

Dealing with Contaminated Sites: From Theory towards Practical Application. Frank A Swartjes Editor

Published by National Institute of Public Health and the Environment (RIVM), Bilthoven, The Netherlands. Published 2011. Hardback, 1114 pp. ISBN:978-90-481-9756-9.

The book, 'Dealing with Contaminated Sites' is an excellent tome detailing all of the three key scientific issues surrounding contaminated sites: human, ecological and groundwater assessments followed by a discussion of the socioeconomic issues involved in management and clean up of contaminated sites. There are seven sections, Part I: Introduction, Part II: Site Investigation, Part III: Human Health Aspects, Part IV: Ecological Aspects, Part V: Groundwater-Related Aspects, Part VI: Risk Management and finally, Part VII: Frameworks. The organization of the book is excellent with each section containing a framing chapter followed by detailed discussions of key issues involved in each stage. For example, for the human assessment section, the book begins by framing the problem of managing contaminated sites in terms of site description and assessment, followed by detailed assessments of toxicity and risk associated with a contaminated site. For example, Chapter 5 by Swartjes and Cornelis on Human Health Risk Assessment provides a solid overview of the subject area of Human Health Risk Assessment. Following this, other sections provide highly detailed descriptions of specific problems such as Chapter 7 by Cave, Wragg, Denys, Jondreville and Feidt which deals with bioavailability of pollutants in soil ingested by humans, or Chapter 8 by McLaughlin, Smolders, Degryse and Rietra on human-plant transfer of metals.

Throughout it all, the authors have kept a tight focus on terrestrial contaminated sites and all the issues surrounding these sites that are specific to terrestrial toxicology and not commonly found in aquatic toxicology or agronomy. For example, in Chapter 2 authored by Meuser and Van de Graaff, there are explicit descriptions of an 'urban soil' and what this implies for risk assessment, as well as 'soil quality' in an urban context. In my opinion, this is what makes this book a superb addition to one's library. Too often, site management tries to extrapolate from agronomic soil science to the unique urban situation encountered at contaminated sites, or alternatively, provides risk assessment procedures that are devoid of the context in which terrestrial urban sites exist. This book avoids these pitfalls and provides some much needed specific contributions to issues unique to terrestrial contaminated sites. For example, vapour intrusion is a problem that occurs uniquely at terrestrial contaminated sites. Chapter 10 authored by McAlary, Provoost and Dawson provides an excellent discussion on vapour intrusion into urban dwellings which includes: (a) an overview of the process, (b) environmental fate models used and their issues and (c) how to try to sample and quantify this vapour intrusion. Thus Chapter 10 can stand alone as an excellent introduction to vapour

intrusion and for individuals who are not expert in the area of vapour intrusion, this Chapter provides enough information and detail for these individuals to launch their own education of this issue. Another common problem at terrestrial contaminated sites is how to sample effectively both scientifically and economically. In Chapter 4, authored by Brus, this issue is discussed in detail and with sufficient rigour that one can apply the lessons from this Chapter to one's own work. In fact, I am currently looking at two other complete books on this subject on my bookshelf and I would not be remiss in stating that the Chapter by Brus encapsulates the essentials of the issue and most importantly, explicitly includes the economics of under or over-estimating contaminated soil volumes.

Section IV on Ecological Aspects which includes Chapters 14 (Posthuma and Suter), 15 (Rutgers and Jensen) and 16 (Hodson, Vijver and Peijnenburg) is one of the best collection of soil ecological risk assessment chapters published in recent years. These sections provide concise, good reviews of the current state of the knowledge as it applies to contaminated terrestrial sites and importantly highlight the limitations of current approaches and follows the format used so successfully in Section III on Human Aspects. Section V on Groundwater-Related Aspects provided a good introduction for non-groundwater experts on how soils and groundwater interact, and what the models mean. I especially appreciated Chapter 19 by Rolle, Maier and Grathwohl on reactive transport as this is a field that has been more opaque in recent years and is now routinely being assigned to specialists in a typical risk assessment. Thus, this Chapter 19 functioned much like Chapter 10 and provided enough background and detail for me to have meaningful conversations with the geological modellers about their models and how they apply to the management of a contaminated site. As a result, I found that the contributions in Sections I-V deal with soil science issues specific to contaminated sites in a meaningful, thoughtful and substantive manner.

This is an ambitious book that deals with contaminated sites from beginning to end. It provides an excellent framing for the assessment and management of sites and provides chapters with enough detail to provide a reader with a launching point to delve into the literature. It is very well suited to an upper year/graduate level course in contaminated site management because it deals with all four disciplines involved in contaminated site managements provides substantive introduction to the key issues in these disciplines that influence site management and remediation. I highly recommend adding this book to your library.

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Swartjes, F.A. (Ed.)

2011, XXVIII, 1104 p. 109 illus., Hardcover

ISBN: 978-90-481-9756-9