

Viruses In Food And Water Risks Surveillance And Control Hardcover

Food-borne viruses are recognized as a major health concern, but their distribution, definition, and impact are poorly understood. The volume Food-Borne Viruses goes a long way in correcting that problem. Written by leading scientists in the field, it brings together the latest knowledge on these viral strains, their detection and control, and associated challenges.

With an increasing population, use of new and diverse chemicals that can enter the water supply, and emergence of new microbial pathogens, the U.S. federal government is faced with a regulatory dilemma: Where should it focus its attention and limited resources to ensure safe drinking water supplies for the future? Identifying Future Drinking Water Contaminants is based on a 1998 workshop on emerging drinking water contaminants. It includes a dozen papers that were presented on new and emerging microbiological and chemical drinking water contaminants, associated analytical and water treatment methods for their detection and removal, and existing and proposed environmental databases to assist in their proactive identification and regulation. The papers are preceded by a conceptual approach and related recommendations to EPA for the periodic creation of future Drinking Water Contaminant Candidate Lists (CCLs--produced every five years--include currently unregulated chemical and microbiological substances that are known or anticipated to occur in public water systems and that may pose health risks).

Why are there no standardised methods for the detection of enteric viruses in food and water? This is a repeated question raised by the industry and food authority in particular in connection with the recent norovirus outbreaks associated with imported oysters and raspberries. The food industry feels abandoned, as without standardised methods they have no tools to convincingly demonstrate that the food prepared at their factories will be safe for the consumer. Because currently no methods are available to measure the infectivity of norovirus, the food authority lacks the needed data for performing appropriate risk assessment and risk analysis studies. In the last couple of years, laboratory methods to detect noroviruses in foods have been greatly improved resulting in increased knowledge on which steps in the concentration, detection and typing of noroviruses need to be further optimized before internationally validated methods can be routinely used. This report presents the most important issues regarding the challenges of detecting enteric viruses (including noroviruses) in food and water that were discussed at the 4th Nordic Workshop. At this meeting researchers from Nordic countries and leading international experts concluded that it is important to not only focus on the epidemiology of foodborne and waterborne viral infections but also increase efforts to improve, harmonize and standardize laboratory methods for the detection of enteric viruses direct in potentially contaminated food such as oysters and raspberries

Viral transmission through contaminated food and water claims hundreds of thousands of lives every year, particularly affecting children in developing nations. Foodborne viral pathogens are associated with gastroenteritis and hepatitis, causing widespread epidemics that affect all populations and demographics worldwide. Foodborne Viral Pathogens comprehensively covers the predominant etiological viral agents of

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foodborne disease, including norovirus, hepatitis A virus, hepatitis E virus, astrovirus, sapovirus and rotavirus, and several emerging viruses and prions. By improving food safety awareness and viral detection, and through promotion of global food safety standards, our ability to cope with and control foodborne disease will be enhanced. Foodborne Viral Pathogens includes a detailed review of the molecular biology, potential vaccines, and available antiviral treatments of all major foodborne viral pathogens and prions. Written by specialists and leading virologists, this book features techniques used for typing, viral detection, strategies for control, and viral risk assessments. This book is intended as a detailed handbook for food microbiology and medical applications and will be a useful guide for anyone with an interest in foodborne disease.

This handbook provides basic facts regarding foodborne pathogenic microorganisms and natural toxins.

"These guidelines have been written for public health practitioners, food and health inspectors, district and national medical officers, laboratory personnel and others who may undertake or participate in the investigation and control of foodborne disease outbreaks."--P. 4 of cover.

The definitive guide to fighting coronaviruses, colds, flus, pandemics, and deadly diseases, from one of North America's leading public health authorities, now updated with a new introduction on protecting yourself and others from COVID-19. Dr. Bonnie Henry, a leading epidemiologist (microbe hunter) and public health doctor at the forefront of the fight against the worldwide COVID-19 coronavirus outbreak, has spent the better part of the last three decades chasing bugs all over the world — from Ebola in Uganda to polio in Pakistan, SARS in Toronto, and the H1N1 influenza outbreak across North America. Now she offers three simple rules to live by: wash your hands, cover your mouth when you cough, and stay at home when you have a fever. From viruses to bacteria to parasites and fungi, Dr. Henry takes us on a tour through the halls of Microbes Inc., providing up-to-date and accurate information on everything from the bugs we breathe, to the bugs we eat and drink, the bugs in our backyard, and beyond. Urgent and informative, Soap and Water & Common Sense is the definitive guide to staying healthy in a germ-filled world.

