

CONTENTS

Contributors

vii

1. Biologically Produced Methane as a Renewable Energy Source	1
D.E. Holmes and J.A. Smith	
1. Introduction	2
2. The Biology of Methanogens	5
3. Mechanisms for Interspecies Electron Exchange	27
4. Biomethanogenic Treatment of Waste	34
5. Conclusions	40
References	41
2. Pathogen and Particle Associations in Wastewater: Significance and Implications for Treatment and Disinfection Processes	63
C. Chahal, B. van den Akker, F. Young, C. Franco, J. Blackbeard and P. Monis	
1. Introduction	64
2. Wastewater	66
3. Pathogens in Wastewater	68
4. Wastewater Treatment	75
5. Turbidity and Particles in Wastewater	88
6. Pathogen-Particle Associations	94
7. Impact of Pathogen-Particle Associations on Disinfection Processes	104
8. Concluding Remarks	109
References	110
3. Insights in Waste Management Bioprocesses Using Genomic Tools	121
H.J. Purohit, A. Kapley, A. Khardenavis, A. Qureshi and N.A. Dafale	
1. Introduction	122
2. Sewage Treatment Plants—A Reactor With Aerobic Option	124
3. Effluent/Wastewater Treatment Plant: Performance of Microbial Gene Pool in Wastewater	132
4. Anaerobic Digesters: Metagenomics and Metabolomics Insight Into Anaerobic Bioprocesses in Management of Municipal Solid Waste Organics	137

5. Community Creating Biofilms to Support Treatment or Fouling	146
6. Future of Mining and Understanding the Bioprocesses in Waste Management	155
Acknowledgment	156
References	156
4. The Oral Microbiome in Health and its Implication in Oral and Systemic Diseases	171
B. Sampaio-Maia, I.M. Caldas, M.L. Pereira, D. Pérez-Mongiovi and R. Araujo	
1. Introduction	172
2. The Oral Microbiome in Health	173
3. The Oral Microbiome and Oral Pathology	185
4. The Oral Microbiome and Systemic Pathology	193
5. Conclusions	197
References	198
Index	211
Contents of Previous Volumes	217