

William C. Blackman, Jr.

BASIC HAZARDOUS WASTE MANAGEMENT



Second Edition

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WASTE MANAGEMENT**
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Preface

As the demand for a clean, safe environment grows, so also grows the public demand for protection from the horrors of hazardous waste mismanagement. Entrepreneurs of industry and commerce provide daily evidence of the general awakening to the need for reduction or elimination of hazardous waste sources and better management of the wastes that are generated. But the ever-present drive for new product advantage, competition, budget and capital restraints, and the activities of those who have not yet accepted their environmental responsibilities continue to threaten our environmental well-being. Meanwhile the “not in my backyard” (NIMBY) syndrome has reached the point that almost no site is acceptable as a hazardous waste treatment or disposal facility.

This clash of imperatives must be dealt with. We, as a people, cannot permit further episodes of uncontrolled release of hazardous materials/waste to threaten us. We, as a first world society, cannot tolerate the continuing aftermath of our history of uncontrolled hazardous waste disposal. But we, as a viable, self-supporting nation, cannot afford to force industry and commerce to their collective knees in the name of environmental purity.

The national conscience, as expressed in the form of research, technological advances, legislative craft, regulatory issue, fiscal support, and public participation, has brought forth great improvement in our hazardous waste management practice. But most of the easy achievements have been realized. The priorities and demands ahead will require a new generation of environmental managers, greater in number and skills than those who have preceded them.

Our traditional approach to the education of future environmental technologists and managers has guided the undergraduate through some basic skill curriculum, to then be followed by a graduate program in engineering or a science. This text is intended to provide an introductory framework, which can be the foundation for a program of study in hazardous waste management or a component of a related program. It is in an overview format, with many references to more detailed materials, to assist the student or instructor in expansion upon specific topics or to flesh-out complex issues. The instructor is encouraged to expand upon issues or topics to meet the perceived needs of students, regions, or industries. Topics for discussion or review are provided at the end of each chapter.

Organization and Content

The first 11 chapters deal with the topics, impacts, technologies, problems, and issues associated with “conventional” hazardous waste and the management practices and statutory and regulatory controls which have evolved around them. Chapters 12 through 14 introduce the closely related medical/infectious waste, underground storage tank, and radioactive waste management technologies and practices. Chapter 15 introduces the hazardous waste worker health and safety issues and regulatory structures that have become a major focal point and concern for managers and supervisors of hazardous waste facilities and sites.

Objectives are stated as the first element of each chapter. Insofar as is possible or appropriate, the chapters are structured to first outline the issue, subject, or technology, then to describe generic practice, and to then conclude with a summary of the statutory and/or regulatory approach. Historical perspective is provided where appropriate to locale, industry, or other emphasis.

The reader who is unfamiliar with the *Federal Register* (FR) and/or the *Code of Federal Regulations* (CFR) should examine these two entries in the Glossary before proceeding with the regulatory material covered in the book.

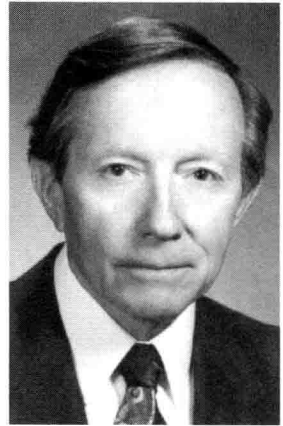
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Dr. Raymond E. Kary, of Kary Environmental Services, Scottsdale, AZ, provided excellent input to the second edition chapter on toxicology and the standards-setting process. Ms. Susan Y. Pickering, of the Technical and Compliance Integration staff, Waste Isolation Pilot Plant (WIPP) project, Sandia National Laboratories at Carlsbad, NM, contributed excellent advice and insight to portions of the radioactive waste management chapter. Mr. Harold L. Berkowitz, chemical engineer, consultant, and faculty associate at the Center for Environmental Studies, Arizona State University, provided extensive input and improvements to the new chapter on hazardous waste worker health and safety. The valuable assistance of all of the reviewers is deeply appreciated.

Without the editing and word-processing skills, as well as the extraordinary patience of Ms. Cindy Zizner, M.S., and the graphic skills of Mr. Steve Scott, these months of work on the revision would have been much less pleasant. Ms. Zizner and Mr. Scott are private practitioners in Tempe, AZ.

I sincerely appreciate the time and effort of the many contributors of photographic materials. The illustrations for which no acknowledgment is made are either my own or those which have been provided to me on earlier occasions. I can only apologize for lack of adequate memory regarding the sources of the earlier contributions.