This is the first book to focus entirely on viruses in foods. It collates information on the occurrence, detection, transmission, and epidemiology of viruses in various foods. Although methods for bacterial detection in food are available, methods for detection of viruses in food, with the exception of shellfish, are not available. It is important, therefore, to develop methods for direct examination of food for viruses and to explore alternate indicators that can accurately reflect the virological quality of food. This book addresses these issues along with strategies for the prevention and control of viral contamination of food.

Heterotrophic Plate Counts and Drinking-water Safety provides a critical assessment of the role of the Heterotrophic Plate Count (HPC) measurement in drinking water quality management. It was developed from an Expert workshop of 32 scientists convened by the World Health Organization and the WHO/NSF International Collaborating Centre for Drinking Water Safety and Treatment in Geneva, Switzerland. The workshop sponsors were the U.S. Environmental Protection Agency, Health Canada, U.S. Centers for Disease Control and Prevention, and the American Waterworks Association Research

Foundation. Heterotrophs are organisms, including bacteria, yeasts and moulds, that require an external source of organic carbon for growth. The HPC test (or Standard Plate Count), applied in many variants, is the internationally accepted test for measuring the heterotrophic microorganism population in drinking water, and also other media. It measures only a fraction of the microorganisms actually present and does not distinguish between pathogens and non-pathogens. Although most, if not all, bacterial pathogens are heterotrophs, most of the microorganisms detected by the HPC test conditions are not human pathogens, thus the colony counts obtained do not alone normally correlate with the presence of pathogens, in the absence of other indicators of faecal contamination. High levels of microbial growth can affect the taste and odor of drinking water and may indicate the presence of nutrients and biofilms which could harbor pathogens, as well as the possibility that some event has interfered with the normal production of the drinking water. HPC counts also routinely increase in water that has been treated by an in-line device such as a carbon filter or softener, in water-dispensing devices and in bottled waters and indeed in all water that has suitable nutrients, does not have a residual disinfectant, and is kept under sufficient conditions. However, there is no firm evidence that non-pathogenic bacterial growth as measured by HPC is accompanied by increased risk of illness among consumers. On the other hand there is some evidence that the presence of the indigenous non-harmful bacteria may challenge the survival of pathogens that may be present in biofilms and on surfaces. There is concern that some immuno-compromised persons may be at risk from exposure to otherwise harmless bacteria if exposure is excessive. There is debate among health professionals as to the need, utility or quantitative basis for health-based standards or guidelines relating to HPC-measured regrowth in drinking water. The issues that were addressed in this work include: the relationship between HPC in drinking water (including that derived from in-line treatment systems, dispensers and bottled water) and health risks for the general public; the role of HPC as an indirect indicator or index for pathogens of concern in drinking water; the role of HPC in assessing the efficacy and proper functioning of water treatment and supply processes; the relationship between HPC and the aesthetic acceptability of drinking water. Heterotrophic Plate Counts and Drinking-water Safety provides valuable information on the utility and the limitations of HPC data in the management and operation of piped water systems as well as other means of providing drinking water to the public. It is of particular value to piped public water suppliers and bottled water suppliers, manufacturers and users of water treatment and transmission equipment and inline treatment devices, water engineers, sanitary and clinical microbiologists, and national and local public health officials and regulators of drinking water quality. The Bad Bug Book 2nd Edition, released in 2012, provides current information about the major known agents that cause foodborne illness. Each chapter in this book is about a pathogen—a bacterium, virus, or parasite—or a natural toxin that can contaminate food and cause illness. The book contains scientific and technical information about the major pathogens that cause these kinds of illnesses. A separate “consumer box” in each chapter provides non-technical information, in everyday language. The boxes describe plainly what can make you sick and, more important, how to prevent it. The information provided in this handbook is abbreviated and general in nature, and is intended for practical use. It is not intended to be a comprehensive scientific or clinical

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reference. The Bad Bug Book is published by the Center for Food Safety and Applied Nutrition (CFSAN) of the Food and Drug Administration (FDA), U.S. Department of Health and Human Services.

