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Nota di contenuto	Microbiology of Drinking Water Production and Distribution; Contents; Preface; 1 Microbial Contaminants in Drinking Water; 1.1 Introduction; 1.2 Transmission Routes of Pathogens and Parasites; 1.2.1 Person-to-Person Transmission; 1.2.2 Waterborne Transmission; 1.2.3 Foodborne Transmission; 1.2.4 Airborne Transmission; 1.2.5 Vector-Borne Transmission; 1.2.6 Fomites; 1.3 Major Pathogens and Parasites of Health Concern in Drinking Water; 1.3.1 Bacterial Pathogens; 1.3.2 Viral Pathogens; 1.3.3 Protozoan Parasites; Web Resources (As of May 23, 2013); Viral Pathogens; Protozoan Parasites Bacterial Pathogens 1.3 Further Reading; 2 Microbiological Aspects of Drinking Water Treatment; 2.1 Introduction; 2.2 Worldwide Concern Over Drinking Water Safety; 2.3 Microbiological Quality of Source Water; 2.3.1 Surface Waters; 2.3.2 Groundwater Sources; 2.3.3 Roof-Harvested Rainwater; 2.4 Overview of Processes Involved in Drinking Water Treatment Plants; 2.5 Process Microbiology and Fate of Pathogens and Parasites in Water Treatment Plants; 2.5.1 Introduction; 2.5.2 Pretreatment of Source Water; 2.5.3 Coagulation-Flocculation-Sedimentation; 2.5.4 Water Softening; 2.5.5 Filtration 2.5.6 Activated Carbon 2.5.7 Membrane Filtration; 2.5.8

Nanotechnology in Water Treatment; 2.5.9 Disinfection; 2.6 Waste Residuals from Water Treatment Plants; 2.7 Drinking Water Quality at the Consumers Tap; 2.7.1 Effect of Service Lines and Indoor Plumbing on Drinking Water Quality; 2.7.2 Point-of-Use Devices for Indoor Water Treatment; 2.7.3 Modified Carbon Filters and Other Devices; Web Resources; Further Reading; 3 Drinking Water Disinfection; 3.1 Introduction; 3.2 Chlorine; 3.2.1 Chlorine Chemistry; 3.2.2 Inactivation of Microorganisms by Chlorine and Chloramines 3.2.3 Adverse Effects of Chlorine on Pathogens 3.2.4 Disinfection By-Products; 3.2.5 Chloramination of Drinking Water; 3.3 Chlorine Dioxide; 3.4 Ozone; 3.4.1 Introduction; 3.4.2 Inactivation of Pathogens and Parasites; 3.4.3 Mechanisms of Inactivation by Ozone; 3.4.4 Ozonation By-Products; 3.5 Ultraviolet Light; 3.5.1 Introduction; 3.5.2 Categories of UV Lamps; 3.5.3 Mechanism of UV Damage; 3.5.4 UV Damage Repair: Photoreactivation; 3.5.5 Factors Controlling UV Action; 3.5.6 Pathogen and Protozoan Parasites Inactivation by UV; 3.5.7 UV Disinfection of Drinking Water 3.5.8 Coupling of UV Radiation with Other Technologies 3.6 Use of Photocatalysts in Water Disinfection; 3.7 Physical Removal/Inactivation of Microbial Pathogens; 3.7.1 Membrane Filtration; 3.7.2 Ultrasound; 3.7.3 Ultrahigh Hydrostatic Pressure; 3.7.4 Nanomaterials; Web Resources; Further Reading; 4 Drinking Water Distribution Systems: Biofilm Microbiology; 4.1 Introduction; 4.2 Biofilm Development in WDSs; 4.2.1 Introduction; 4.2.2 Processes Involved in Biofilm Development; 4.2.3 Factors Involved in Biofilm Accumulation; 4.2.4 Biofilm Ecology; 4.2.5 Gene Exchange and Quorum Sensing in Biofilms 4.2.6 Biofilm Detachment from Surfaces

Sommario/riassunto

"This book is proposed because it offers a comprehensive coverage of most of the topics pertaining to drinking water microbiology. It concerns the public health aspects of drinking water treatment and distribution and describes the different water treatment processes (pretreatment, coagulation, flocculation, sedimentation, filtration, disinfection) and their impact on waterborne microbial pathogens and parasites. The quality of the treated water may however be degraded in the water distribution system (WDS). Microorganisms attach to surfaces, namely water distribution pipes, and form biofilms which allow their survival and growth, gene exchange and resistance to disinfection. The biofilm environment also allows the survival and potential growth of primary and opportunistic pathogens. The water distribution system may also harbor various organisms (e.g., algae, cyanobacteria, fungi, actinomycetes, free living amoebas, invertebrates, iron and manganese bacteria, nitrifying bacteria) which alter the quality of treated water. The biostability of the treated water is an important factor to consider if one wants to reduce bacterial growth in WDS. Various approaches/methodologies have been proposed to assess the bacterial growth potential in WDS. Due to bioterrorism threats to drinking water safety, one needs to know about the scope of this threat, the microbial agents involved and the safeguards that are put in place to protect this precious resource. The proposed book would not be complete if one fails to discuss the research on drinking water quality in developing countries which experience more than two million deaths resulting from diarrheal diseases. Various simple and low-cost treatment technologies are available for improving the quality of drinking water in developing countries. Finally, due to a surge in bottled water sales around the world, there is a great need to know about the microbiological water quality of this resource which is often misunderstood by the public at large"-- Provided by publisher.
