

CONTENTS

VOLUME 1

SECTION I. LABORATORY DESIGN, HANDLING AND MANAGEMENT

1. Control of Potential Carcinogenic, Mutagenic and Toxic Chemicals via a Protocol Review  
Concept and Chemistry Containment Laboratory 3
2. Approaches for Safe Handling Procedures and Design of a High-Hazard Laboratory for Life  
Scientists 31
3. Preparation, Packaging and Perversity of Chemical Carcinogens A Repository Viewpoint 49
4. Design and Operation of a Hazardous Materials Laboratory 79
5. Transportation of Materials from Radian Corporation's Hazardous Materials Laboratory 101
6. Management of Carcinogenic and Highly Toxic Chemicals in a Multidisciplinary Research  
Facility 129
7. Safe Handling of Chemical Carcinogens in the Research Laboratory 139
8. Design, Implementation and Monitoring of Laboratories for Handling Chemical Carcinogens

SECTION II. CHEMICAL MONITORING AND  
MEDICAL SURVEILLANCE

9. Monitoring Trace Amounts of Organic Chemicals in the Laboratory Atmosphere 169
10. State-of-the-Art Techniques for Monitoring Environmental Carcinogens,  
Mutagens and Teratogens 185
11. Development of a Personal Monitoring Device for the Detection of Direct-Acting Alkylating  
Agents 197
12. Analysis of Carcinogenic and Mutagenic Aromatic Amines 205
13. Use of Human Biological Monitoring for Risk Assessment of Mutagenesis and Carcinogenic  
Effect 247
14. Immunologic Assessment of Patients with Pulmonary Metaplasia and Neoplasia 259

SECTION III. INFORMATIONAL NEEDS AND CHEMICAL  
CLASSIFICATION

15. Preparation of Carcinogen Monographs 291
16. Mutagenesis, Carcinogenesis and Terastogenesis Information Systems 299
17. Synthetic Fossil Fuel Technologies: Health Problems and Intersociety Cooperation 313
18. Potential Industrial Carcinogenic and Mutagenic Alkylating Agents 329
19. Chemical Causes of Prenatal Maldevelopment 365

VOLUME 2

SECTION IV. STRUCTURE-ACTIVITY AND TOXICITY  
PREDICTION

20. Structure-Activity Analyses in the Classification of Toxic Chemicals 385
21. Application of Structure-Activity Studies to Develop Models for Estimation of Toxicity 411
22. High Toxicity and Co-Carcinogenic Potential of Certain Halogenated Aromatic Hydrocarbons

CONTENTS

VOLUME 1

SECTION I. LABORATORY DESIGN, HANDLING AND MANAGEMENT

1. Control of Potential Carcinogenic, Mutagenic and Toxic Chemicals via a Protocol Review  
Concept and Chemistry Containment Laboratory 3
2. Approaches for Safe Handling Procedures and Design of a High-Hazard Laboratory for Life  
Scientists 31
3. Preparation, Packaging and Perversity of Chemical Carcinogens A Repository Viewpoint 49
4. Design and Operation of a Hazardous Materials Laboratory 79
5. Transportation of Materials from Radian Corporation's Hazardous Materials Laboratory 101
6. Management of Carcinogenic and Highly Toxic Chemicals in a Multidisciplinary Research  
Facility 129
7. Safe Handling of Chemical Carcinogens in the Research Laboratory 139
8. Design, Implementation and Monitoring of Laboratories for Handling Chemical Carcinogens

SECTION II. CHEMICAL MONITORING AND  
MEDICAL SURVEILLANCE

9. Monitoring Trace Amounts of Organic Chemicals in the Laboratory Atmosphere 169
10. State-of-the-Art Techniques for Monitoring Environmental Carcinogens,  
Mutagens and Teratogens 185
11. Development of a Personal Monitoring Device for the Detection of Direct-Acting Alkylating  
Agents 197
12. Analysis of Carcinogenic and Mutagenic Aromatic Amines 205
13. Use of Human Biological Monitoring for Risk Assessment of Mutagenesis and Carcinogenic  
Effect 247
14. Immunologic Assessment of Patients with Pulmonary Metaplasia and Neoplasia 259

SECTION III. INFORMATIONAL NEEDS AND CHEMICAL  
CLASSIFICATION

15. Preparation of Carcinogen Monographs 291
16. Mutagenesis, Carcinogenesis and Terastogenesis Information Systems 299
17. Synthetic Fossil Fuel Technologies: Health Problems and Intersociety Cooperation 313
18. Potential Industrial Carcinogenic and Mutagenic Alkylating Agents 329
19. Chemical Causes of Prenatal Maldevelopment 365

VOLUME 2

SECTION IV. STRUCTURE-ACTIVITY AND TOXICITY  
PREDICTION

20. Structure-Activity Analyses in the Classification of Toxic Chemicals 385
21. Application of Structure-Activity Studies to Develop Models for Estimation of Toxicity 411
22. High Toxicity and Co-Carcinogenic Potential of Certain Halogenated Aromatic Hydrocarbons

Activity Aspects	421
24. Biological Generation of Free Radicals and Carcinogenesis	469
25. Quantitative Structure-Activity Relationships in Chemical Carcinogenesis: Mechanistic Schemes for Polycyclic Aromatic Hydrocarbons and Aromatic Amines	493
SECTION V. SPILL CONTROL, DEGRADATION AND DEACTIVATIO	
26. Carcinogen Spills: A Challenge to Laboratory Safety Capability	509
27. Degradation of Chemical Carcinogens: An Annotated Bibliography	519
28. Limitations of Photodegradation in the Decontamination and Disposal of Chemical Carcinogens	555
SECTION VI. DISPOSAL	
30. Disposal of Chemical Carcinogens, Mutagens and Teratogens from Research Facilities	575
31. Detoxification of Materials by Microwave Plasma	595
32. Molten Salt Destruction of Hazardous Wastes Produced in the Laboratory	617
33. Monitoring for Polycyclic Aromatic Hydrocarbon (PAH) Content and Mutagenic Activity In Products and Emissions from a Gasifier Demonstration Project	635
INDEX	653

Activity Aspects	421
24. Biological Generation of Free Radicals and Carcinogenesis	469
25. Quantitative Structure-Activity Relationships in Chemical Carcinogenesis: Mechanistic Schemes for Polycyclic Aromatic Hydrocarbons and Aromatic Amines	493
SECTION V. SPILL CONTROL, DEGRADATION AND DEACTIVATIO	
26. Carcinogen Spills: A Challenge to Laboratory Safety Capability	509
27. Degradation of Chemical Carcinogens: An Annotated Bibliography	519
28. Limitations of Photodegradation in the Decontamination and Disposal of Chemical Carcinogens	555
SECTION VI. DISPOSAL	
30. Disposal of Chemical Carcinogens, Mutagens and Teratogens from Research Facilities	575
31. Detoxification of Materials by Microwave Plasma	595
32. Molten Salt Destruction of Hazardous Wastes Produced in the Laboratory	617
33. Monitoring for Polycyclic Aromatic Hydrocarbon (PAH) Content and Mutagenic Activity In Products and Emissions from a Gasifier Demonstration Project	635
INDEX	653