

Microbiological Quality Of Indoor Air In University Rooms

This is a practical, user-friendly guide to the identification and assessment of indoor air contaminants that contribute to building related illness in commercial buildings, institutions, and residences. The third edition covers basic concepts and details various approaches and up-to-date analytical methods, and it addresses some of the more recent, as well as less common, concerns on air pollutants. All chapters will be updated and also includes one completely new chapter on Inhalable Airborne Particles. All updates adhere to the latest National Ambient Air Quality Standards and other active standards.

Millions of children and adults across the nation spend their days in school buildings, and they need safe, healthy environments to thrive, learn, and succeed. This book explores the school environment using the methods and perspectives of environmental health science. Though environmental health has long been understood to be an important factor in workplaces, homes, and communities, this is the first book to address the same basic concerns in schools. The editors are physicians and educators trained in pediatrics, occupational and environmental medicine, and medical toxicology, and the authors are experts in their fields drawn from across the United States and abroad. Each section of the book addresses a different concern facing schools today. In the first six sections, the various aspects of the school environment are examined. Chapters include the physical environment of the school, air quality issues, pest control, cleaning methods, food safety, safe designs of playgrounds and sports fields, crime and violence prevention, and transportation. In the last two sections, recommendations are made for school administrators on how to maximize the health of their schools. Appropriately evaluating the school environment, implementing strategies to address children and adults with disabilities, emphasizing health services, infectious disease prevention and recognition, and occupational health for faculty and staff are all addressed. The entire book is evidence-based, readable, generously illustrated, and practical. An indispensable resource for parents, school staff, administrators, government officials, and health professionals, this book is for anyone who cares about the health of our schools.

Fundamentals of Air Cleaning Technology and Its Application in Cleanrooms sets up the theoretical framework for cleanrooms. New ideas and methods are presented, which include the characteristic index of cleanrooms, uniform and non-uniform distribution characteristics, the minimum sampling volume, a new concept of outdoor air conditioning and the fundamentals of leakage-preventing layers. Written by an author who can look back on major scientific achievements and 50 years of experience in this field, this book offers a concise and accessible introduction to the fundamentals of air cleaning technology and its application. The work is intended for researchers, college teachers, graduates, designers, technicians and corporate R&D personnel in the field of HVAC and air cleaning technology. Zhonglin Xu is a senior research fellow at China Academy of Building Research.

Expanding far beyond its predecessor, this text offers a comprehensive guide to the assessment and control of bioaerosols in the full range of contemporary workplaces. Although the indoor environment remains a focus of concern, much of the

information in this publication has application beyond office environments. The prominence of saprophytic microorganisms remains; however, more attention has been given to other important biological agents (e.g., arthropod and animal allergens, infectious agents, and microbial volatile organic compounds). In addition, fuller descriptions are provided for microbial toxins and cell wall components that may cause health effects

Current Air Quality Issues

Current Microbiological Research in Africa

Dampness and Mould

A Guide to Detection, Health Hazards, and Mitigation

Bioaerosols

Indoor Air. Detection and Enumeration of Moulds. Sampling from Materials

Pulp and Paper Industry: Microbiological Issues in Papermaking features in-depth and thorough coverage of microbiological issues in papermaking and their consequences and the current state of the different alternatives for prevention, treatment and control of biofilm/slime considering the impact of the actual technological changes in papermaking on the control programmes. The microbial issues in paper mill systems, chemistry of deposits on paper machines, the strategies for deposit control and methods used for the analysis of biofouling are all dealt in this book along with various growth prevention methods. The traditional use of biocides is discussed taken into account the new environmental regulations regarding their use. Finally, discusses the trends regarding the future of the microbiological control in papermaking systems. In-depth coverage of microbiological issues in papermaking and their consequences Discusses eco-efficient processes (green processes) for biofilm/slime control Offers a thorough review of the current literature with links to the primary literature Comprehensive indexing Author is an authority in the pulp and paper industry

This book intends to provide information about detection and health effects due to bacteria, fungi and viruses in indoor environments. The book will cover also information about preventive and protective measures to avoid health-hazardous. Case studies will be also addressed to enrich the book with the expertise of each invited author. The book also intends to fill a gap regarding information about all biologic agents, since most of the books available are dedicated to only one type of microorganisms. For various

different biologic agents and metabolites this book will compile information about indoors presence, detection methods, exposure assessment and health effects. Several problems regarding the exposure of biologic agents will be presented through case studies, and also the implementation of preventive and protective measures to avoid/minimize exposure. Besides, all the book will focus on occupational health and/or public health point of view.

