Microbiological Examination of Water and Wastewater

MICROBIOLOGICAL EXAMINATION of WATER and WASTEWATER

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Preface

Microbiological tests in environmental pollution control are intended to indicate the degree of contamination by the detection and enumeration of indicator organisms.

Many excellent microbiology textbooks and laboratory manuals are available to teach microbiology courses. A great number of published scientific materials and government agency releases are also available for selected areas of environmental microbiology. However, these texts are difficult to use as laboratory guides and they are not designed for training purposes.

There is a great need for information related to the general operation of environmental microbiology laboratories as well as for training laboratory technicians to detect indicator microorganisms in environmental samples. This book completely satisfies these demands and provides those requirements. It is designed as an important tool for environmental laboratory technicians and to serve as a complete guide in their training and in their work.

With the presentation of the fundamentals of microbiology, microbial metabolism, microbial growth and control, and the classification and introduction of microorganisms, the text helps to better understand the purpose and significance of the mechanisms of microbiological examination. Discussion of the general operations and techniques used in environmental microbiology laboratories, sample collection and preservation, detailed QA/QC requirements, and selected step-by-step methodologies, are provided to make this book a useful guide for laboratory technicians working in this field. The text is divided into four parts:

1. General microbiology,
2. Environmental microbiology,
3. Safety and quality control in environmental microbiology laboratories,
4. Techniques and methods in the routine environmental microbiology examination.

The authors of this book hope that as a practical handbook, it will be a valuable contribution to environmental education and special training programs. The aim is to assist environmental laboratory technicians in their work. This handbook also gives a helping hand to environmental laboratory managers, environmental consultants, water and wastewater treatment plant operators and managers, industrial hygienists and health officials.

Authors

Maria Csuros is an environmental chemist, she received her Ph.D. in Environmental Chemistry from the Janus Pannonius University, Hungary. Most of her professional life has revolved around environmental testing laboratories and teaching.

Her first encounter with environmental science occurred at the Environmental and Public Health Laboratory in Hungary, where she worked as the supervisor of the Water Department.

After moving to the United States, she continued to dedicate her knowledge and time to environmental analytical work and education. She designed and developed an environmental science program for Pensacola Junior College that focused on environmental sampling and analysis. An associate professor and coordinator of this program, she teaches chemistry and environmental courses.

She has published two books *Environmental Sampling and Analysis for the Technician* (1994) and *Environmental Sampling and Analysis Laboratory Manual* (1996) by CRC/LEWIS Publishers. She has also authored a number of environmental publications in Hungary.

Csaba Csuros is a professor of science at Pensacola Junior College and has received the excellence in teaching award.

He earned his Ph.D. at Jozsef Attila University, Hungary, in Microbiology. His professional life focused on medical and public health laboratory work and he teaches microbiology, anatomy, and physiology.

He was a delegate to the International Entomology Congress held in Moscow. His research interests center on serological diagnosis of parasitic diseases (ascariasis, echinococcosis, and filariasis).

He has published a number of papers in the field of microbiology, and he is a co-author of a book *Tropical Diseases* published by the Microbiology Department of the University of Medicine, in Pecs, Hungary.

Klara Czako-Ver received her Ph.D. in Biological Sciences from Eotvos Lorand University, Hungary. She is presently a faculty member of Janus Pannonius University, Hungary, and teaches microbiology.

Her present research interest is in isolation of chromium sensitive and tolerant *Schizosaccharomyces pombe mutants*, cytological, biophysical, and genetical investigations.

Her publications have mostly dealt with the effects of toxic metals on the microbial life.

Acknowledgment

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Warm words of thanks to our sons, Geza and Zoltan, and to our grandchildren, Aaron, Andrew, Daniel, Jordan, and Sebastian for their love, encouragement, and for their cheerful spirit.

To all of you, thank you!

Dedication

Our work is dedicated with all of our love to our sons Geza and Zoltan.

M. C. and C. C.

I am honored to dedicate this book to the memory of my parents, Maria and Geza Csuros.

C.C.

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