This book provides a critical, multiperspective, sociohistorical analysis of the role of food in postcolonial Indigenous, British and French settler relations. Drawing on archival resources from Australian explorers, settlers and nation builders, the book argues that contemporary issues of food security, sovereignty and sustainability have been significantly shaped by the colonial impact on human foodways. The author goes on to enhance readers' understanding of how contact between inhabitants and newcomers was shaped and informed by food, and how these engagements established a *modus vivendi* that carries through to the present day. Based on the assessment of archival records, it uses a comparative, socio-historical lens to investigate contact between Indigenous and non-Indigenous people where the exchange of food or knowledge about food took place. It finds that the transfer of food and food knowledge was multifaceted, and the flow of food knowledge occurred in both directions, although these exchanges were neither symmetrical nor balanced. It also analyzes and discusses food as a focal point of activity. The final chapter offers an assessment of the potential for the development of a sustainable, nutritious, tasty Australian cuisine that moves beyond the tropes and stereotypical narratives embedded into colonial Indigenous-settler relations in the context of food. If this was accepted by all Australians, it would allow opportunities to be created for Indigenous Australians to develop food products for the market that are sustainable, economically viable and developed in ways that are culturally appropriate.

Viruses can be highly infectious and are capable of causing widespread disease outbreaks. The significance of viral pathogens in food and waterborne illness is increasingly being recognised and viruses transferred by these routes are important areas of research. *Viruses in food and water* reviews the risks, surveillance and control of food and waterborne viral disease. Part one provides an introduction to food and environmental virology. Part two goes on to explore methods of detection, surveillance and risk assessment of viruses in food and water; it includes chapters on molecular detection of viruses in foods and food processing environments, quality control in the analytical laboratory, and quantitative risk assessment for food and waterborne viruses. Part three focuses on virus transmission routes and control of food and water contamination. It contains chapters on fresh produce, shellfish and viral presence, and control methods in waste water and sewage. Finally, part four highlights particular pathogens including norovirus, hepatitis A and emerging zoonotic viruses. *Viruses in food and water* is a standard reference book for microbiologists in academia, analytical labs and the food and water treatment industries, as well as environmental health professionals and researchers working on foodborne viruses. Explores methods of detection, surveillance and risk assessment of viruses in food and water Considers virus transmission routes and control of food and water contamination Highlights advances in the understanding of specific pathogens, including norovirus, hepatitis A and rotaviruses and the advances in vaccine development

The accelerated globalization of the food supply, coupled with toughening government standards, is putting global food production, distribution, and retail industries under a high-intensity spotlight. High-publicity cases about foodborne illnesses over recent

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years have heightened public awareness of food safety issues, and momentum has been building to find new ways to detect and identify foodborne pathogens and eliminate food-related infections and intoxications. This extensively revised 4e covers how the incidence and impact of foodborne diseases is determined, foodborne intoxications with an introduction noting common features among these diseases and control measures that are applicable before and after the basic foodstuff is harvested. Provides a summary of the

Up to now, the global burden of illness and deaths caused by foodborne disease has never been quantified. In order to fill this data vacuum, the World Health Organization (WHO) together with its partners launched in 2006 the Initiative to Estimate the Global Burden of Foodborne Diseases. After an initial consultation, WHO in 2007 established a Foodborne Disease Burden Epidemiology Reference Group (FERG) to lead the initiative. Six taskforces were established under FERG, focusing on groups of hazards or aspects of the methodology. These taskforces commissioned systematic reviews and other studies to provide the data from which to calculate the burden estimates. This report is an outcome of a decade of work by WHO key partners and a number of dedicated individuals. Some additional findings--which cannot be integrated into this report--will be published and user-friendly online tools made available separately. This report and related tools should enable governments and other stakeholders to draw public attention to this often under-estimated problem and mobilize political will and resources to combat foodborne diseases.

Written by the world's leading scientists and spanning over 400 articles in three volumes, the Encyclopedia of Food Microbiology, Second Edition is a complete, highly structured guide to current knowledge in the field. Fully revised and updated, this encyclopedia reflects the key advances in the field since the first edition was published in 1999. The articles in this key work, heavily illustrated and fully revised since the first edition in 1999, highlight advances in areas such as genomics and food safety to bring users up-to-date on microorganisms in foods. Topics such as DNA sequencing and *E. coli* are particularly well covered. With lists of further reading to help users explore topics in depth, this resource will enrich scientists at every level in academia and industry, providing fundamental information as well as explaining state-of-the-art scientific discoveries. This book is designed to allow disparate approaches (from farmers to processors to food handlers and consumers) and interests to access accurate and objective information about the microbiology of foods. Microbiology impacts the safe presentation of food. From harvest and storage to determination of shelf-life, to presentation and consumption. This work highlights the risks of microbial contamination and is an invaluable go-to guide for anyone working in Food Health and Safety. Has a two-fold industry appeal (1) those developing new functional food products and (2) to all corporations concerned about the potential hazards of microbes in their food products.

