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Book review

CHEMICAL ANALYSIS OF CONTAMINATED LAND

K. Clive Thompson, C. Paul Nathanail (Eds.)
Analytical Chemistry Series
Blackwell Publishing, USA/Canada CRC Press, Boca Raton, ISBN: 0-8493-2810-1, 2003, XV+290 pags.

The book *Chemical Analysis of Contaminated Land* edited by K. Clive Thomson and C. Paul Nathanail provides a description of chemical analysis of potentially polluted land. Also, the book describes the methods of interpreting results from the risk assessment point of view.

The book comprises ten chapters, sharing the experience of the authors in the analysis of contaminated land.

Chapter 1, *The risk assessor as the customer* (by K. Clive Thomson and C. Paul Nathanail) represents an introductory chapter that provides essential information to risk assessors regarding sampling and analysis of potentially contaminated sites. Also, in this chapter it is stressed that effective contaminated land management requires an integrated approach from a multidisciplinary range of scientists and other professionals.

Chapter 2, *The requirements of the analytical method* (by David Westwood) sets out to provide advice and guidance to analysts and to others on the selection of appropriate methodology, on why and how methods should be fully validated, and to provide stimuli to those who consider what actions may be necessary to ensure correct interpretation of data.

Chapter 3, *Initial sample preparation* (by Mark Allen) covers the problem of sample homogenization and the initial sample preparation for analysis.

Chapter 4, *Metal analysis* (by Patrick Thomas) covers the analysis of metals and elemental analysis. The vast majority of elemental analysis is related to total analysis, in which all forms of the substances of interest are expected and detected and a single total concentration is reported for each element. However, the toxicity of the various species of a given element (e.g. Cr^{III} and Cr^{IV}) can vary by orders of magnitude. Consequently the analysis of all species, where individual forms of the substance of interest are analyzed, gains importance.

Chapter 5, *Analysis of inorganic parameters* (by George E. Rayment et al.) deals with the analysis of inorganic parameters such as electrical conductivity, pH, chloride, redox, cyanide, cyanate, thiocyanate, water-soluble boron, various sulfur species including sulfide and pyrites. This chapter also covers asbestos analysis.

Chapter 6, *Petroleum hydrocarbons and polyaromatic hydrocarbons* (by Jim Farrell – Jones) covers the analysis of petroleum hydrocarbons including polyaromatic hydrocarbons (PAHs). There is some disagreement on how this analysis should be carried out and results interpreted, and this chapter attempts to deal with these complex issues.

Chapter 7, *Volatile organic compounds* (by Sue Owen and Peter Whittle) discusses the presence of VOCs in soil and the three common methods of analysis for these substances. This chapter also reviews the various sampling and subsampling options for VOCs.

Chapter 8, *Non-halogenated organic compounds including semi-volatile organic comounds (SVOCs)* (by Joop Harmsen and Paul Frintrop) discusses the difficulties of pre-treatment and extraction of wide range of semi-volatile organic substances from various soil matrices.

Chapter 9, *Leaching tests* (by Leslie Heasman) deals with tests that are used to assess the mobility of pollutants and their rate of release from soil matrix into groundwater. It should be mentioned that leaching tests are a common component of groundwater risk assessment.

Chapter 10, *Ecological assessment and toxicity screening in contaminated land analysis* (by Andreas P. Loibner et al.), the final chapter, deals with potential uses of toxicity tests in contaminated land analysis and covers ecological assessment and toxicity screening. This approach can give useful information on the overall potential toxicity. It can be used to detect potential contamination and also to confirm that bioremediation processes have been effective in reducing toxicity.

It should be mentioned that microbiological analysis is not covered in this work.

The book is addressed equally to analytical chemists and risk assessors (environmental scientists or engineers) who are responsible for performing analyses of potentially contaminated soil samples.

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