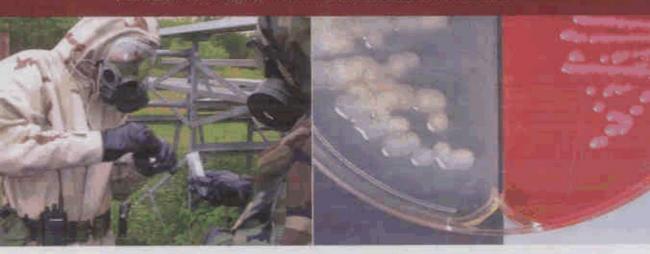
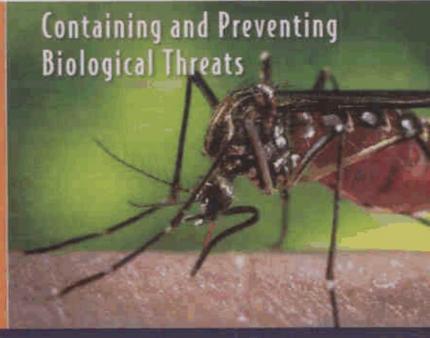
BUTTERWORTH-HEINEMANN HOMELAND SECURITY SERIES



BIOSECURITY & BIOTERRORISM





Jeffrey R. Ryan Jan F. Glarum





Table of Contents

	Foreword by Corrie Brown, College of Veterinary Medicine, University of Georgia	xi
	About the Authors	xiii
	Preface	χV
	Acknowledgments	xix
Part I	Biosecurity, Biodefense, and the Reason for Them	1
Chapter 1	Seeds of Destruction	3
	Introduction	3
	The Reality versus the Potential	5
	The History of Biowarfare	7
	Modern-Day Bioterrorism	15
	Weaponization	16
	A Question of Scale	18
	The Genesis of Biosecurity and Biodefense	18
	Essential Terminology	19
	Discussion Questions	20
	Web Sites	20
	References	20
Chapter 2	Recognition of Biological Threat	23
	Introduction	23
	Bacterial Pathogens	25
	Rickettsial Pathogens	27
	Viral Pathogens	27
	Prions	29
	Fungal Pathogens	29

TABLE OF CONTENTS

vi

	Biological Toxins	30
	Disease	30
	Tiered Diagnosis	32
	Probability of Use	33
	Conclusion	36
	Essential Terminology	36
	Discussion Questions	37
	Web Sites	37
	References	38
Part II	The Threat to Human Health	39
Chapter 3	Category A Diseases and Agents	41
	Introduction	41
	Anthrax	42
	Plague	47
	Tularemia	51
	Smallpox	55
	Viral Hemorrhagic Fevers	59
	Botulism	65
	Essential Terminology	69
	Discussion Questions	69
	Web Site	69
	References	70
Chapter 4	Category B Diseases and Agents	73
	Introduction	73
	Brucellosis	74
	Glanders and Melioidosis	79
	Q Fever	82
	Psittacosis	87
	Viral Encephalitis	90
	Ricin Poisoning	94
	Conclusion	96
	Essential Terminology	96
	Discussion Questions	97

	TABLE OF CONTENTS	vii
	Web Sites	97
	References	98
Chapter 5	Category C Diseases and Agents	101
•	Introduction	101
	Nipah Virus	103
	Hantavirus	105
	West Nile Virus	110
	SARS Virus	113
	Conclusion	115
	Essential Terminology	115
	Web Sites	116
	References	116
Chapter 6	Recognize, Avoid, Isolate, and Notify	119
	Introduction	119
	Community Response Organizations	120
	The Concept of RAIN	122
	Recognition	122
	Sampling and Detection Methods	124
	Avoidance	130
	Isolation	131
	Notification	133
	Conclusion	133
	Essential Terminology	133
	Discussion Questions	134
	Web Sites	134
	References	135
Chapter 7	Case Studies	137
	Introduction	137
	1. Anthrax, Sverdlovsk, USSR, 1979: Accidental Release of Weaponized Material	138
	2. Salmonellosis and the Rajneesh, the Dalles, Oregon, USA, 1984: Intentional Food-Borne Outbreak	140
	3. Pneumonic Plague, Surat, India, 1994: Natural Outbreak	142

	4. Amerithrax, USA, 2001: Intentional Release of a Formulated Agent	144
	5. Ricin and the Amateur Bioterrorist, USA, 2004:	
	Intentional Release	147
	6. Norwalk Virus, Queen of the West Cruise Ship, Coastal Oregon, USA, 2002: Accidental Exposure	148
	Conclusion	150
	Essential Terminology	151
	Web Sites	151
	Discussion Questions	151
	References	152
Part III	The Threat to Agriculture	153
Chapter 8	Biological Threat to Agriculture	155
	Introduction	155
	The Importance of Agriculture	156
	Foreign Animal Diseases	157
	Agroterrorism	162
	Biosecurity from Field to Fork	168
	Animal Disease Outbreak Response	171
	Food Safety	180
	Conclusion	181
	Essential Terminology	182
	Discussion Questions	182
	Web Sites	182
	References	183
Chapter 9	Recent Animal Disease Outbreaks and Lessons Learned	185
	Introduction	185
	Foot-and-Mouth Disease	187
	Avian Influenza	190
	Classical Swine Fever	192
	Bovine Spongiform Encephalopathy	192
	Case Studies	194
	Protecting the Food Chain from BSE	200

	TABLE OF CONTENTS	ix
	Conclusion	201
	Essential Terminology	202
	Discussion Questions	203
	Suggested Reading	203
	Web Sites	203
	References	204
Part IV	Initiatives, Issues, Assets, and Programs	207
Chapter 10	Legal Aspects of Biosecurity	209
	Introduction	209
	Legislation and Presidential Directives	213
	Public Health and the Application of Law	218
	Transporting Biohazardous Materials	224
	Conclusion	224
	Essential Terminology	224
	Discussion Questions	226
	Web Sites	226
	References on HIPAA	226
	References	226
Chapter 11	Response at the State and Local Level	229
	Introduction	229
	Recognition: Surveillance	231
	Command and Coordination	233
	Response: Safety	239
	Response: Biosampling	242
	Response: Containment	246
	Conclusion	249
	Web Sites	251
	References	251
Chapter 12	Biosecurity Programs and Assets	253
	Introduction	254
	Mitigation: Establishing Policy and Oversight	255
	Preparedness	260
	Response and Recovery	268

	Conclusion	275
	Essential Terminology	276
	Discussion Questions	278
	Web Sites	278
	References	278
Chapter 13	Consequence Management and a Model Program	281
	Introduction	281
	Consequence Management	284
	Autonomous Detection Systems	285
	The Biohazard Detection System	287
	United States Postal Service CONOPS	294
	Conclusion	297
	Essential Terminology	297
•	Discussion Questions	298
	Web Site	298
	References	298
Chapter 14	Future Directions for Biosecurity	299
	Introduction	299
	The Dark Specter of Terrorism	304
	New Strategies for Prevention, Preparedness,	
	and Containment	306
	The Future of Biodefense Research	309
	Conclusion	311
	Essential Terminology	312
	Discussion Questions	312
	Web Sites	313
	References	313
Index		315