Record Nr. UNINA9910556882403321 **Titolo** Biological approaches in dye-containing wastewater . Volume 2 / / Ali Khadir and Subramanian Senthilkannan Muthu, editors Pubbl/distr/stampa Singapore:,: Springer,, [2022] ©2022 **ISBN** 981-19-0526-6 Descrizione fisica 1 online resource (238 pages) Collana Sustainable Textiles: Production, Processing, Manufacturing and Chemistry 628.35 Disciplina Soggetti Sewage - Purification - Biological treatment Sewage - Purification - Color removal Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Intro -- Contents -- About the Editors -- Dye Removal Using Activated Nota di contenuto

Sludge -- 1 Introduction -- 2 Dye Degradation by Adsorption -- 2.1 Adsorption of Dye onto Sludge-Based Activated Carbon -- 2.2 Adsorption of Dye onto Dried Activated Sludge -- 3 Aerobic Granular Technology -- 4 Sequential Chemical and Activated Sludge Process --5 Dye Treatment Using Fungus -- 6 Dye Treatment Using Biofloculant Isolated from Activated Sludge -- 7 Activated Sludge Parameters -- 8 Conclusion -- References -- Fundamental Concepts of Dye-Containing Textile Wastewater Treatments: Microbial and Enzymatic Approaches --1 Introduction -- 2 Chemical Structure of Dyes -- 2.1 Global Dye Market -- 2.2 Classification of Textile Dyes -- 3 Azo-Based Textile Dyes -- 3.1 Global Azo Dye Market -- 3.2 Effects of Azo Dyes on Environment -- 4 Textile Wastewater Conventional Treatments --4.1 Primary Treatment -- 4.2 Secondary Treatment -- 4.3 Tertiary Treatment -- 5 Aerobic and Anaerobic Microbial Degradation of Dyes: Bacterial, Fungal, and Microalgae -- 5.1 Aerobic Microbial Degradation of Dyes -- 5.2 Anaerobic Microbial Degradation of Dyes -- 5.3 Sequential Aerobic-Anaerobic Treatment -- 5.4 Phycoremediation -- 6 Enzymatic Degradation of Dyes -- 6.1 Laccases -- 6.2 Peroxidases --6.3 Azoreductase -- 7 New Trends on Microbial and Enzyme Degradation of Dye-Containing Textile Wastewater Treatment -- 7.1

Dye Adsorption -- 7.2 Genetically Modified Organisms (GMOs) -- 7.3 Combined Treatments Systems -- 7.4 Biofilms -- 7.5 Dye Industry Waste and Resource Recovery Strategy -- 7.6 Machine Learning -- 8 Conclusion -- References -- Role of Microbial Biofilms in Dye Degradation During Textile Wastewater Treatment -- 1 Introduction -- 2 Characteristics of Dye -- 2.1 Classification Based on Their Chemical Structure.

2.2 Classification Based on Affinity to Varying Substrates Their Applicability -- 3 Dyes: Impact on Environment -- 4 Understanding Biofilm Formation -- 4.1 Biofilm Potential in Dye Removal -- 4.2