This report draws attention to the threat of viruses as a risk to public health when they are present in food. Viruses play a major role in the burden of infectious intestinal disease and require special and separate attention because they behave differently from bacteria. In identifying the major routes of viral contamination of foods, this report seeks to highlight those areas which need immediate attention and provide guidance to both risk assessors and risk managers in understanding the challenges to be overcome.

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in effectively addressing the problems associated with foodborne viruses. This volume and other in this series, co-published with WHO, contain information that is useful to both risk assessors and risk managers, the Codex Alimentarius Commission, governments and food regulatory agencies, industry and other people or institutions with an interest in foodborne viruses, their public health impact and approaches for the evaluation and selection of potential control strategies.

This book, which is the result of contributions from a team of international authors, presents a collection of materials that can be categorized into two groups. The first group of papers deals with clinical toxicology topics including poisoning by anticoagulant rodenticides, food toxins, carbon monoxide, the toxicity of beta-lactam antibiotics, acute neonicotinoid poisoning, occupational risk factors for acute pesticide poisoning, activating carbon fibers, and date pits for use in liver toxin adsorption. The second group of papers deals with forensic or analytical toxicology topics such as simplified methods for the analysis of gaseous toxic agents, rapid methods for the analysis and monitoring of pathogens in drinking water and water-based solutions, as well as the linkages between clinical and forensic toxicology. Each chapter presents new information on the topic discussed based on authors' experience while summarizing existing knowledge. As such, this book will be a good teaching aid and can be a prescribed or recommended reading for postgraduate students and professionals in the fields of public health, medicine, pharmacy, nursing, biology, toxicology, and forensic sciences.

Developments such as the increasing globalisation of the food industry, new technologies and products, and changes in the susceptibility of populations to disease, have all highlighted the problem of emerging pathogens. Pathogens may be defined as emerging in a number of ways. They can be newly-discovered, linked for the first time to disease in humans or to a particular food. A pathogen may also be defined as emerging when significant new strains emerge from an existing pathogen, or if the incidence of a pathogen increases dramatically. This important book discusses some of the major emerging pathogens and how they can be identified, tracked and controlled so that they do not pose a risk to consumers. After an introductory chapter, *Emerging foodborne pathogens* is split into two parts. The first part deals with how pathogens evolve, surveillance methods in the USA and Europe, risk assessment techniques and the use of food safety objectives. The second part of the book looks at individual pathogens, their characteristics, methods of detection and methods of control. These include: *Arcobacter*; *Campylobacter*; *Trematodes* and helminths; emerging strains of *E. coli*; *Hepatitis viruses*; *Prion diseases*; *Vibrios*; *Yersinia*; *Listeria*; *Helicobacter pylori*; *Enterobacteriaceae*; *Campylobacter*; *Mycobacterium paratuberculosis*; and enterocci. *Emerging foodborne pathogens* is a standard reference for microbiologists and QA staff in the food industry, and food safety scientists working in governments and the research community. Discusses identification issues Looks at surveillance methods and the tracking of viruses Looks at individual pathogens in detail

Globalization of the food supply has created conditions favorable for the emergence, reemergence, and spread of food-borne pathogens-compounding the challenge of anticipating, detecting, and effectively responding to food-borne threats to health. In the United States, food-borne agents affect 1 out of 6 individuals and cause approximately 48 million illnesses, 128,000

hospitalizations, and 3,000 deaths each year. This figure likely represents just the tip of the iceberg, because it fails to account for the broad array of food-borne illnesses or for their wide-ranging repercussions for consumers, government, and the food industry-both domestically and internationally. A One Health approach to food safety may hold the promise of harnessing and integrating the expertise and resources from across the spectrum of multiple health domains including the human and veterinary medical and plant pathology communities with those of the wildlife and aquatic health and ecology communities. The IOM's Forum on Microbial Threats hosted a public workshop on December 13 and 14, 2011 that examined issues critical to the protection of the nation's food supply. The workshop explored existing knowledge and unanswered questions on the nature and extent of food-borne threats to health. Participants discussed the globalization of the U.S. food supply and the burden of illness associated with foodborne threats to health; considered the spectrum of food-borne threats as well as illustrative case studies; reviewed existing research, policies, and practices to prevent and mitigate foodborne threats; and, identified opportunities to reduce future threats to the nation's food supply through the use of a "One Health" approach to food safety. Improving Food Safety Through a One Health Approach: Workshop Summary covers the events of the workshop and explains the recommendations for future related workshops.

