists working in the food process industries, as well as for designers of process plants. The book also serves as a basic reference for food process engineering students. The chapters cover engineering and economic issues for all important steps in food processing. This research is based on the physical properties of food, the analytical expressions of transport phenomena, and the description of typical equipment used in food processing. Illustrations that explain the structure and operation of industrial food processing equipment are presented. style="font-size: 13.3333330154419px;">The materials of construction and fabrication of food processing equipment are covered here, as well as the selection of the appropriate equipment for various food processing operations. Mechanical processing equipment such as size reduction, size enlargement, homogenization, and mixing are discussed. Mechanical separations equipment such as filters, centrifuges, presses, and solids/air systems, plus equipment for industrial food processing such as heat transfer, evaporation, dehydration, refrigeration, freezing, thermal processing, and dehydration, are presented. Equipment for novel food processes such as high

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pressure processing, are discussed. The appendices include conversion of units, selected thermophysical properties, plant utilities, and an extensive list of manufacturers and suppliers of food equipment.

To satisfy consumer demand for “fresh-like” additive-free foods, many food producers nowadays apply mild processing and conservation techniques that often shorten the shelf-life of food, may put food at risk and may compromise consumer health. However, food legislation developed in many countries around the globe requires that microbiologically safe food shall be produced by means of process equipment that minimizes the risk of contamination and that is easily cleanable. Hence, good hygienic engineering and design practice became one of the tools to reduce or exclude microbial (e.g. pathogens), chemical (e.g. lubricating fluids, cleaning chemicals) or physical (e.g. glass, wood) contamination of food. Good hygienic equipment design also allows for the elimination of food product “held up” within the process equipment that could deteriorate and affect product quality and may reduce the downtime required for an item of process equipment to be cleaned or maintained. Although initially more expensive than poorly designed equipment, hygienically designed equipment is more cost effective in the long term. In response to the demand of food producers and global legislation, manufacturers of food processing equipment are encouraged to develop and manufacture food processing equipment that is hygienically designed and easily cleanable. This chapter gives guidance on the hygienic design, selection of hygienic open and closed food processing equipment and maintenance of hygienic process equipment.

How safe is our food supply? Each year the media report what appears to be growing concern related to illness caused by the food consumed by Americans. These food borne illnesses are

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caused by pathogenic microorganisms, pesticide residues, and food additives. Recent actions taken at the federal, state, and local levels in response to the increase in reported incidences of food borne illnesses point to the need to evaluate the food safety system in the United States. This book assesses the effectiveness of the current food safety system and provides recommendations on changes needed to ensure an effective science-based food safety system. Ensuring Safe Food discusses such important issues as: What are the primary hazards associated with the food supply? What gaps exist in the current system for ensuring a safe food supply? What effects do trends in food consumption have on food safety? What is the impact of food preparation and handling practices in the home, in food services, or in production operations on the risk of food borne illnesses? What organizational changes in responsibility or oversight could be made to increase the effectiveness of the food safety system in the United States? Current concerns associated with microbiological, chemical, and physical hazards in the food supply are discussed. The book also considers how changes in technology and food processing might introduce new risks. Recommendations are made on steps for developing a coordinated, unified system for food safety. The book also highlights areas that need additional study. Ensuring Safe Food will be important for policymakers, food trade professionals, food producers, food processors, food researchers, public health professionals, and consumers.

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