Biofilm-Based Processes in Dye Removal -- 4.3 Trending Approaches in Dye Removal via Biofilms -- 5 Conclusion -- References --Biotransformation of Anthraquinone Dye by Microbial Enzymes -- 1 Introduction -- 2 Anthraquinone Dye -- 3 Remediation Technique for Dyes Contamination -- 4 Biological Methods -- 4.1 Degradation of Dyes by Fungal Strains -- 4.2 Role of Bacterial Strains -- 4.3 Role of Yeast and Filamentous Fungi -- 4.4 Role of Microbial Enzymes -- 5 Conclusion -- References -- Microalgae-Based Remediation Approaches in Textile Dye Removal -- 1 Introduction -- 2 Azo Dyes --3 Use of Microalgae in the Removal of Azo Dyes from Textile Effluents -- 3.1 Processes for the Treatment of Textile Effluents by Microalgae -- 3.2 Use of the Microalgal Biomass Generated in the Treatment of Textile Effluents -- 4 Concluding Remarks -- References -- Plant-Microbe-Based Remediation Approaches in Dye Removal -- 1 Introduction -- 2 Dyes and Its Impact on Environment and Human Health -- 3 Different Approaches for the Remediation of Dyes from the Industrial Wastewater -- 3.1 Physical Methods -- 3.2 Chemical Methods -- 3.3 Biological Methods -- 4 Microbial Bioremediation of Dyes -- 5 Phytoremediation -- 6 Mechanism of Dye Degradation by Using Plant-Microbe Synergism Approach -- 7 Plant-Microbe Synergism Approach: Selection of Microbe -- 8 Analysis of the Metabolites and Degradation Products of Plant-Microbe Synergism -- 9 Toxicity Evaluation of Metabolites and Dve Degraded Products Formed After Plant-Microbe Synergism -- 10 Conclusion --References -- Role of Fungi in the Removal of Synthetic Dyes from Textile Industry Effluents -- 1 Introduction. 2 Textile Industries-Effluent Waste Waters-Synthetic Dyes-Environmental and Human Health Issues -- 3 Available Remediation Methods to Treat Textile Effluents -- 4 Role of Microorganisms in the Bioremediation of Textile Effluents -- 4.1 Degradation of Dyes by Bacteria -- 4.2 Degradation of Dyes by Algae -- 4.3 Degradation of Dyes by Yeasts -- 4.4 Degradation of Dyes by Fungi -- 5 Role of Fungi in the Removal of Synthetic Dyes from Textile Industry Effluents -- 6 Conclusion -- 7 Future Directions -- References -- The Applicability of the Microalgae-Based Systems in Textile Dye Industrial Wastewater -- 1 Introduction -- 2 Textiles Wastewater: Origin and Composition -- 3 Conventional Treatment Methodologies and Their Limitations -- 3.1 Physical Methods -- 3.2 Physico-Chemical Methods -- 3.3 Biological Methods -- 4 Bioremediation of Textile Wastewater by Microalgae -- 4.1 Phycoremediation of Textile Wastewater Using Microalgae -- 5 Biomass Production: The Main Applicability of the Biomass Microalgae After Wastewater Treatment --6 Conclusion and Future Perspectives -- References -- Potential for Constructed Wetlands Aimed at Sustainable Wastewater Treatment, Reuse, and Disposal in Dyestuff and Textile Sectors -- 1 The Context of Dyestuff and Textile Sectors in India -- 1.1 Environmental Challenges Faced in Dyestuffs and Textile Sector -- 1.2 The Scope and Specific Objectives -- 2 The Genesis of Pollution in Dyestuff & Dyestuff

-- Textile Sectors -- 2.1 Pollution Causing Steps in Production of Dyestuffs -- 2.2 Pollution Causing Steps in Textile Processing -- 3 Shortcomings of Conventional Treatment Strategies for Removal of Dyes in Wastewater Treatment -- 4 The Horizon of Eco-centric Treatment Technologies -- 4.1 Significance of Natural Treatment Systems for Sustainable Wastewater Treatment -- 4.2 Use of Engineered CWs for Treatment of Domestic Wastewaters. 4.3 Kinetics of Removal of COD, BOD and Nutrients in CWs -- 5 Significance of CWs for Treatment of Industrial Wastewaters -- 5.1 Removal of Industrial Pollutants Using Constructed Wetlands -- 5.2 Case Studies on Co-disposal of Industrial and Domestic Wastewaters --6 Use of Constructed Wetlands in Dye Wastewater Management -- 6.1 Constructed Wetlands for Secondary Treatment -- 6.2 Constructed Wetlands for Tertiary Treatment -- 7 Integration of Constructed Wetlands in Dye Wastewater Management -- 7.1 Significance of Wastewater Segregation in Textile Sector -- 7.2 Potential for Using Constructed Wetlands for Treating Segregated Streams -- 7.3 Advanced Treatment Technologies for Concentrated Fractions of Dye Wastewaters -- 7.4 A Conceptual Framework for Preventive Environmental Management -- 8 Summary and Conclusions --References.