MEDWIN PUBLISHERS
Committed to create value for Researchers

Medicinal & Analytical Chemistry International Journal
ISSN: 2639-2534

Environmental Chemistry: Review of a Book

Tanmoy Das*

Department of Chemistry, University of Burdwan, India

***Corresponding author:** Tanmoy Das, Department of Chemistry, University of Burdwan, Burdwan, India, Email: tdas.bu@gmail.com

Review Article

Volume 2 Issue 4

Received Date: November 16, 2018

Published Date: December 18, 2018

DOI: 10.23880/macij-16000129

Abstract

The book "Environmental Chemistry" authored by A.K. De was reviewed critically. All the chapters were taken into consideration. The book covers all aspects of environmental related recent hot topics. The book contains one chapter on Instrumental Methods of Chemical Analysis which is the beauty of the book.

The objective of environmental education is to enlighten the public, particularly students, about the importance of protection and conservation of our environment and the need to restrain human activities which lead to indiscriminate release of pollutants into the environment. 'Environmental Chemistry is a part of environmental education [1].

'Environmental Chemistry' is multidisciplinary science involving Chemistry, Physics, Life Science, Agriculture, Medical Science etc. An understanding of the basic concepts of environmental chemistry is essential not only for all chemists but also for all non-chemists engaged in environmental science, engineering and management [2].

In the 'introduction' chapter of the book the different cycles viz., hydrological cycle, the oxygen cycle, the nitrogen cycle, the phosphorous cycle and the sulphur cycle have been well documented [3]. The discussion on Global warming has been well done in the atmosphere chapter so also the ozone layer depletion with proper mechanisms [4,5]. The chapter on lithosphere deals well with soil chemistry.

The chapter on 'Chemical Toxicology documents different toxic elements like As, Cd, Cr, Pb, Hg, etc regarding their sources and effects in a tabular form. The biochemical effects of these trace elements have also been corroborated in a beautiful way giving proper mechanisms and sequence of chemical reactions.

In the chapter on 'air pollution' the primary air pollutants have been identified viz., CO, NOx, SOx, HC and particulates. The control and monitoring of these species have been well written. The phenomenon acid rain has been included here with proper mechanism and consequences. It is this chapter where "Bhopal gas tragedy" has been discussed in a very nice way with every minute details and illustrations---- exception from any other literature so far found. The Chernobyl diasaster has also taken a place here with a short note.

In the chapter-11 some discussions have been made on noise pollution in a tabulated matter. The chapter on Water pollution, the twelveth chapter of this book, deals with the different water pollutants under the following categories:

- Organic pollutants
- Inorganic pollutants
- Sediments
- Radioactive materials
- Thermal pollutants

The different pesticides have been classified as insecticides, herbicides and fungicides with their appropriate chemical nature and structure. The phenomenon 'eutrophication' has been explained in this chapter. Waste water treatment has been discussed here under the heads of domestic waste water treatment, industrial waste water treatment under aerobic and anaerobic conditions with every details.

Medicinal & Analytical Chemistry International Journal
ISSN: 2639-2534

In this particular chapter one very important and difficult aspect of water pollution has been dealt with, i.e., chemical speciation. Thus speciation of Cu, Pb, Hg, As, Se and Cr has been done in a very useful and befitting manner.

Different water quality parameter (physical and chemical) standards have been tabulated under USPH and ISI standards with their permissible levels in domestic water supplies for drinking water and it was concluded that the ISI values, available for only a few parameters, are much higher than those for USPH, for no good reasons. In the analysis part of different water quality parameters sampling, preservation techniques have been discussed. Both conventional wet chemical methods and instrumental methods have been adopted here for various physical and chemical parameters in a very beautiful way. This portion of the whole book can be regarded as the most enriched part to an ordinary chemist. For the determination of arsenic the SDDC method has been suggested to be suitable up to the limit of 0.002- 0.1 ppm of As. In discussing the instrument analyses the AAS has been preferred.

With a discussion of Ganga Action Plan the Arsenic contamination of Groundwater has been dealt with particular reference to West Bengal and Bangladesh arsenic calamity the chapter-12 has been terminated.

In chapter-13 waste treatment/management and recycling have been discussed where municipal a solid waste treatment has been taken into consideration. Here Vermicomposting, incineration, etc. have been discussed. For waste water treatment both aerobic and anaerobic treatments have been taken into account.

The chapter on instrumental techniques (chapter 14), the different instruments, viz., NAA, AAS, ICPES, XRF, NDIR, FTIR, Chmemiluminescene, GC, GC-MS, HPLC etc. have been taken into consideration. In a very brief way these various techniques have been dealt with in a befitting manner with a clear cut description of principle, instrumentation and applications. This particular chapter is so enriched that any general chemist/analyst (if he is not at all concerned about any environmental sample) can find it as a source book in comparison to a book wholely devoted to 'instrumental methods of chemical analyses'.

In the chapter-15 of this book one can find a comparative study of different energy resources, viz., coal, wood, petroleum so also nuclear (fission/fusion) and solar energy.

The sixteenth chapter deals with the global environment in a general way where different issues have been taken into account. Finally, the earth summit has been addressed where different occasions have been mentioned when and where different developed and developing countries had united (like UNCED at Reo de Janerio on June 3-14, 1992) to discuss the present status of environment and their measures to combat them. Finally, the book ends with a set of model question bank based on these chapters.

Conclusion

The book "Environmental Chemistry" authored by De AK, (7th Edition) can be considered as a sourcebook and a comprehensive literature for any learner who is interested in environmental studies. Though, the particular title of the book is "Environmental Chemistry" but it is more than that since it covers almost all of the environmental issues in addition to the chemical aspect of environmental pollution. Two chapters, in particular, the water pollution chapter and the instrumental analysis chapter need special emphasis in their excellence as the author has poured all his efforts to augment the quest of a chemist, in isolation. The portion on water analyses has been written in a very meticulous way with every finer details of methodologies.. In essence this particular book can be recommended for the students of UG / PG so also at the research level and can be an asset for any library or an individual for a personal possession and ready reference as Environmental Awareness is concerned.

Critique

Though the book has covered "Green Chemistry" in a nut shell but does not cover Sustainable Development in any way.

References

1. A Text book of Environmental Chemistry and Pollution Control. (2002) Dara SS, Chand S & Co. Ltd.

2. Environmental Science and Engineering" (1989) by J Glynm Henry, Gary W Heinke, Prentice Hall NJ.

3. Atmospheric Chemistry (1976) by J Heicvklen, Academic Press, NewYork.

4. Environmental Chemistry (1976) by Moore JW and Moore FA, Academic Press.

   The Challenge of Global warming, (1989) By Dean Edwin Abrahhamson (Ed.), Island Press, Washing DC.

Copyright© Tanmoy Das.