This book focuses on successful application of microbial biotechnology in areas such as medicine, agriculture, environment and human health.

Air pollution is thus far one of the key environmental issues in urban areas.

Comprehensive air quality plans are required to manage air pollution for a particular area. Consequently, air should be continuously sampled, monitored, and modeled to examine different action plans. Reviews and research papers describe air pollution in five main contexts: Monitoring, Modeling, Risk Assessment, Health, and Indoor Air Pollution. The book is recommended to experts interested in health and air pollution issues.

Microbiomes of the Built Environment

Advanced Topics in Environmental Health and Air Pollution Case Studies

Safe and Healthy School Environments

WHO global air quality guidelines

Chemical, Microbiological, Health and Comfort Aspects of Indoor Air Quality - State of the Art in SBS

Chemistry, Emission Control, Radioactive Pollution and Indoor Air Quality

Aerobiology is the science that studies the biological component of the atmosphere and its effects on living systems and on the environment. This term was used for the first time in 1935, but the attention of scientists to the biological component of the atmosphere goes back to 1769, when the Italian biologist Spallanzani carried out a series of experiments that disproved the concept of spontaneous generation of life and proved the presence of viable microorganisms in the air. Aerobiology has marked characteristics of interdisciplinarity: its application fields range from respiratory diseases to the airborne outbreak of animal and vegetal diseases and to the biodegradation of substances and materials. The latter is the subject of this book. The purpose of aerobiological research applied to the conservation of cultural heritage is to evaluate the risk of alteration by airborne microorganisms of materials forming artefacts of historical, artistic and archaeological interest. Airborne spores and vegetative structures may develop on different substrates and may be a cause of degradation, in relation to the types of materials, the microclimatic situation and the pollution of the conservation environments.

The qualitative and quantitative evaluation of the biological component of air, performed by means of targeted analysis campaigns, and of the characteristics of materials and environments, supplies indispensable information for the evaluation of the actual risk and the planning of interventions. This book is divided into four main parts.

More than 50 million Americans, one out of five, suffer from hay fever, asthma, and other allergic diseases. Many of these conditions are caused by exposure to allergens in indoor environments such as the house, work, and school--where we spend as much as 98 percent of our time. Developed by medical, public health, and engineering professionals working together, this unique volume summarizes what is known about indoor allergens, how they affect human health, the magnitude of their effect on various populations, and how they can be controlled. The book addresses controversies, recommends research directions, and suggests how to assist and educate allergy patients, as well as professionals. *Indoor Allergens* presents a wealth of information about common indoor allergens and their varying effects, from significant hay fever to life-threatening asthma. The volume discusses sources of allergens, from fungi and dust mites to allergenic chemicals, plants, and animals, and examines practical measures for their control. *Indoor Allergens* discusses how the human airway and immune system respond to inhaled allergens and assesses patient testing methods, covering the importance of the patient's medical history and outlining procedures and approaches to interpretation for skin tests, in vitro diagnostic tests, and tests of patients' pulmonary function. This comprehensive and practical volume will be important to allergists and other health care providers; public health professionals; specialists in building design, construction, and maintenance; faculty and students in public health; and interested allergy patients.

People's desire to understand the environments in which they live is a natural one. People spend most of their time in spaces and structures designed, built, and managed by humans, and it is estimated that people in developed countries now spend 90 percent of their lives indoors. As people move from homes to workplaces, traveling in cars and on transit systems, microorganisms are continually with and around them. The human-associated microbes that are shed, along with the human behaviors that affect their transport and removal, make significant contributions to the diversity of the indoor microbiome. The characteristics of "healthy" indoor environments cannot yet be defined, nor do microbial, clinical, and building researchers yet understand how to modify features of indoor environments—such as building ventilation systems and the chemistry of building materials—in ways that would have predictable impacts on microbial communities to promote health and prevent disease. The factors that affect the environments within buildings, the ways in which building characteristics influence the composition and function of indoor microbial communities, and the ways in which these microbial communities relate to human health and well-being are extraordinarily complex and can be explored only as a dynamic, interconnected ecosystem by engaging the fields of microbial biology and ecology, chemistry, building science, and human physiology. This report reviews what is known about the intersection of these disciplines, and how new tools may facilitate advances in understanding the ecosystem of built environments, indoor microbiomes, and effects on human health and well-being. It offers a research agenda to generate the information needed so that stakeholders with an interest in understanding the impacts of built environments will be able to make more informed decisions.

