

Book reviews

Proceedings of the Sixteenth Technical Seminar on Chemical Spills and Proceedings of the Phytoremediation Technical Seminar, May 31/June 1, 1999. Environment Canada, Ottawa, Ontario, Canada, 1999, 167 and 175 pp., respectively.

In back-to-back fashion, Environment Canada has published (in one volume) the proceedings of two seminars it held in Calgary, Alberta in the spring of 1999. This annual volume on spills is one I look for annually with anticipation. The addition of the Phytoremediation Seminar was new.

The spill proceedings contain the following 11 papers divided into three major sections:

- The Spill Problem
 - Solvent Vapour Monitoring in Work Space by Solid Phase Micro Extraction
 - Duplicating Conditions for Field Testing of Carbon Dioxide: A Modeller's Dream becomes a Technician's Nightmare
 - A Closer Look at the Use of a Portable Infra-red Analyzer for Low-Level Hydrocarbon Emissions
 - Sampling and Analysis of Shredded Automobile Residue
 - Coupled Supercritical Fluid Extractor-Gas Chromatography/Mass Spectrometry for Quick Extraction of Organic Analytes from Solids
 - Summary of Spill Events in Canada 1984–1995
- Countermeasures Technology
 - Decontaminating Residences Sprayed with Methyl Parathion
 - The Evaluation of the Steam and Iron Assisted Leaching (SIAL) Process
- Fate and Effects
 - Sources, Pathways and Environmental Fate of Organochlorine Compounds in the Arctic
 - Use of Microtox^R and a Lux-modified *Pseudomonas fluorescens* to Assess the Toxicity of Salinity Contaminated Sites
 - The Dilemma of Agrochemicals

Environment Canada dominated the presenters (not surprisingly) and six of the 11 papers were authored or co-authored by M. Fingas, a member of the editorial board of this journal. Participants from the U.S. EPA in Edison, NJ, were author or co-author of two papers.

Phytoremediation, a relatively new topic (method) in site contamination abatement, but one the focus of much research recently was the subject of 12 papers in the second half of the book (three of which were poster session presentations). The papers were categorized under the following titles:

- Heavy Metals
- Hydrocarbons
- Poster Session.

GARY F. BENNETT

PII: S0304-3894(99)00119-3

Environmental Law Handbook, Fifteenth Edition, Thomas F.P. Sullivan (Ed.), Government Institutes, Rockville, MD, 1999, \$89.00, 697 pp., ISBN: 0-86587-650-9

At the end of the first chapter of the 15th edition of this book (the first edition was published 26 years ago), Sullivan writes (and I fully agree).

“The need for a working understanding of the environmental law system is probably more crucial now that it ever has been. Our actions and inactions, what we know and — perhaps most importantly — what we ought to know, can have dramatic effects on the financial well-being of organization, as well as the financial and personal futures of the individuals who work for them. Failure to know is no excuse. Under the legal theory of constructive knowledge, for those involved in the environmental field, knowledge may be presumed.

Knowledge of, and strict adherence to, the mandates of the environmental laws is not a luxury for companies and organizations. Financial viability and profitability, the bottom line for businesses, and personal freedom, the bottom line for individuals, may rest on this knowledge and how we use it. I hope that this chapter and this *Environmental Law Handbook* will help motivate you to aggressively seek both the information and the understanding needed to achieve full compliance with the letter and spirit of the environmental laws.”

Having given a deposition in a Superfund-like case the week preceding my review of the book, I could not agree more with the need for engineers and scientists to be familiar with environmental law and the workings thereof. This book sets the standard for conveying that knowledge, each separate chapter being authored by a different attorney [each said to be a “recognized environmental legal expert in the area”].

The book begins “at the beginning” with an excellent chapter on the Fundamentals of Environmental Law, with Sullivan explaining the meaning of such general legal terms as tort, nuisance, trespass, negligence, etc. But Sullivan really focuses on environmental law; indeed, his first section heading is “Environmental Law as a System.”

Enforcement and Liability is the title of Chapter 2, in which the author (T.L. Adams) writes, “Through the years, with the passage of the air, water, and waste laws, the EPA and the DOJ have become increasingly systematic, sophisticated, and skilled at finding and punishing corporations and individuals for environmental violations.” High fines and long jail terms (I just read in another publication of one man sentenced to 14 years in jail) often result from prosecution.

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.

GARY F. BENNETT

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”.

GARY F. BENNETT