The Author

William C. Blackman, Jr. is an environmental engineer and professor for the Center for Environmental Studies, Arizona State University. Professor Blackman was a career engineer and manager assigned to enforcement programs of the U.S. Environmental Protection Agency and predecessor agencies. As Technical Coordinator and Deputy Director of the EPA National Enforcement Investigations Center, he planned and directed early hazardous waste site investigations and participated in the development of the site investigation techniques and site health and safety procedures which have become standard practice.

In 1985, he was appointed Assistant Director, Arizona Department of Environmental Quality where he managed state and federal RCRA and Superfund programs. He joined the ASU faculty in 1989 where he teaches undergraduate and graduate courses in hazardous waste management and control of toxic air pollutants. He has developed and presents a program of seminars on hazardous waste management, underground storage tank management, emergency planning, and hazardous materials transportation regulation. He directs ASU participation in the California–Arizona Consortium, presenting OSHA health and safety training for hazardous waste and underground storage tank workers.

Professor Blackman received his B.S. in Civil Engineering and M.S. in Sanitary Engineering from the University of Missouri at Columbia, his MPA (Environmental Management) from the University of Southern California at Los Angeles, and his DPA (Environmental Management and Public Policy) from the University of Colorado at Denver. He has published a number of papers on water quality and pollution control and on hazardous waste site investigations and safety procedures.

Contents

1. THE HAZARDOUS WASTE PERSPECTIVE	
Objectives	1
Introduction	1
Dawning of the Problem	
Early Hazardous Waste Management	3
“Take It Out Back and Dump It”	13
“Treatment” and Other Assorted Techniques	14
Numbers and Impacts	17
Early Efforts — What Worked/Didn’t Work	20
Legislation/Litigation	20
Political	25
Administrative	26
Technical	27
International Aspects	29
Topics for Review or Discussion	31
References	31
2. DEFINITION OF HAZARDOUS WASTE	
Objectives	35
Introduction	35
The Chemist	36
The Life Scientist/Health Professional	37
The Environmentalist	37
The Legislator/Lawyer/Administrator/Diplomat	38
Implementing the RCRA Definition of Hazardous Waste	39
Hazardous Waste Characteristics	40
Listed Hazardous Wastes	42
The “Mixture” and “Derived-From” Rules	44
Hazardous Waste Identification Rule Development	44
Topics for Review or Discussion	46
References	46
3. PATHWAYS, FATES, AND DISPOSITION OF HAZARDOUS WASTE RELEASES	
Objectives	47
Introduction	47

Releases of Chemicals to the Environment	48
Releases to the Atmosphere	48
Releases to Surface Waters	49
Releases to the Land	50
Movement, Fates, and Disposition	51
Behavior of Waste Constituents	
Released to the Atmosphere	51
Movement of Hazardous Waste Constituents in	
Surface Waters	52
Pathways of Hazardous Waste Constituents Reaching	
Groundwater	52
Chemical Transformations	57
Topics for Review or Discussion	60
References	61
4. TOXICOLOGY AND THE STANDARD-SETTING PROCESSES	
Objectives	63
Introduction	63
Public Health Impacts	64
Toxicity Hazard	64
Toxic Actions	67
Risk Assessment and Standards	69
Other Hazards	73
Regulatory Application of Health Standards and Criteria	75
Technology-Based Standards	75
Risk-Based Standards	75
RCRA Standards	76
Topics for Review or Discussion	77
References	77
5. HAZARDOUS WASTE SOURCES/GENERATORS	
Objectives	79
Introduction	79
The Generator Defined	80
The Three Classifications of Generators	80
Wastes Generated	80
Regulatory Requirements	82
EPA ID Number	83
Pretransport Regulations	83
Accumulation of Waste	85
The Manifest	86
Record Keeping and Reporting Requirements	89
Exports and Imports of Hazardous Wastes	90
Generator Responsibilities for Restricted Waste Management	90
Generator Requirements	90
Appendix A	91
Appendix B	93