This second edition offers a comprehensive overview of the priority indoor air pollutants, such as volatile organic compounds, indoor particles and fibres, combustion products and other chemical agents that may affect health. It includes updated reviews with a focus on emission processes and on the large variety of volatile organic pollutants. It also introduces new topics, such as reflections on the shift in

human health from infection-related diseases to chronic illnesses and the significance of indoor chemical exposure. The authors provide insights into different cultural settings and their consequences for indoor air quality. Further, the book briefly discusses building certification as a market-oriented tool to improve energy efficiency and indoor air quality in the building sector. It appeals to public health specialists; scientists; graduate students in the field of environmental sciences; decision makers in government, regulatory bodies and the construction industry; and facility managers.

Medical Laboratory Manual for Tropical Countries

Chemical, Microbiological, Health and Comfort Aspects of Indoor Air Quality - State of the Art in SBS. CHEMICAL AND ENVIRONMENTAL SCIENCE Volume 4

Designing Healthy Indoor Environments

Microbiological Corrosion of Buildings

Indoor Air Borne Bacteria in Hospital Wards

The book describes the effects of air pollutants, from the indoor and outdoor spaces, on the human physiology. Air pollutants can influence inflammation biomarkers, can influence the pathogenesis of chronic cough, can influence reactive oxygen species (ROS) and can induce autonomic nervous system interactions that modulate cardiac oxidative stress and cardiac electrophysiological changes, can participate in the onset and exacerbation of upper respiratory and cardio-vascular diseases, can lead to the exacerbation of asthma and allergic diseases. The book also presents how the urban environment can influence and modify the impact of various pollutants on human health.

With an emphasis on passive sampling, this volume focuses on the environmental monitoring for common gaseous pollutants. It offers an overview of the history and nature of pollutants of concern to museums and the challenges facing scientists, conservators, and managers seeking to develop target pollutant guidelines to protect cultural property.

Introduction to the attack on man-made materials of economic and cultural importance by living organisms.

Interest in indoor air quality (IAQ) is growing at public, political and scientific levels. Complaints about poor IAQ, associated with acute symptoms such as mucous irritation, headaches and bad odor occur frequently, particularly in the office environment, where typical patterns of symptoms often occur, leading to the coining of the term 'Sick Building Syndrome'. In the present book, internationally known experts address the following issues: the dynamics of the indoor environment and strategies for indoor measurement chemical and microbiological pollution, important species, sources and detection methods effects of indoor pollution, in particular sensory irritation, including odor airway, eye and skin irritation by organic indoor pollutants and their assessment immune effects, including allergic sensitization chemical hyper-responsiveness controlled human reactions to organic pollutants building investigation: approaches and results source

characterization and control criteria, norms and techniques in indoor air pollution, and regulatory aspects. The complex, multifactorial nature of sick building syndrome requires multidisciplinary collaboration from very diverse fields. It is evident that communication between researchers coming from very different areas, all speaking their own language, is a difficult task. This book, presenting as it does the state of the art on sick buildings and how to cure them, is a sound foundation on which to build for the future.

Methods and Measurement Techniques for Biodeterioration Monitoring

Indoor Allergens

Microbiological Screening of the Indoor Air Quality in the Polk County Administration Building

Monitoring for Gaseous Pollutants in Museum Environments

Microbiological Quality of Indoor Air in the Wilan ó w Palace Museum and Its Potential Impact on the Biodeterioration of the Genoa Velvets

Report of Microbial Growth Task Force

This comprehensive handbook provides up-to-date knowledge and practical advice from established authorities in aerosol science. It covers the principles and practices of bioaerosol sampling, descriptions and comparisons of bioaerosol samplers, calibration methods, and assay techniques, with an emphasis on practicalities, such as which sampler to use and where it should be placed. The text also offers critiques concerning handling the samples to provide representative and meaningful assays for their viability, infectivity, and allergenicity. A wide range of microbes—viz., viruses, bacteria, fungi and pollens, and their fragments—are considered from such perspectives. Bioaerosols Handbook is divided into four parts, providing a wide-ranging reference work, as well as a practical guide on how best to sample and assay bioaerosols using current technology.

