

## BOOK REVIEW

### **CARBON, NITROGEN AND SULFUR POLLUTANTS AND THEIR DETERMINATION IN AIR AND WATER**

by J Greyson

Pub: Marcel Dekker Inc, New York and Basel, 1990, pp 376

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The author directs this monograph to engineers and chemists who are not normally trained in analytical chemistry. It is a very readable book with much information starting at "first principles" from the origin of C, N and S elements as pollutants to their current impact on the environment. The text is divided up into four major parts. In first Part I (Introduction) consisting of two chapters, the effects of past and present pollutants on the environment are reviewed tracing events from the early man (BC) to the "killer smogs" of the 19th century following the industrial revolution. In Chapter 2 the various biosphere and biogeochemical cycles relating to C, N and S elements are discussed.

In constructing these early chapters the author is to be congratulated on dealing with both the complexity and the high volume of the subject matter already published.

In Part II, consisting of 3 Chapters, the chemistry of C, N and S is discussed starting from their basic electronic configuration and moving onto the basic life forms of these elements in nature and their interactions with other elements. Also discussed is the biochemistry of these three elements in the various cycles such as the Krebs cycle (citric acid cycle). In Chapter 4 the three elements (C, N and S) in water pollution are reviewed and their mode of entry paths, including a mention of radioactive waste materials, and subsequent sewage treatment. Chapter 5 discusses the three elements (C, N and S) in air pollution including the effects of CFCs and on ozone depletion.

Part III is the major part of the text with 6 Chapters taking the reader into methods for the analysis of C, N and S in the environment by physical methods using various types of spectrometry (Chapter 7), electrochemical methods (Chapter 8), chromatographic methods, including super critical chromatography (Chapter 9), chemical methods (Chapter 10) and bioanalytical methods (Chapter 11). There is a useful introduction which mentions the criteria that are used for selection of analytical methods (Chapter 6) i.e. "more than one way to skin a cat". Perhaps surprisingly this part of the text does not specifically discuss the use of chemical or biological sensors as analytical tools.

Chapter 11 on bioanalytical methods includes a section on basic radioimmunoassay and non-radioactive immunoassay methods.

The final Part IV consists of just one chapter (12) on Commercial Equipment currently available from field use instrumentation to laboratory instruments with a useful table of Directories of Instrument and Laboratory Chemical Suppliers.

A Bibliography (98 references) is included but one should always remember that bibliographies "can conceal as much as they reveal". An adequate Index completes the text.

The text appears to have few errors - page 219 (Figure 9.3) is interesting, showing the chromatographic movement of "any late molecules" (should be analyte molecules)!

Overall the text provides useful basic reading of background information especially for those just embarking on a career in analytical chemistry.

E. Anthony Evans Ph.D.  
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