

Book reviews

**Deutsche Forschungsgemeinschaft, List of MAK and BAT Values 2005: Maximum Concentrations and Biological Tolerance Values at the Workplace, Report #41 of the Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area, Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim, Germany, 2005 (257 pages, US\$ 75.00, soft cover, CD-ROM included, ISBN 3-527-31357-5).**

“The MAK value is defined as the maximum concentration of a chemical substance (as gas, vapour or particulate matter) in the workplace air which generally does not have known adverse effects on the health of the employee nor cause unreasonable annoyance (e.g., by a nauseous odour) even when the person is repeatedly exposed during long periods, usually for 8 h daily but assuming on average a 40-h working week. As a rule, the MAK value is given as an average concentration for a period of up to one working day or shift.”

MAK values promote the protection of health in the workplace by providing a basis for judgment of the toxic potential or safety of the concentrations of substances in the workplace air. Data for approximately 800 chemicals are contained in this book.

Following the tabulated numerical data for the aforementioned chemicals, there are chapters discussing:

- Carcinogenic substances;
- Sensitizing substances;
- Aerosols;
- Limitation of exposure peaks;
- Percutaneous absorption;
- MAK values and pregnancy;
- Germ cell mutagens;
- Substances requiring special considerations;
- Biological tolerance values
  - Significance and use of BAT values,
  - List of substances,
  - Carcinogenic substances;
- CAS number index.

Accompanying the book is a CD-ROM disk entitled “List of MAK and BAT Values 2005”.

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**T.K. Das (Ed.), Toward Zero Discharge: Innovative Methodology and Technology for Process Pollution Prevention, Wiley Interscience, Hoboken, NJ, 2005 (744 pp., US\$ 110.00, ISBN 0-471-46967-X).**

Pollution prevention, sustainability, and life-cycle analysis are three interrelated but currently very popular topics in the environmental field. This book addresses all of them.

The back cover of the book describes its coverage as follows:

“In this contributed volume, recognized experts in the field present methodology and strategy for, and evaluation and quantification of, zero discharge and process pollution prevention. This reference explores technologies and applications, and provides case studies and real-world examples. Coverage includes:

- Sustainability and sustainable development in the chemical and allied industries
- Life cycle assessment
- Industrial ecology, eco-industrial parks, and green engineering
- Case studies of the pulp and paper and other industries”

The editor amplifies the foregoing further on the first page of the book. “In this book, we will focus on the best available industrial processes, techniques, and technologies that treat waste streams, as well as innovative and emerging processes that have better potential for achieving the highest standards in pollution prevention at the plant level, leading to zero discharge.”

And, indeed, they have discussed this topic well in 13 diverse and wide-ranging chapters contributed by a significant number of writers:

- Introduction
- Zero discharge industries
- Fundamentals of life cycle assessment

- Assessment and management of health and environmental risks
- Economics of pollution prevention: toward an environmentally sustainable economy
- Sustainability and sustainable development
- Zero discharge technology
- Technologies for pollution prevention: air
- Technologies for pollution prevention: water
- Technologies for pollution prevention: solid waste
- Minimization of environmental discharge through process integration
- Process pollution prevention in the pulp and paper industry
- Progress toward zero discharge in paper process technologies

The topic of the book will have great interest to practicing environmental engineers and the authors are to be commended for the wide-ranging discussion, but the book suffers from some editing problems. For example, in the chapter entitled "Technologies for pollution prevention: air," there is a discussion of e-beam based oxidation treatment for VOC contaminated aqueous phase waste streams. It is a well-written subchapter, but this example deals with water systems rather than air.

The inclusion problem occurs also in the next chapter, entitled "Technologies for pollution prevention: water." Air emissions from foundries are discussed in some detail in spite of the fact the chapter, as previously noted, is devoted to water. Discussed also are the problems of groundwater quality. Clearly, this topic also is important but should have been included, in my opinion, elsewhere. It is not that the aforementioned topics covered in this chapter are incorrect for inclusion in the book, but that they are out of place. I realize that dealing with a multitude of writers submitting sections for a book like this presents a difficult editing task. It is one that should have been done to better categorize the material.

Strange, in my estimation, is the inclusion of a chapter on risk assessment which, although that is a topic of considerable interest to environmental engineers, it seems strangely out of place in a book dealing with pollution prevention.

Chapter 6, which is entitled "Sustainability and sustainable development," deals with a current "hot topic," and one very suited to this book. In it the author, who is the editor himself, states that:

"This chapter provides a framework within which to measure how well a company is doing in terms of resource consumption and pollution emissions and mitigation while extracting more value from its processes. This framework supports the decision-making process by providing mechanisms for benchmarking performance, tracking improvement over time, evaluating the products and processes involved, and developing strategies for improvement."

I might note that this chapter contains a short discussion of the production of fuels from biobased products. Only five pages are devoted to this very important topic which received much attention at the 2005 Annual Meeting of AIChE.

There is a very interesting section in the chapter on "Technologies for pollution prevention: solid waste." In it, the authors

discuss plastic recycling in a developing country. Interesting as it is, the discussion of a relatively unsophisticated system in a lesser developed country really added very little to the textbook.

The book's final two chapters deal with the pulp and paper industry with which the editor has had much experience. Das authoritatively discusses pollution control in the industry and processes that could lead to zero discharge.

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**B. Beloff, M. Lines, D. Tanzil (Eds.), *Transforming Sustainability Strategy into Action: The Chemical Industry*, Wiley Interscience, Hoboken, NJ, 2005 (567 pages, US\$ 94.95, ISBN 0-471-64445-5).**

Sustainability as an environmental program has progressed from a purely theoretical concern into an industrially recognized and increasingly discussed mode of action. Indeed, it is important that its underlying principles be adopted for the long-term viability of humanity. The American Institute of Chemical Engineers recognized the importance of the concept when they chartered the Institute for Sustainability in 2000. The Institute's first chair, Earl Beaver, has contributed to the book as have several other chemical engineers. But the source of authors is not surprising as the focus of this book, as the title suggests, is the chemical industry. The goal of the editors in writing this book was to provide "... a framework to enable companies to adopt sustainable business practices".

Fifty-six authors have contributed to the text which has eight long chapters. Each chapter has subsections individually authored. The editors describe the book's contents as follows (the description provided has been reduced in length by my editing):

- Chapter 2: Addressing sustainability in the chemical industry  
This chapter looks at the scope and scale of the chemical industry; the industry's response to formative developments and drivers; and the evolution of its signature program responsible care, with a look at its current role in advancing sustainability as well as future positioning.
- Chapter 3: Views on key issues facing the chemical industry  
This chapter looks at the public's perception of the chemical industry. This chapter highlights key issues, challenges and opportunities for the chemical industry, including the com-