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BOOK REVIEW

Determination of Organic Compounds in Soils, Sediments and Sludges

By T. R. Crompton

E&FN Spon (Taylor & Francis Group), New York, 2000,

ISBN 0-419-25270-3 xxvii + 490 pages

Price: \$149.00

T. R. Crompton has accomplished the Herculean task of summarizing the literature (up to 1998) for the determination of organic and organometallic substances in soils, aquatic, and marine sediments and sludge. Although previous books address the analysis of such compounds in water, this is the first book dedicated to the analysis of pollutants in soils, sediments, and sludges, matrices that typically contain a variety of interfering compounds and offer significant analytical challenges. Overall, the book is relatively easy to read; the "camera ready" manuscript produced by the author contains clear tables, figures, and font. Classes of compounds addressed in this text include a wide variety of mostly anthropogenic compounds such as insecticides, herbicides, fungicides, fertilizers, petroleum-related compounds, detergents, as well as humic/fulvic acids. The initial chapter provides an overview of the types of analytical instrumentation that is commonly used to analyze organic compounds in soils, sediments, and sludge. Each of the next 12 chapters is dedicated to the analysis of a class of compounds. Chapter topics include hydrocarbons, surface active agents, oxygen-containing compounds, halogen-containing compounds, nitrogen-containing compounds, phosphorous-containing compounds, sulfur-containing compounds, pesticides (insecticides, growth regulators, fungicides), mixtures of organic compounds, metalloids, organometallic compounds, and finally miscellaneous organics. In these chapters, the author briefly summarizes the scientific literature with respect to the analytical techniques covered in Chapter One. Although details are generally insufficient to permit readers to duplicate reported analyses, cited references are listed at the end of each chapter. Chapter Fourteen emphasizes the importance of sampling procedures and provides a good overview of sample homogenization, and destructive and nondestructive sampling approaches. The final two chapters discuss accumulation processes in sediments, and the disposal of wastes to land. These chapters provide an excellent justification for the importance of the material presented in this book, and would perhaps serve the reader better had they constituted the initial book chapters. The book concludes with an appendix of instrument suppliers, an extremely brief listing of the United Kingdom Ministry of Agriculture,

Fisheries, and Foods Methods for soil analysis, and a subject index.

This book provides a good initial reference for a variety of graduate students, scientists (chemists, biologists, soil scientists, toxicologists, environmental scientists, etc.), managers, data/grant reviewers, and public health professionals who may be faced with reviewing data and/or developing an analytical approach for the analysis of organic compounds in difficult matrices such as soils, sediments and sludges. Mostly, however, this book simply reviews the literature. The author injects very little analysis to the literature summary. For example, there is no mention of the fact that analysis by thin-layer chromatography is generally qualitative (nonquantitative) compared to analysis by gas chromatography (GC) or high performance liquid chromatography. For the analysis of halogen-containing compounds (such as organochlorine insecticides), there is no mention of the selectivity afforded by GC-electron capture detection. I believe a large number of readers would benefit greatly from a discussion section at the end of each chapter. This discussion might include a table that compares the variety of detection methods with respect to limits of detection, cost, sample throughput, and reproducibility. Because many chapters contain mostly references that are more than 20 years old (i.e., citations pertaining to the use of packed GC columns), the discussion section could help the reader determine the advantages of one technique over another and which techniques are commonly used today versus those which are antiquated. Perhaps this would be easier if individual chapters were written by pertinent experts or at least if there were multiple editors rather than having one author compile and edit the entire book. Additionally, a brief summary of the author's experience/expertise would possibly contribute credibility to this book. Another small addition that would increase the value of the book would be the inclusion of the article titles in the cited references. This would make it easier for readers to determine the value of citations prior to obtaining the article.

A subjective aspect of the text is the author's tendency to recommend instrumentation manufactured by Swedish companies. It's been my experience that most major manufacturers of popular instrumentation offer very comparable instrumentation. As such, cost and service (which tends to vary by geographic region) often determine which instruments offer the best value. I doubt that the author's recommendations are valid outside of Sweden. Also, as models are continuously being modified by most manufacturers, the circa 1998 listing of models and options is already dated and somewhat incomplete.

Because this book is potentially valuable to environmental professionals with training in a wide variety of disciplines, the addition of chemical structures to represent the various classes of compounds discussed in this book might be helpful. Another option would be to include an appendix containing the structures of the specific compounds discussed in the preceding chapters.

Personally, I enjoyed reading this book. It gave me several ideas for analytical projects that I am currently working on in

my laboratory. All in all, this book is a very noble undertaking. Despite some shortcomings, this book is a very valuable text for scientists and regulatory personnel in a wide variety of disciplines.

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