proceedings and are also, together with another 96 selected papers, available as PDF-files on the CD-rom disk. Titles of 135 poster presentations, some with photographs of the full displays, are also available in a PDF-file. All PDF-files are searchable with 'ADOBE Acrobat' software. Searchability is, however, hampered by a failure of the search machine to properly recognize the theme codes in the abstracts and by the absence of keywords. Also, the 'Table of Contents' of the written proceedings is not structured according to the conference themes. Searching for specific elements shows that Cd in soils is discussed most, closely followed by Zn, Cu, Pb and Ni. Aspects of pollution of surface water, sediments and groundwater are also discussed.

In summary, it can be said that information in the proceedings on aspects of a wide range of toxic elements in the environment is extensive and a useful entry to recent research and to background literature. The 2 years it has taken for the proceedings to be published is, however, too long. The proceedings should have appeared well before the 4th conference, which was held at Berkeley (USA) in July 1997. A 5th conference on the same theme is scheduled for July 1999 in Vienna (Austria).

ROBERT GERRITSE
64 Hamer Avenue, Wembley Downs,
WA 6019, Australia
E-mail address: geoprocc@space.net.au

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Guidelines for quality management in soil and plant laboratories. FAO Soils Bulletin 74. L.P. van Reeuwijk, with a contribution by V.J.G. Houba. FAO/ISRIC, Rome/Wageningen, 1998 Softcover, vi + 143 pp. U$20. ISBN 92 5 104 065 6.

This new book gathers in one place some sound advice on many aspects of quality management in soil and plant analysis laboratories. The book encompasses all aspects of laboratory management, including data quality control, procedural and documentation issues, laboratory organization and staff responsibilities, safety, equipment and materials handling, statistics, and various topics related to data quality.

The book begins with principles of laboratory organisation and overall documentation, particularly the production and use of Standard Operating Procedures (SOPs). At first, the emphasis on documentation seems a bit excessive, but the author emphasises a step-by-step approach in building a quality management system, in which layers of complexity are added only as they are warranted. The true utility of well-documented SOPs is demonstrated in several later examples regarding equipment use. The examples contain complete and unambiguous instructions, coupled with useful data on calibration and

accuracy of the instruments. Similar advice on producing concise but clear instructions for analytical method SOPs, including how *not* to write instructions, is also included. The message is clear that a well-written SOP can go far in eliminating the pitfalls of word-of-mouth explanations, notes stuck in the apparatus drawer, handwritten alterations of methods and the like.

The final chapters deal with statistics and quality control, and are perhaps the most useful. Basic definitions of precision, accuracy and bias (among others) are given, but unlike most general treatments of the subject in laboratory manuals, which show only the qualitative ''target with scattered arrow hits'' graphic, the author backs up the graphics with precise statistical definitions and example calculations. A review of pertinent statistical tests is given, including concrete examples of when each test is, or is not, appropriate. A prior familiarity with statistics is useful.

Three chapters deal with procedures for ensuring and quantifying analytical data quality, most of which are well-known: use of calibration graphs, cross-checking of standards, blanks and detection limits, and so on. Sections on method validation and testing for robustness are probably less widely appreciated, and are well-explained, again with specific examples. Internal quality control procedures, such as the use of control charts, and the preparation and testing of control samples, are detailed. Finally, an overview of external quality control is given, detailing various types of interlaboratory tests and their uses.

A disappointment was the slight attention given to computer-aided computation and record-keeping, and the space given to DOS-based software, which is essentially obsolete even in developing countries. This is a minor point, and in fact the presentation of basic statistical procedures rather than computer-application-specific routines is a strength of the book, for the basic knowledge can always be applied regardless of the software.

In conclusion, this book provides a concise and coherent compilation of basic quality management principles and techniques. Any laboratory striving for improved and consistent quality will find the clearly written and well-organised book useful.

PAUL C. SMITHSON
International Centre for Research in Agroforestry, P.O. Box 30677, Nairobi, Kenya

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