

An interesting aspect of the chapter is the discussion of the reorganization of EPA's enforcement program with new experimental approaches to enforcement in the form of compliance assurance projects. New "buzz words" are "Reorganization: Cleaner, Cheaper, Smarter" and "Common Sense Initiative."

Following these two introductory chapters, are single chapters dealing with each of the U.S. major environmental laws:

- Resource Conservation and Recovery Act
- Underground Storage Tanks
- Clean Air Act
- Clean Water Act
- Oil Pollution Act
- Safe Drinking Water Act
- Comprehensive Environmental, Response, Compensation, and Liability Act
- National Environmental Policy Act
- Toxic Substances Control Act
- Pesticides
- Pollution Prevention Act
- Federal Facility Compliance Act
- Emergency Planning and Community Right-to-Know Act
- Occupational Safety and Health Act.

[Some of the above laws, although listed separately, are really part of the other laws, e.g. Underground Storage Tank regulations are governed by RCRA and Emergency Planning is a part of CERCLA.]

Continual changes in these laws require that those who labor in the environmental field must have the most recent information on the topic. This book provides that update.

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PII: S0304-3894(99)00147-8

Emerging Separation and Separative Reaction Technologies for Process Waste Reduction: Adsorption and Membrane Systems, Peter P. Radecki, John C. Crittenden, David R. Shonnard, John L. Bulloch, Eds., AIChE, New York, NY, 1999, US\$75.00, 319 pp., ISBN: 0-8169-0789-7

"This monograph is part of the American Institute of Chemical Engineers' Center for Waste Reduction Technologies' (CWRT) long-term objective of developing technologies and tools useful for promoting waste minimization practices in industry. The monograph, which focuses primarily on adsorption and membrane separation technologies, also contains information on the emerging science of reactor technologies using membranes, adsorption, and reactive distillation". Part of the information in the book came from a 1998 National Workshop on Process Waste Reduction via Separation Technologies and Separative Reactors which was held in New Orleans, LA.

In the first three chapters, the writers discuss the fundamental concepts important to each of the technologies and highlight broad areas of need for each technology.

The first chapter is entitled “Adsorption, Membrane, and Separative Reactor Processes: New Developments Offer Opportunities for Process Waste Reduction”. In this chapter, the author characterizes adsorption, membrane and separative reactor processes with respect to their application for pollution prevention. “It includes descriptions of factors which affect efficiency, covers technology status and new directions, and identifies research needs. A summary of applications for pollution prevention together with research needs follows”.

The authors highlight the processes in the three following sections in which I will summarize (by section heading) briefly:

- Process Modifications to Produce Less Pollution
 - Elimination of Solvents
 - Elimination of Purge Streams
 - Recovery of Catalysts
 - Absorptive Reactors
 - Adsorptive reactors
 - Membrane Reactors
- Recovery and Recycle of Potential Contaminants for Reuse within Production Unit Boundaries
 - Recovery from Plant Leak-off Streams
 - Recovery of Organics from Air
 - Wastewater Recovery
 - Recovery of Water from By-Product Streams
- Research Needs
 - More Adsorbents
 - Clean Regeneration Configurations
 - Better Membranes
 - Long Range Research Goals

The next two chapters deal separately and in detail with Adsorption (Chap. 2) and Membrane (Chap. 3) Technologies. Each chapter is approximately 100 pages long and the contributors discuss the technology of interest in great detail. The information benefits from the collaboration of 3–4 primary authors, 4–7 secondary (contributing) authors and 1–2 editors.

The fourth (and final) chapter reports on the “Findings of the national Workshop on Process Waste Reduction”. For the workshop, 89 industrial, academic and governmental representatives, gathered in New Orleans, LA, in the fall of 1998 “to discuss how adsorption, membranes, and separative reactor technologies may be used to reduce chemical process waste. The outcomes of the workshop include (1) documentation of perspectives from experts in these technology areas and (2) recommendations of candidate process and process streams for application of the subject technologies to achieve process waste reduction”.

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