The atmosphere may be our most precious resource. Accordingly, the balance between its use and protection is a high priority for our civilization. While many of us would consider air pollution to be an issue that the modern world has resolved to a greater extent, it still appears to have considerable influence on the global environment. In many countries with ambitious economic growth targets the acceptable levels of air pollution have been transgressed. Serious respiratory disease related problems have been identified with both indoor and outdoor pollution throughout the world. The 25 chapters of this book deal with several air pollution issues grouped into the following sections: a) air pollution chemistry; b) air pollutant emission control; c) radioactive pollution and d) indoor air quality.

Viruses, Bacteria and Fungi in the Built Environment: Designing Healthy Indoor Environments opens with a brief introduction to viruses, bacteria and fungi in the built environment and discusses their impact on human health. Sections discuss the microbiology of building materials, the airborne transmission of

viruses and bacteria in the built environment, and plumbing-associated microbiome. As the first book on this important area to be written in light of the COVID-19 pandemic, this work will be a valuable reference resource for researchers, civil engineers, architects, postgraduate students, contractors and other professionals working and interested in the field of the built environment. Elements of building design, including choice of materials, ventilation and plumbing can have important implications for the microbiology of a building, and consequently, the health of the building's occupants. This important new reference work explains the microbiology of buildings and disease control in the built environment to those who design and implement new construction and renovate. Provides an essential guide on the microbiology of buildings, covering bacteria, fungi and viruses on surfaces, in air and in water Comprehensively examines how humidity influences fungal growth in several building materials Includes important information about the airborne transmission of infectious agents Addresses ventilation design to improve human health Presents the first book on disease control in buildings since the COVID-19 pandemic

WHO Guidelines for Indoor Air Quality Dampness and Mould WHO Regional Office Europe

Agricultural and Environmental Applications

WHO Guidelines for Indoor Air Quality

particulate matter (PM_{2.5} and PM₁₀), ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide

Correlation Between Microbiological Indoor Air Quality and Air Conditioning Systems in Hospital Buildings

Exposure to Microbiological Agents in Indoor and Occupational Environments

A Research Agenda for Indoor Microbiology, Human Health, and Buildings

Air, Quality, Air pollution, Atmosphere, Internal, Buildings, Microbiological analysis, Eumycophyta, Sampling methods, Count methods (microbiology), Culture techniques, Test specimens

This interdisciplinary guide offers background, research findings, and practical strategies for assessing and improving air quality in hospitals and other healthcare settings. Positing good air quality as critical to patient and staff well-being, it identifies disease-carrying microbes, pollutants, and other airborne toxins and their health risks, and provides localized interventions for reducing transmission of pathogens. Effective large-scale approaches to air quality control are also outlined, from green building materials to hygienic HVAC and air treatment practices. Its thoroughness of coverage makes this book a vital resource for professionals involved in every aspect of health service facilities, from planning and construction to maintenance and management. Among the topics covered: Existing guidelines in indoor air quality: the case study of hospital environments Hospital environments and epidemiology of healthcare-associated infections Analysis of microorganisms in hospital environments and potential risks Legionella indoor air contamination in healthcare environments HVAC system design in healthcare facilities and control of aerosol contaminants Assessment of indoor air quality in inpatient wards Indoor Air Quality in Healthcare Facilities imparts up-to-date expertise to a variety of professional readers, including hospitals' technical and management departments, healthcare facilities' chief

medical officers, hospital planners, sport and thermal building designers, public health departments, and students of universities and schools of hygiene.

Nosocomial infection (NI) is an infection acquired whilst staying, visiting or working in a hospital or healthcare facility. It is also defined as an infection acquired in hospital by a patient who was admitted for a reason other than that infection or an infection occurring in a patient in a hospital or other health care facility in whom the infection was not present or incubating at the time of admission. One of the risk factors for such infection is bacterial contamination of hospital wards indoor air by bacteria. In view of that, the microbiological quality of air can be considered as a mirror of the hygienic condition for hospital wards."

