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Book reviews

H. Greim (Ed.), The MAK-collection for Occupational Health and Safety. Part 1. MAK Value Documentations, vol. 24 Wiley–VCH Verlag GmbH & Co. KGaA, Weinheim, Germany (2007). 200 pp., Price: US$ 150.00, ISBN: 978-3-527-31594-9

This book is one of a series that provides ". . . comprehensive and authoritative information for occupational health and safety professionals and researchers." Provided are " . . .both the toxicological substantiation of threshold values for chemicals at the workplace . . . and the suitable monitoring methods."

This volume contains data for the following seven chemicals: acrylonitrile, calcium cyanamide, crotonaldehyde, cyanamide, dicyanodiamide, hydrogen chloride, and trichloroethylene. Provided is a review of the available toxicological studies and data that includes toxic effects, mechanisms and modes of action, toxicogenetics and metabolism, and effects in man and animals. Also provided are data on the carcinogenic, germ-cell mutagenic, sensitizing or skin-resorptive effects, as well as their toxicity to the reproductive system. Basic physico-chemical data also are provided.

As with the other volumes in this series, the index covers all 24 volumes.

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Applied Combustion, E.L. Keating., second ed., CRC Press/Taylor & Francis Group, Boca Raton, FL (2007). 683 pp., Price: US$ 139.95, ISBN: 978-1-57444-460-1

This book has been authored by a mechanical engineer who has broad experience in both teaching and consulting. He designed his book to be used both as a course text as well as a resource for practicing engineers.

Not surprisingly, the focus is on combustion (as the title notes) and it discusses practical applications of this process based upon a thorough discussion of fundamental principles of combustion systems. The book is complete with numerous practical examples and worked problems.

Burner systems and burner design are not areas of my expertise, although I have tangentially been involved with the area in teaching air pollution courses as well as industrial consulting. Consequently, my focus is more on the air pollution (emission) aspects of burners—their fuels, efficiency, and emissions as opposed to burner design and combustion efficiency.

To highlight the contents of the book, I will list the chapter titles:

1. Introduction to applied combustion
2. Combustion and energy
3. Combustion and entropy
4. Fluid mechanics
5. Chemical kinetics
6. Solid fuels
7. Liquid fuels
8. Gaseous fuels
9. Combustion engine testing
10. Spark-ignition engine combustion
11. Compression-ignition engine combustion
12. Gas turbine engine combustion
13. Thermal destruction

Keating discusses in detail numerous aspects of combustion that involve novel fuels (to me the term novel fuels means fuels other than coal and petrochemical fuels such as oil and natural gas). He details the combustion systems and emissions therefrom. For example, he includes a mathematical analysis of the burning of alcohol, landfill gas, and municipal and hazardous waste, the latter topic which is of major interest to readers of this journal.

To illustrate the coverage of the above, I note below the headings in the section of the chapter dealing with that topic (Chapter 13). The sections in this chapter are as follows: Introduction; Thermal destruction combustion chemistry; Basic elements of thermal destruction; Thermal destruction components; thermal destruction configurations; and Environmental regulations and thermal destruction.

It is not obvious from the above list that the topics include a discussion of dioxin, MACT (maximum achievable control

technology), and emission standards for conventional waste incineration, but they do. As is common with the rest of this book, equipment designs are given for units such as rotary kilns, controlled air thermal destruction configuration, multiple hearth incinerators, FBC (fluidized bed combustion) thermal destruction, and PAT (plasma arc torch) thermal destruction. As he does throughout the book, Keating provides worked examples of incineration problems that include hazardous waste incineration of chlorobenzene, highly diluted organic wastewater and benzene.

Other features of the book include more than 1150 figures, tables and equations and 250 student problems. Both SI and English engineering units are used, with the interrelation between the systems helped by an extensive set of conversion factors which are given in the appendices. The appendices also have an extensive set of tables containing data on the thermochemical properties of fuels. Also found in the appendices is an approximately 20-page bibliography on combustion topics; surprisingly, the section on air pollution is exceeding short and not up to date.

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The Ribbon of Green: Change in Riparian Vegetation in the Southwestern United States, R.H. Webb, S.A. Leake, R.M. Turner. The University of Arizona Press, Tucson, AZ (2007). 480 pp. (9 in. × 12 in. format), Price: US$ 75.00, ISBN: 978-0-8165-2588-1

Woody wetlands are extremely important ecologically although their geographical footprint is small. They support one-third of the southwest United States region's vascular plants and harbor dozens of migrating species. Although small in size, they have a disproportionally high biological value.

In the flyer accompanying this book, the publisher writes:

> "In The Ribbon Green, hydrologists Robert H. Webb and Stanley A. Leake and botanist Raymond M. Turner deliver an indispensable examination of the factors affecting the stability of woody riparian vegetation. Utilizing repeat photography, historic information, and data on species composition and vegetation history, they meticulously document 140 years of the status of riparian vegetation in the southwestern United States. With their knowledge of the environment's delicacy, the authors provide information on what allows the woody wetlands to flourish—flood control, favorable climatic conditions, and large winter floods.
> The authors argue against the common assumption that the riparian wetlands have been decimated. Rather, ecosystem disturbances such as floods have allowed germination and generated new openings for plants to take rood in. Bringing well-documented and accessible insights to the ecological study of wetlands, this book will influence our perception of stability and change in Southwestern riparian ecosystems."

To illustrate their book, the authors have included 31 maps, 87 illustrations, and 484 photographs.

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