

Book Reviews

Risk-Based Contaminated Land Investigation and Assessment, Judith Petts, Tom Cairney, and Mike Smith, John Wiley and Sons, New York, NY, 1997, 334 pp., ISBN: 0-471-96608-8.

This book presents a straightforward approach to risk-based contaminated land assessment. The authors detail a systematic algorithm for the investigation and assessment process. They breakdown each of the primary aspects of the algorithm, compare them to the appropriate risk-based assessment steps that are suggested by the United States and various European governments, and detail the limitations and benefits of each approach. The methodology proposed by the authors contains the same essential criteria used by government agencies, but the authors promote the idea that each contaminated site is unique and thus, requires an approach that is flexible enough to address the differences in site conditions.

This book does not address the risk assessment associated with ecological concerns. It concerns itself only with risk assessment as it pertains to humans.

The authors discuss each phase of risk-based contaminated land assessment thoroughly, noting the dangers and pitfalls associated with each phase. They also discuss how each of the phases are inter-related. They use numerous cases studies to emphasize these issues.

‘Chapters 1–3 provide background to contaminated land risk management, developing approaches, risk assessment framework, and site investigation as a component’. The systematic approach to risk-based contaminated land assessment is introduced in these chapters.

‘Chapters 4–7 discuss site investigation as a component of the risk assessment process. They address the means of optimizing the gathering of systematic information which is representative of the contaminant conditions and environmental pathways by which contaminants may move, and relevant to the understanding of the characteristics which may be at risk’. Here, the authors include chapters on evaluating the contamination in the groundwater as well as in the soil vapor phase with respect to the site investigation process.

‘Chapters 8–10 discuss the assessment of the collected information and data’. Risk assessment is partitioned into qualitative, semi-quantitative, and fully quantitative evaluations. The authors discuss the appropriateness of each of these in the context of the risk assessment process. These chapters include discussions of risk ranking and risk assessment determined from exposure evaluations.

The last chapter, Chapter 11, discusses the final step in the risk assignment process, decision-making, and emphasizes risk communication within this process.

This book should be a mandatory reading material for any individual or organization that is involved with remediation of contaminated land.

DOUGLAS YOUNG
Chem. Eng.
The University of Toledo
Toledo, OH 43606
USA

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Design of Remediation Systems, Jimmy H.C. Wang, Chin Hong Lim and Greg L. Nolen, CRC Lewis Publishers, Boca Raton, FL, 1997, \$59.95, 263 pp., ISBN: 1-56670-217-8

In the preface, the authors write:

“This book was written to provide a guide for environmental consultants, managers, owners and operators, regulators, and students to perform a remediation design from the assessment phase to completion. It strives to provide engineers with the tools to conduct a pilot test, apply the results, and design a system that is practical and efficient.” I believe they have.

In the text, the authors have focussed on the problem of petroleum-contaminated sites (not trying to encompass all possible contaminants), presenting a plethora of useful information and guidance on ‘remediation practices from the design engineering point of view.’

The book has eight chapters. Following the introductory chapter is a refresher (chapter) course on the chemistry of hydrocarbons (a chapter I think could have been omitted from the chemical engineer’s perspective). However, perhaps geotechnical engineers would say the same about Chapter 3, on geology and hydrogeology concepts, a chapter I found most useful.

For me, the book really begins with Chapter 4, which evaluates the general design approach from remediation project and takes the reader step-by-step through a typical design process. Included in this chapter is a discussion of design based on risk-based corrective action.

The ‘meat’ of the book is found in the next three chapters:

- Design of Soil Vapor Extraction Systems
- Design of Bioremediation Systems
- Design of Pump and Treat Systems

Each chapter is comprehensive with both theoretical and practical information given. However, regarding the theoretical, I would have liked to have seen numerically worked examples for many of the theoretical (and practical) design equations presented, especially air stripping.

Minor criticisms of the text in my analysis include:

- a missing description of air stripping tower packing;