Topics for Review or Discussion	95
References	95
6. TRANSPORTATION OF HAZARDOUS WASTES	
Objectives	97
Introduction	97
Modes and Scope of Hazardous Waste Transportation	98
Highway Shipment of Hazardous Wastes	99
Railway Shipment of Hazardous Wastes	99
Accidents/Incidents Involving Hazardous Waste Shipments	99
Regulatory Structures	102
Department of Transportation Regulations	102
RCRA Regulations for Hazardous Waste Transporters	105
EPA ID Number	107
The Manifest	107
Handling Hazardous Wastes Discharges	108
Import-Export Activity	111
Topics for Review or Discussion	114
References	114
7. TREATMENT AND DISPOSAL METHODS AND PROCESSES	
Objectives	117
Introduction	117
Administrative and Nontechnical Requirements	118
Subpart A — Facilities That Are Subject to the Regulations	119
Subpart B — General Facility Standards	119
Subpart C — Preparedness and Prevention	120
Subpart D — Contingency Plan and Emergency Procedures	122
Subpart E — Manifest System, Record Keeping, and Reporting	123
General Technical Standards for Interim Status Facilities	124
Subpart F — Groundwater Monitoring	124
Subpart G — Closure, Post-Closure	127
Subpart H — Financial Requirements	128
Hazardous Waste Treatment	129
Activated Carbon Adsorption	131
Stripping	132
Neutralization and Precipitation	135
Solidification	135
Oxidation and Reduction	136
Biological Treatment	139
Subpart Q — Chemical, Physical, and Biological Treatment	140

Destruction of Hazardous Waste by Incineration	140
Subpart O — Incinerators	145
Subpart P — Thermal Treatment	146
Storage of Hazardous Waste	146
Subpart I — Containers	147
Subpart J — Tanks	148
Subpart DD — Storage in Containment Buildings	150
Land Disposal of Hazardous Wastes	152
Landfills	154
Subpart N — Landfills	159
Surface Impoundments	159
Subpart K — Surface Impoundments	160
Waste Piles	162
Subpart L — Waste Piles	163
Underground Disposal	163
Subpart R — Underground Injection	165
Other Treatment and Disposal Methods	167
Ocean Dumping	167
Ocean Incineration	167
Land Treatment	168
Subpart M — Land Treatment	168
Land Disposal Restrictions	169
Topics for Review or Discussion	171
References	171

8. HAZARDOUS WASTE MINIMIZATION, REUSE, AND RECYCLING

Objectives	173
Introduction	173
Waste Minimization Techniques	175
Source Reduction	175
Product Changes	177
Source Control	178
Hazardous Waste Recycling	182
Use and Reuse	182
Reclamation	184
The RCRA Waste Minimization Program	186
The Pollution Prevention Act of 1990	188
RCRA Regulation of Recycling	190
Topics for Review or Discussion	191
References	191

9. RCRA PERMITS, COMPLIANCE, AND ENFORCEMENT

Objectives	193
Introduction	193
Permits to Treat, Store, or Dispose of Hazardous Waste	194

Facilities Permitted	194
The Permitting Process	195
The Corrective Action Process	196
Compliance Requirements of RCRA	197
Self-Monitoring	197
Inspections	200
Enforcement of RCRA Regulations	201
Informal Actions	202
Administrative Orders	202
Civil Actions	203
Criminal Actions	203
Topics for Review or Discussion	204
References	204
10. ASSESSMENT TECHNIQUES FOR SITE REMEDIATION	
Objectives	205
Introduction	205
Identifying Problem Sites and Obtaining	
Background Information	207
Purpose	207
Cultural History	208
Technical Information	208
Regulatory History	208
Background Report	209
Site Assessment Procedures in the Private Sector	209
Pre-Phase I	209
Phase I	210
Phase II	210
Standardized Environmental Site Assessments	210
Environmental Audits	211
Compliance Inspections/Investigations by Regulatory	
Agencies	212
Purpose	212
The Inspection Plan	213
Conduct of the Inspection/Investigation	214
Site Evaluation	224
National Priorities List	224
Hazard Ranking System	225
Remedial Investigation/Feasibility Study	225
Record of Decision	225
Negotiations, Enforcement	225
Appendix A — ASTM Standard Practice for Environmental	
Site Assessments: Phase I Environmental Site Assessment	
Process — Appendix 2	226
Topics for Review or Discussion	228
References	229