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What is the coronavirus, and why is everyone talking about it? Engagingly illustrated by Axel Scheffler, this approachable and timely book helps answer these questions and many more, providing children aged 5-10 and their parents with clear and accessible explanations about the coronavirus and its effects - both from a health perspective and the impact it has on a family's day-to-day life. With input from expert consultant Professor Graham Medley of the London School of Hygiene & Tropical Medicine, as well as advice from teachers and child psychologists, this is a practical and informative resource to help explain the changes we are currently all experiencing. The book is free to read and download, but Nosy Crow would like to encourage readers, should they feel in a position to, to make a donation to: <https://www.nhscharitiestogether.co.uk/>

The transmission of human pathogens by faecally contaminated fruit and vegetables is well established, but the burden of disease caused by foodborne pathogens is unknown. Fresh produce can be contaminated through the use of polluted irrigation water or by the handling of the produce by infected individuals either pre- or post harvest. There is very little known regarding the extent of viral contamination of irrigation water and fresh produce in South Africa. Noroviruses (NoV) and hepatitis A virus (HAV) are recognized as leading causes of foodborne viral disease. These viruses are transmitted predominantly via the faecal oral route, primarily person-to-person by direct contact with an infected person, or indirectly by ingestion of contaminated food and water. The detection of enteric viruses in food or water is problematical and complex as many foodborne

viruses, including HAV and NoV, cannot be readily isolated in cell culture. The aim of this investigation was to develop and optimise simple and efficient methods for the concentration and detection of NoV GII and HAV in irrigation water and fresh produce. These methods would then be applied to field samples of irrigation water and fresh produce to try and establish a link between viral contamination detected in irrigation water and that on associated irrigated fresh produce. The efficiency of different commercial real-time reverse transcriptase-polymerase chain reaction amplification kits for the realtime detection of HAV, NoV GI and NoV GII was assessed, and standard curves for the quantitative detection of these viruses were constructed using the most appropriate kit. Using two types of fresh produce, three different elution buffers, each at two pHs, with two different elution times were compared to establish which buffer was the most efficient for the extraction of viruses from the fresh produce. The tris-glycine beef extract buffer (pH 9.5) with an elution time of 20 minutes most efficient for the extraction of the selected enteric viruses from fresh produce. From April 2008 to November 2009, 86 irrigation water and 72 fresh produce samples were collected from commercial and subsistence farms, street vendors and commercial outlets. All the irrigation water and fresh produce samples were analysed for HAV, NoV GI and NoV GII. Overall, 16.3 % (13/86) and 12.5 % (9/72) of irrigation water and fresh produce samples tested positive for one or more human pathogenic viruses, namely NoV GII and HAV, respectively. Nucleotide sequence and phylogenetic analysis of the HAV and NoV GII strains identified clinically relevant viruses in the irrigation water and on the fresh produce. A direct link between contaminated irrigation water and contamination of fresh produce could not be established, but irrigation water was identified as a possible source of contamination of the fresh produce. The results also suggested that food handlers contributed significantly to the viral contamination of the fresh produce. This study highlights the potential health risk posed by fresh produce to consumers in South Africa and highlights the need for further in depth studies to quantify the risk to consumers. This study represents new data on the occurrence of enteric viruses in food and water in South Africa and is crucial for the development of effective intervention and control strategies for food safety in South Africa. Copyright.

Hepatitis A virus (HAV) is responsible for around half of the total number of hepatitis infections diagnosed worldwide. HAV infection is mainly propagated via the fecal-oral route, and as a consequence of globalization, transnational outbreaks of foodborne infections are reported with increasing frequency. Therefore, in this review, state-of-the-art information on the molecular procedures for HAV detection in food, and the efficacy of common food manufacturing processes are compiled. The purpose of this Brief is to consolidate basic information on various aspects of HAV and to provide a guideline for its prevention and control across the food supply chain from pre-harvest to manufacturing. ?

