

environment. This balancing act has been a constant struggle for EPA since the inception of the RCRA program.

In addition, the legal constraints of RCRA are such that subsequent recycling regulations have become quite complex. Under Subtitle C of RCRA, EPA has the authority to regulate hazardous wastes; hazardous wastes, however, are defined in the statute as a subset of *solid* wastes. Thus, EPA has developed the hazardous waste recycling regulations around a series of regulations that either include wastes and secondary materials in the definition of solid waste, or exempt those materials from that definition.’’

Point made.

The book jacket notes (and I concur) that the author goes beyond summarization of the law to help industry professionals truly understand regulations and how they relate to real world situations. To accomplish this task, he employed very useful techniques: flow charts, text boxes, tables, and checklists to allow a facility manager to review his/her site’s compliance status.

In addition to a detailed step-by-step review of RCRA’s provisions, Wagner discusses HMTA (Hazardous Material Transportation Act and its requirements for hazardous waste transportation), Superfund, CERCLA (Comprehensive Environmental Response and Cleanup Liability Act) and the cleanup of prior contaminated sites and spills.

Also discussed are regulations governing the spillage (cleanup thereof) and disposal of PCBs. RCRA corrective action, a program designed to clean up releases of hazardous wastes and/or hazardous constituents from hazardous waste treatment, storage or disposal facilities (TSPF), is discussed in Chap. 9.

In summary, Wagner has done an excellent job of describing all facets of the very complex US hazardous waste law. A small point, the OSHA (the Occupational Safety and Health Act) is highlighted on the book cover but is not discussed, although safety and handling hazards were a recurrent theme throughout the book. I would also note the author does an excellent job of citing the sections of the law (referring to the US Code of Federal Regulations) he is discussing.

The book has several appendices of which I note the following:

- List of RCRA Hazardous Wastes, CERCLA Reportable Quantities, and EPCRA Reportable Quantities.
- Information Sources (mainly USEPA, office addresses are given with telephone numbers plus web sites, the latter being the first such list I have seen in a text. State EPA addresses and telephone numbers plus web sites also are given.).

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Biofiltration for Air Pollution Control. Joseph S. Deviny, Marc A. Deshusses and Todd S. Webster, Lewis Publishers, Boca Raton, FL, 1998, \$69.95, 299 pp., ISBN: 1-56670-289-5

Firmly established in Europe, biofiltration technology has recently been introduced to North America and is being actively researched and utilized industrially.

The authors noted: “Gas-phase biological reactors utilize microbial metabolic reactions to treat contaminated air. Biological treatment is effective and economical for low concentrations of contaminant in large quantities of air. The contaminants are sorbed from a gas to an aqueous phase where microbial attack occurs. Through oxidative and occasionally reductive reactions, the contaminants are converted to carbon dioxide, water vapor, and organic biomass.”

“Biofiltration uses microorganisms fixed to a porous medium to break down pollutants present in an air stream. The microorganisms grow in a biofilm on the surface of a medium or are suspended in the water phase surrounding the medium particles. The filter-bed medium consists of relatively inert substances (compost, peat, etc.) which ensure large surface attachment areas and additional nutrient supply. As the air passes through the bed, the contaminants in the air phase sorb into the biofilm and onto the filter medium, where they are biodegraded. Biofilters are not filtration units as strictly defined. Instead, they are systems that use a combination of basic processes: absorption, adsorption, degradation, and desorption of gas-phase contaminants.”

The three authors of this book have been, for some period of time, actively involved in biofilter research. Many of the more than 200 references (found at the end of the book) are to their own papers. Consequently, the reader will find the book comprehensive and authoritative. I certainly did.

In nine chapters (see below) the authors cover virtually every aspect of biofilter technology, and, as I said, they reference their writing very well. The chapters, by title, are:

- Introduction
- Mechanisms of biofiltration
- Biofilter media
- Controlling factors and operation of biofilters
- Microbial ecology of biofiltration
- Modeling biofiltration
- Design of biofilters
- Biofilter startup and monitoring
- Application of biofilters

While I was tempted, in this review, to discuss all nine chapters, I did not because I believe the chapter titles adequately describe the book’s content and comprehensive coverage. But I could not resist commenting on the last chapter on the Application of Biofilters. In it, the authors in some detail discuss typical examples of field application of biofiltration. Data given for each (if available) include the following:

- Owner and location
- Builder
- Type of air stream
- Year of installation
- Medium type and volume of medium
- Number of layers and height of medium
- Biofilter construction type
- Humidification
- Air flow rate

- Empty bed residence time
- Pressure drop
- Average bed temperature
- Pollutants treated
- Biofilter controls
- Biofilter design and acceptance criterion
- Approximate investment costs
- Approximate treatment cost per 1000 m³ off-gas treated
- Performance

In summary, an authoritative, comprehensive, well-written book.

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Remediation and Management of Degraded Lands. M.H. Wong, M.W.C. Wong and A.J.M. Baker, Eds. Lewis Publishers, Boca Raton, FL, 1998, \$69.95, 364 pp., ISBN: 1-84934-118-3

Thirty-four papers presented at the International Conference on the Remediation and Management of Degraded Lands (place and date not given) have been included in this volume. The papers are grouped under three headings:

- Mine Management and Rehabilitation — 14 papers
- Management of Derelict Lands — 9 papers
- Soil Contamination and Remediation — 11 papers

As the reader can see, the emphasis was on mine waste and the major researchers (presenters) represented the UK, Australia and Hong Kong/China. Canada and U.S. researchers presented a limited number of papers, but none of the published papers dealt with contaminated industrial property (classified often as Superfund sites in the USA). I would suggest the topic represents an opportunity for the next conference on this topic to broaden its horizon.

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