11.	SITE REMEDIAL TECHNOLOGIES, PRACTICES, AND REGULATIONS	
	Objectives	231
	Introduction	231
	Remedial Objectives	232
	Programmatic Objectives	232
	Technical Objectives	233
	Onsite Remedial Techniques	235
	Containment Methods	235
	Extraction Methods	236
	Treatment Methods	245
	Destruction Methods	246
	Removal Technologies and Practices	249
	Excavation	249
	Mechanical and Hydraulic Dredging	254
	RCRA and Superfund Remedial Actions	254
	RCRA Corrective Actions	254
	Superfund Remedial Actions	255
	Topics for Review or Discussion	257
	References	257
12.	MEDICAL/BIOMEDICAL/INFECTIOUS WASTE MANAGEMENT	
	Objectives	259
	Introduction	259
	Definition and Characterization of Medical Waste	261
	Infectious Waste	262
	Medical Waste	262
	Infectious Waste Management	264
	Designation of Infectious Waste	264
	Segregation of Infectious Waste	265
	Packaging of Infectious Waste	265
	Storage of Infectious Waste	267
	Transport of Infectious Waste	267
	Treatment of Infectious Waste	270
	Steam Sterilization	271
	Incineration	274
	Emerging Treatment Technologies	275
	Disposal of Treated Waste	275
	Contingency Planning	276
	Staff Training	277
	Topics for Review or Discussion	277
	References	277
13.	RADIOACTIVE WASTE MANAGEMENT	
	Objectives	279
	Information	279
	Background	281

The Nature, Effects, and Measurement of Radioactivity	282
Radioactivity	282
Types of Radiation	283
Measurement of Radioactivity	285
Human Health Effects of Exposure to Radiation	286
Radiation Protection	287
Permissible Dose Concepts and Applications	287
The ALARA Concept	287
Pathways of Dispersion and Human Exposure	288
Physical Protection	289
Radiological Monitoring Programs	290
Regulatory Structures	291
Historical Development of Policies and Statutes	291
Statutory and Regulatory Framework	292
Department of Energy Management of Cleanup Programs	293
High-Level Radioactive Waste Management	293
HLW Defined and Described	293
HLW Treatment and Disposal	293
Transuranic Waste Management	295
TRU Defined and Described	295
TRU Disposal	295
Low-Level Waste Management	298
LLW Defined and Classified	298
Treatment and Disposal of LLW	299
Uranium Mine and Mill Tailings Management	301
Tailings Defined, Described, and Classified	301
Treatment and Control	302
Topics for Review or Discussion	303
References	304

14. UNDERGROUND STORAGE TANK MANAGEMENT

Objectives	307
Introduction	307
Leaking Underground Storage Tanks —	
Problems and Causes	309
Galvanic Corrosion	309
Faulty Installation	310
Piping Failures	310
Spills and Overfills	311
Compatibility of UST and Contents	311
Mobility of Leaked Hydrocarbon Fuels	312
Protection of Tanks and Piping from Corrosion	312
Protection by Sacrificial Anode	313
Protection by Impressed Current	313
Protection by Cladding or Dielectric Coating	313
Protection of Piping	313

Detection of Leaks from Underground Storage	
Tank Systems	313
Automatic Tank Gauging	314
Groundwater Monitoring	314
Soil Vapor Monitoring	314
Secondary Containment and Interstitial Monitoring	315
Statistical Inventory Reconciliation	315
Manual Tank Gauging	315
Tank Tightness Testing with Inventory Control	316
Detection of Leaks in Pressurized Underground Piping	316
Detection of Leaks in Underground Suction Piping	316
RCRA Subtitle I Regulations and Requirements	316
Background	316
Implementation Schedule	317
Requirements for New Petroleum UST Systems	317
Requirements for Existing UST Systems	318
Corrective Action Requirements	318
Financial Responsibility Requirements	319
The LUST Trust Fund	319
Closure of Underground Storage Tank Facilities	320
Permanent Closure	320
Exceptions to Permanent Closure	320
Temporary Closure	321
Topics for Review or Discussion	321
References	321

15. HAZARDOUS WASTE WORKER HEALTH AND SAFETY

Objectives	323
Introduction	323
Hazards Encountered on Hazardous Waste Sites	325
Chemical Exposure	325
Explosion and Fire	326
Oxygen Deficiency	326
Ionizing Radiation	327
Biologic Hazards	327
Safety Hazards	328
Electrical Hazards	328
Heat Stress	328
Cold Exposure	329
Noise Hazard	329
Other Physical Hazards	329
Hazardous Waste Operations and Emergency Response	330
Background	330
The HAZWOPER Summarized	331
Standards Applicable to Cleanup Sites	331

Standards Applicable to Treatment, Storage, and Disposal Sites	338
Standards Applicable to Emergency Response Teams	338
Other Important Topics and Compliance Issues	340
Respirator Selection Criteria	340
Applicable Air Contaminant Standards	342
Chemical Hazard Communication	342
Appendix A. OSHA Workplace Standards Which May Apply to Hazardous Waste Sites	343
Topics for Review or Discussion	348
References	349
Glossary	351
Index	369