Viral Gastroenteritis: Molecular Epidemiology and Pathogenesis provides a comprehensive review of research on viruses causing acute gastroenteritis in infants and young children, including coverage of rotaviruses, human caliciviruses, astroviruses, enteric adenoviruses, and viruses causing gastroenteritis more rarely. Includes general chapters on gastrointestinal physiology and pathophysiology, gastrointestinal immune mechanisms, immunodeficiencies and host genetics influencing susceptibility to viral gastroenteritis, and therapeutic and preventative approaches. The book also includes special sections on virus particle structures, replication cycles, pathogenesis, immunology, epidemiology, and preventative measures. This book covers both basic science and translational applications and is an appropriate resource for virologists, molecular biologists, epidemiologists, gastroenterologists, vaccinologists, and those with an interest in public health. Features new approaches in diagnosis and characterization of viral gastroenteritis pathogens Includes coverage of therapeutic and preventative methods Covers recent advances in characterizing the molecular biology and immune responses of rotaviruses and noroviruses Covers both basic science and translational applications and is an appropriate resource for virologists, molecular biologists, epidemiologists, gastroenterologists, vaccinologists, and those with an interest in public health

Antimicrobial Food Packaging takes an interdisciplinary approach to provide a complete and robust understanding of packaging from some of the most well-known international experts. This practical reference provides basic information and practical applications for the potential uses of various films in food packaging, describes the different types of microbial targets (fungal, bacteria, etc.), and focuses on the applicability of techniques to industry. Tactics on the monitoring of microbial activity that use antimicrobial packaging detection of food borne pathogens, the use of biosensors, and testing antimicrobial susceptibility are also included, along with food safety and good manufacturing practices. The book aims to curtail the development of microbiological contamination of food through anti-microbial packaging to improve the safety in the food supply chain. Presents the science behind anti-microbial packaging and films reflecting advancements in chemistry, microbiology, and food science Includes the most up-to-date information on regulatory aspects, consumer acceptance, research trends, cost analysis, risk analysis and quality control Discusses the uses of natural and unnatural compounds for food safety and defense

The accelerated globalization of the food supply, coupled with toughening government standards, is putting global food production, distribution, and retail industries under a high-intensity spotlight. High publicity cases about foodborne illnesses over recent years have heightened public awareness of food safety issues, and momentum has been building to find new ways to detect and identify foodborne pathogens and eliminate food-related infections and intoxications. This extensively revised Third Edition covers how the incidence and impact of foodborne diseases is determined, foodborne intoxications with an introduction that notes common features among these diseases and control measures that are applicable before and after the basic foodstuff is harvested. * A summary of the foods most association with human infections * A discussion of the principles of laboratory detection of the agent considering the advantages and disadvantages of various procedure * A 'historical to present-day' section * A description of the infection in humans and animals, including reservoirs and the mode of transmission

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Humic Substances color all waters more or less brown. Their concentrations exceed all carbon of living organisms by at least one order of magnitude. Opposite to former paradigms, they participate in almost any metabolic pathway. They protect against UV-irradiation, enable indirect photolysis and, thus, purify hazardous chemicals, they provide inorganic and organic nutrients, may form cryptic genes with DNA and dampen metabolic fluctuations. More recently they can increase adverse effects of hazardous chemicals and they can directly interfere with organisms. The book tries to relate effects to structural features.

For years, scientists have been warning us that a pandemic was all but inevitable. Now it's here, and the rest of us have a lot to learn. Fortunately, science writer Carl Zimmer is here to guide us. In this compact volume, he tells the story of how the smallest living things known to science can bring an entire planet of people to a halt--and what we can learn from how we've defeated them in the past. Planet of Viruses covers such threats as Ebola, MERS, and chikungunya virus; tells about recent scientific discoveries, such as a hundred-million-year-old virus that infected the common ancestor of armadillos, elephants, and humans; and shares new findings that show why climate change may lead to even deadlier outbreaks. Zimmer's lucid explanations and fascinating stories demonstrate how deeply humans and viruses are intertwined. Viruses helped give rise to the first life-forms, are responsible for many of our most devastating diseases, and will continue to control our fate for centuries. Thoroughly readable, and, for all its honesty about the threats, as reassuring as it is frightening, A Planet of Viruses is a fascinating tour of a world we all need to better understand.

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 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.

Hepatitis E (HEV) is a viral infectious disease that infects humans and domestic, wild, and synanthropic animals alike. In developing countries, the disease often presents as an epidemic, transmitted primarily through the fecal-oral route. In recent years, sporadic cases have also been documented in industrial countries, including Europe. The identification and characterization of animal strains of HEV from pigs, wild boar, and deer, and the demonstrated ability of cross-species infection by these animal strains raise potential public health concerns for foodborne and zoonotic transmission of the virus. This Brief will provide a thorough overview of HEV. It will discuss the epidemiology and pathogenesis of the virus in both humans and animals, review detection methods, and provide methods for its control and prevention.

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