Scientific output in low- and middle-income countries is greatly challenged by numerous factors. This is particularly pronounced in sub-Saharan African countries, despite the continent being the world ' s second largest and second most-populous continent, currently undergoing rapid economic growth. Financial constraints and unclear areas of focus when funding is available, are among the limiting factors, with the consequence being the development of inadequate policies, especially those relating to environmental protection and conservation. This 13-chapter book is a unique piece in the field of microbiology, designed to stimulate some research areas in Africa by illustrating interesting and informative examples of the current applied research agenda in environmental microbiology in selected countries within the continent. With authors from the North, South, East and West of Africa, the book touches diverse applied methods and approaches to meet the pragmatic needs faced by environmental microbiologists in Africa. Also included are topics on viruses, bacteria (including cyanobacteria), and protozoa, and their importance in disease. Sustainable agriculture and aquaculture, and eco-friendly oil and hydrocarbon bioremediation and degradation approaches are highlighted. Microbial involvement in different common indoor (e.g., household kitchens, latrines, and hospitals) and outdoor settings including air, soil, and water habitats, and their resistance to commonly used antibiotics, are described. Hopefully, the work presented here will stimulate the need for increasing modern training and funding initiatives to prepare African microbiologists to meet the challenges they face in African universities and research laboratories.

The Latest Sampling and Analytical Methods, Third Edition

Viruses, Bacteria and Fungi in the Built Environment

Indoor Air Quality

Diversity, Health Impacts, Investigation and Control

Damp Indoor Spaces and Health

Selected Applications for Sustainable Environmental Management

Investigation techniques and analytical methodologies for addressing microbial contamination indoors Microbial contamination indoors is a significant environmental and occupational health and safety problem. This book provides fundamental background information on fungal and bacterial growth indoors as well as in-depth, practical approaches to analyzing and remedying problems. The information helps investigators, laboratory managers, and environmental health professionals properly use state-of-the-science methods and correctly interpret the results. With chapters by expert microbiologists, mycologists, environmental professionals, and

industrial hygienists, *Sampling and Analysis of Indoor Microorganisms* is a multidisciplinary, comprehensive reference on advanced approaches, covering: Microbiological problems in a water-damaged environment Indoor construction techniques and materials that impact environmental microbiology Microbial ecology indoors, airborne bacteria, genetic-based analytical methods, and statistical tools for microorganism analysis Microbiological sampling approaches Mold removal principles and methods, including specialized microbial remediation techniques for HVAC systems, legionellas and biofilms, and sewage contamination A forensic approach toward the assessment of fungal growth in the indoor environment A must-have guide for practicing professionals, including environmental health and safety personnel, public health officials, and building and construction engineers and architects, this is also a valuable reference for attorneys, home inspectors, water restoration personnel, mold remediation contractors, insurance adjusters, and others.

Microbial pollution is a key element of indoor air pollution. It is caused by hundreds of species of bacteria and fungi, in particular filamentous fungi (mould), growing indoors when sufficient moisture is available. This document provides a comprehensive review of the scientific evidence on health problems associated with building moisture and biological agents. The review concludes that the most important effects are increased prevalences of respiratory symptoms, allergies and asthma as well as perturbation of the immunological system. The document also summarizes the available information on the conditions that determine the presence of mould and measures to control their growth indoors. WHO guidelines for protecting public health are formulated on the basis of the review. The most important means for avoiding adverse health effects is the prevention (or minimization) of persistent dampness and microbial growth on interior surfaces and in building structures. [Ed.]

Low-temperature technologies include the area of refrigeration and cryogenics. Since the beginning of theoretical developments and practical application, these technologies become a part of our life. Low temperatures have found application in almost all branches of industries as well as in households. These systems can be of very small capacity (few watts) up to hundreds of megawatts. In order to develop any of the technologies for successful practical application, very intensive theoretical and experimental research should be conducted. This book provides the reader with a comprehensive overview of the latest developments, perspectives, and feasibility of new low-temperature technologies and improvements of existing systems, equipment, and evaluation methods.

This volume includes an introduction to the laboratory with recommendations about quality assurance, safety and equipment. There is particular emphasis on the major parasitic diseases such as malaria, filariasis, African trypanosomiasis, Chagas' disease, leishmaniasis and schistosomiasis.

Indoor Air. Detection and Enumeration of Moulds. Culture-Based Method

Assessing and Controlling Adverse Health Effects

Indoor Air Pollution

Fundamentals of Air Cleaning Technology and Its Application in Cleanrooms

Selected Pollutants

Microorganisms in Home and Indoor Work Environments

This book presents WHO guidelines for the protection of public health from risks due to a number of chemicals commonly present in indoor air. The substances considered in this review, i.e. benzene, carbon monoxide, formaldehyde, naphthalene, nitrogen dioxide, polycyclic aromatic hydrocarbons (especially benzo[a]pyrene), radon, trichloroethylene and tetrachloroethylene, have indoor sources, are known in respect of their hazardousness to health and are often found indoors in concentrations of health concern. The guidelines are targeted at public health professionals involved in preventing health risks of environmental exposures, as well as specialists and authorities involved in the design and use of buildings, indoor materials and products. They provide a scientific basis for legally enforceable standards.

