

through voluntary direct action by industry. Reports on 17 chemicals are used to measure improvement in toxic chemical management. Note also Appendix P for further data.

In conclusion, the book is a very valuable guide to the whole scene where toxic chemicals are concerned or considered. The publisher promises another edition in 1997; we look forward to it with much interest.

HOWARD FAWCETT

*Practical Handbook of Ground-Water Monitoring*, by D.M. Nielson (Ed.), Lewis Publishers, 1991, 715 pp., US\$ 99.00, ISBN 0-87371-124-6

This book truly lives up to its title and more as a comprehensive handbook on most aspects of ground-water monitoring. The 15 chapters are well organized and cut across the different circumstances under which monitoring may be required. As a consequence, the book gives a well rounded perspective on technical issues. Each chapter is written by an expert or team of experts with hands-on, practical experience.

The book begins with a review of the requirements in different regulatory programs that give rise to the need for monitoring ground water systems. The second chapter is an extensive treatise on the design of ground-water monitoring systems. It contains numerous examples of different geologic settings and varying contaminant scenarios which will affect the nature of an optimal design. As such, the text promises to be a handy look-up reference.

Chapter 3 contains a brief discussion of the philosophy and purpose of site investigations as relates to environmental restoration programs. This is followed by a very quantitative chapter on technology for monitoring the vadose zone which describes the basic phenomena that dictate water and contaminant movement in the vadose zone and the methods available for measuring that movement. The fifth chapter discusses the nature and utility of technical approaches to remote sensing and geophysical surveys. Guidance is provided to help select the best technique for a given task. Chapter 6 contains a discussion of drilling technology and soil sampling/characterization techniques. A practical guide is included to aid in the selection of the best drilling technology for a particular application.

Chapter 7 addresses the design of monitoring wells themselves and the selection of materials of construction. The eighth chapter provides information on post construction considerations such as well development, surveying maintenance, rehabilitation and abandonment, while the ninth chapter is a treatise on the collection and interpretation of water level measurements. Chapter 10 provides definitions of important aquifer properties and a description of methods and procedures for measuring the same. It is followed by chapters on water sample collection and sample analysis that summarize available methods and indicate proper approaches to sample program design. The thirteenth chapter is directed to a discussion of the organization and evaluation of water quality data. The final two chapters cover health and safety

considerations and decontamination procedures for sampling equipment. The book concludes with an extensive glossary.

I strongly recommend this book to anyone actively involved in ground-water monitoring. It will serve both as a text book for newcomers and a reference for experienced professionals. The heavy emphasis on quantitative aspects and comprehensive nature of the offerings are a welcome addition to the current literature and a good counterpoint to books written on specific programmatic themes such as site restoration or waste disposal. This book should have an excellent shelf life.

GAYNOR DAWSON

*Standard Handbook for Solid and Hazardous Waste Facility Assessments*, by Martin N. Sara, Lewis Publishers, 1994, 925 pp., US\$ 89.95, ISBN 0-87371-318-4

This book is one of the first true handbooks available on the techniques and technology applied to conduct assessments of contaminated sites and sites at which new facilities may be constructed. The assessments addressed here are site characterization studies as opposed to compliance assessments. As such, the technologies discussed include sampling and analysis, geophysical surveys, aquifer testing and other means of describing the chemical and physical site characteristics that affect the fate and transport of chemicals in the environment. The text provides detailed diagrams and descriptions of the various methods available for characterization as well as comparative information to assist in the selection of the best approach for a given situation.

The chapters are organized to flow in the order that activities are typically undertaken during an assessment. After a brief introduction, the text moves right into a description of different elements of site assessments such as site reconnaissance, the preliminary conceptual model, the Phase I report, greenfield siting, monitoring system evaluations, and environmental audits and property acquisition reviews. Under Phase II surficial field investigations, the narrative covers the technical aspects of topographic mapping, soils classification, geologic mapping, geophysical surveys, hydrology, land use mapping, field ecology surveys, historic and archaeologic surveys, and fault investigations. The chapter on subsurface investigations similarly covers the full range of parameters and methods of interest. Chapter 5 on environmental testing describes the methods used to measure key properties such as hydraulic conductivity, unsaturated conductivity, aquitard leakage, and soils characteristics.

Other chapters are devoted to fractured rock assessments, data interpretation techniques, development of a conceptual model, monitoring system design, organization and assessment of water quality data, and reporting. Appended materials include a glossary, models for writing a request for proposal, a scope of work and a statement of work; chemical parameter lists for various regulatory programs; and model specifications for wells and ground-water supply systems.