

## BOOK REVIEW\*

FLEMING, Diane O. & HUNT, Debra L. – Biological safety: principles and practices. 3<sup>rd</sup>. ed. Washington, ASM Press, 2000. 784p. ilus. ISBN 1-55581-180-9

Biosafety may be considered a science that “deals with safe methods for managing infectious materials” in order to “eliminate or reduce exposure to biohazardous organisms and their products”, and thus, minimize “the potential for occupational illness and adverse environmental impacts from microorganisms and biological materials”. Biosafety basic fundament must be the conciliation of technological advances with human, animal and environmental health protection. During the last 10 years, the number of regulations and guidelines concerning on biosafety has expanded greatly due to increase in the consciousness of private, academic and governmental institutions.

In this context, the book “Biological Safety – Principles and Practices”, third edition, edited by Diane O. Fleming and Debra L. Hunt offers tools, principles and techniques that are very useful for personal and environmental safety to work with biohazardous agents and materials. The book also allows the improvement of individual biological safety knowledge, and may be used as a reference text for courses in biosafety.

The book is divided into 5 sections. The first section is on “Hazard identification”. In the chapters of this section the authors describe indigenous and pathogenic microorganisms of humans, laboratory animals and plants as well as the epidemiology of laboratory associated infections.

The second section is on “Hazard assessment”. The authors discuss risk assessment associated with the use of biological hazards, present a synopsis of bacterial, protozoan, helminthic, mycotic pathogens and zoonotic hazards that infect humans in their workplace. They describe the epidemiology and risk of transmission of hepatitis viruses, HIV-1 and other blood-borne pathogens in laboratory settings as well as the basic strategies for prevention and control of infections caused by them. Biosafety precautions for prion diseases, *Mycobacterium tuberculosis* and other airborne pathogens as well as for cell lines, allergens and biological toxins are described.

The third section is on “Hazard control”. The authors present a design of basic biomedical, clinical and containment laboratories. They describe primary barriers, ranging from personal protective equipment, such as gloves or a laboratory coat, to a biological safety cabinet, and show how important is to select appropriate primary barriers and to use them properly, in order to provide protection for workers and the environment. The Universal Precautions for human specimens are described. Recommendations on decontamination, sterilization, disinfection, and antisepsis are discussed and procedures are suggested for use in research and clinical laboratories in specific situations. Guidelines and regulations for the disposal of regulated medical waste are presented.

The fourth section is on “Administrative controls”. The aim of this section is to provide methodology for elaborating safety programs. The major elements of the biosafety program at Johns Hopkins University and

Johns Hopkins Hospital are described. The regulations and guidelines for handling biohazards and recombinant DNA in many countries are briefly discussed. The importance of an institutional biosafety program evaluation is emphasized. The principles and most important components of occupational and environmental medicine are summarized.

The fifth section is on “Special considerations for biosafety”. The authors consider specific points related to biosafety in the teaching laboratory, in the pharmaceutical industry, in large-scale production of microorganisms and in the virology laboratory. New features such as biological safety aspects related to bioterrorism, to recombinant DNA technologies, and to Internet are reviewed and discussed.

The book also offers three appendixes containing specific regulations and guidelines: 1. “Biosafety in Microbiological and Biomedical Laboratories” (BMBL) (CDC/NIH, 1999). 2. “Occupational Exposure to Blood-borne Pathogens – CFR Part 1910.1030” (OSHA). 3. “NIH Guidelines for Research Involving Recombinant DNA Molecules” (NIH, 1999).

All laboratories need biosafety programs to minimize risks to human, animal and environmental health, however it is essential that the personnel is conscious and engaged with the programs. Information is the best way for obtaining support. The information is important not only for implementing the programs but also for encouraging the adhesion or disseminating the biosafety goals.

In this way, the book offers a great deal of information. To read this book is a very interesting task, and it shows the need of working in adequate conditions and stimulates individual biosafety practices.

This book may be a very important tool in acquiring and maintaining biosafety conditions, however the behavior of each individual in the workplace is the most important point.

**MARIA CARMEN ARROYO SANCHEZ, MSc, PhD**

Pesquisador Científico  
Laboratório de Imunobiologia Celular e Molecular  
Instituto de Medicina Tropical de São Paulo  
arroyo@usp.br

ASM Press  
American Society of Microbiology  
1752 N Street, N.W.  
Washington, DC 20036-2084 – USA  
Email: [books@asmusa.org](mailto:books@asmusa.org)  
[www.asmpress.org](http://www.asmpress.org)

\*This book is available at the Library of the Instituto de Medicina Tropical de São Paulo