Despite the large amount of money spent on research into pollution of the indoor environment, the problem remains complex with major gaps in our knowledge of the identities and sources of pollutants and of the effects of prolonged exposure to indoor pollutants on health. Microorganisms in Home and Indoor Work Environments considers one such group o

Environmental stress caused by water continuously exposes buildings to microbial colonization. This is highly evident when both minor dampness and mass flooding occur. The text describes how microbiological corrosion of buildings and the structures and substances derived from these hazards are responsible for adverse health effects on people exposed to these contaminated environments. Microbiological Corrosion of Buildings: A Guide to Detection, Health Hazards, and Mitigation describes the key elements and methods for neutralising and removing microbiological contamination, and the operating algorithm for checking the effectiveness of preventative solutions. Ideal for construction engineers, microbiologists and professionals in the field.

Features: Latest methods for detection of indoor microbial hazards Identifies the tools needed for natural, non-destructive and non-invasive methods of bio-corrosion removal Describes the social and health problems associated with exposure to microbiological hazards Provides case studies and examples of microorganisms responsible for microbial corrosion. 'Climate change and the associated adverse effects, such as floods and whirlwinds, make the problem of microbiological corrosion of buildings that generates health risks and economic losses on a global scale, the focus of science and technology. The monograph presents a complex problem of building bio-corrosion, that requires knowledge of the distant fields of microbiology and building technology, for the use of both scientists and practitioners. This pioneering work of an interdisciplinary nature harmoniously combines knowledge on specific microbiological issues relating to the process of bio-corrosion and the associated health risks with detailed issues of construction technology concerning the prevention of bio-corrosion and its removal. The authors succeeded in combining a very high scientific level in the

monograph with an accessible and understandable presentation of complex problems. The extensive references, ranging from "classical" items from many years ago to the most recent articles presenting the state of the art in this field, are worth emphasising.' —Prof. Jacek Dutkiewicz, Ph.D., D.Sc., Institute of Rural Health in Lublin

Almost all homes, apartments, and commercial buildings will experience leaks, flooding, or other forms of excessive indoor dampness at some point. Not only is excessive dampness a health problem by itself, it also contributes to several other potentially problematic types of situations. Molds and other microbial agents favor damp indoor environments, and excess moisture may initiate the release of chemical emissions from damaged building materials and furnishings. This new book from the Institute of Medicine examines the health impact of exposures resulting from damp indoor environments and offers recommendations for public health interventions. Damp Indoor Spaces and Health covers a broad range of topics. The book not only examines the relationship between damp or moldy indoor environments and adverse health outcomes but also discusses how and where buildings get wet, how dampness influences microbial growth and chemical emissions, ways to prevent and remediate dampness, and elements of a public health response to the issues. A comprehensive literature review finds sufficient evidence of an association between damp indoor environments and some upper respiratory tract symptoms, coughing, wheezing, and asthma symptoms in sensitized persons. This important book will be of interest to a wide-ranging audience of science, health, engineering, and building professionals, government officials, and members of the public.

Pulp and Paper Industry

Low-temperature Technologies

Sampling and Analysis of Indoor Microorganisms

Microbiological Issues in Papermaking

Project Summary

Indoor Air Quality in Healthcare Facilities

The main objective of these updated global guidelines is to offer health-based air quality guideline levels, expressed as long-term or short-term concentrations for six key air pollutants: PM_{2.5}, PM₁₀, ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide. In addition, the guidelines provide interim targets to guide reduction efforts of these pollutants, as well as good practice statements for the management of certain types of PM (i.e., black carbon/elemental carbon, ultrafine particles, particles originating from sand and duststorms). These guidelines are not legally binding standards; however, they provide WHO Member States with an evidence-informed tool, which they can use to inform legislation and policy. Ultimately, the goal of these guidelines is to help reduce levels of air pollutants in order to decrease the enormous health burden resulting from the exposure to air pollution worldwide.

Cultural Heritage and Aerobiology

Introduction to Biodeterioration

Microbes and Microbial Technology

Assessment and Control

Bioaerosols Handbook

Project Summary, Microbiological Screening of the Indoor Air Quality in the Polk County,
EPA/600/SR-95/088, U.S. EPA, September 1995