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# Book Review

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## Biological Safety: Principles and Practices (Fourth Edition)

**Edited by Diane O. Fleming and Debra L. Hunt**
Washington, DC: ASM Press (2006)
680 pages, ISBN: 1-55581-339-9



What are biosafety, biocontainment, and biosecurity? How are they related? What do I need to know to develop and implement a biosafety program? Answers to these and many more questions are seen as elemental or even obvious to some experienced practitioners of biosafety. What is obvious to some; however, is not obvious to all. The past decade has seen a number of changes in biosafety, biosecurity, and biosurety (the military component of biosecurity) recommendations and requirements. Possibly more significant, or at least as important is the impact the increase in BSL-3 and BSL-4 laboratory infrastructure is having on our ability to grow, train and retain biosafety professionals to meet growing needs. This is not a U.S.-centric phenomenon; rather, it is a global trend. So where are all these new biosafety professionals coming from and what level of knowledge and experience do they possess? The bad news is there is a serious lack of funding for developing training programs and applied research in biosafety. The good news is there are nascent formal training programs and Fellowships at the National Institutes of Health and University of Wisconsin to develop a steady supply of trained biosafety professionals with hands-on practical experience. This book could literally be the text for those training programs.

*Biological Safety: Principles and Practices*, Fourth Edition, Edited by Diane O. Fleming and Debra L. Hunt provides fundamental and, in many instances, very detailed and applied information on biosafety. Overall, the book is comprehensive in scope and the chapters are well-written. One of the most valuable attributes of this book is the diversity of information across the sections and chapters. Even among experienced biosafety professionals, it is rare to find someone with combined in-depth understanding of biosafety as applicable to the biomedical research laboratory, research greenhouse, pharmaceutical and large-scale production facilities and research facilities, or vivaria working with large or exotic animals. Those new to biosafety, or working in institutes with dynamic research programs, will appreciate the extensive coverage of hazards and mitigation measures. This information is provided over a broad range of potentially hazardous situations to include work involving various risk group pathogens and toxins, cell lines, allergens, animals, and prions. The information presented, along with the meticulous reference sections, provides the reader with a strong general background and overview of each topic as well as a means to gain more specific information by acquiring materials cited in the reference section. One of the hardest parts in writing this review is pinpointing which chapters I liked best, or the chapters I felt were most important as I found so many to be pivotal to biosafety. This was a well-written, enjoyable, interesting read. I particularly enjoyed chapters like "Design of Biomedical Laboratory Facilities" that provided information ranging from the philosophical aspects of design to specific examples of how to design different types of laboratories, from identifying what is important and giving consideration down to the level of subsystems.

A tribute to the work of the editors and authors is that there are very few criticisms. An increased use of visuals such as diagrams, charts, graphs would be a welcome addition in future editions to break up long stretches of text and provide a succinct summary, or comparison of information. The chapter on Biosecurity was disappointing as it was superficial in its coverage of the topic, consisting primarily of lists of regulations. A future revision should address the actual impact of these regulations, provide practical solutions, or strategies for implementation, and address the topic on a broader scale.

What can we look forward to in the Fifth Edition of *Biological Safety: Principles and Practices*? When I read the tea leaves, I see chapters that address aquaculture; "how to" attain a viable and compliant biosecurity program; navigating Export Control Regulations; more on actual work practices with Risk Group 4 agents; nanotechnology; design and engineering of "green" energy efficient high containment facilities; and a discussion of the biosafety, biosecurity and regulatory challenges that will be ushered in by synthetic genomics. On the programmatic side, I predict that we will need to see a chapter that helps to define codes of conduct, or ethics for life scientists. This will include aspects of biosafety and biosecurity, and guidance on the decision making process involved in securing non-select agents and other valuable assets and information. Stay tuned; I am certain the next edition will be of the same excellent quality as this Fourth Edition.