

BOOK REVIEWS

Selection of books for review is based on the editor's opinions regarding possible reader interest and on the availability of the book to the editor. Occasional selections may include books on topics somewhat peripheral to the subject matter ordinarily considered acceptable.



NBS/NRC Steam Tables: Thermodynamic and Transport Properties and Computer Program for Vapor and Liquid States of Water in SI Units

<i>Authors</i>	Lester Haar, John S. Gallagher, and George S. Kell
<i>Publisher</i>	Hemisphere Publishing Corporation, New York (1984)
<i>Pages</i>	320
<i>Price</i>	\$34.50/\$14.95 (softbound)
<i>Reviewer</i>	Efstathios E. Michaelides

This new book on steam tables emanates from a collaboration of the U.S. National Bureau of Standards and the National Research Council of Canada. The tables extend the range of steam properties to 2000°C and 30 000 bar and have the provisional approval of the International Association for the Properties of Steam for a smaller range.

The new steam tables contain the usual saturation and single-phase properties of water and steam, but extend their range to pressures up to 30 000 bar and temperatures up to 2000°C. One welcome addition is the inclusion of the second virial coefficient, B , and its derivative with respect to temperature; they are both helpful for many engineering calculations. The tables are supplemented with a list of several isochore curves near the critical region and a complete list of the specific heat capacity and the speed of sound for the vapor and liquid phases.

The transport properties of water and steam, long forgotten in other publications, also find a place in this new book. The tables include listings for the viscosity, thermal conductivity, Prandtl number, and dielectric constant of water substance for pressures in the 1- to 1000-bar range and temperatures from 0 to 800°C.

Several useful diagrams, a Mollier chart for the fundamental equation for the derivation of properties, and a computer program for thermodynamic property calculations are also included in the book.

All in all this new set of tables contains several new features, absent from comparable books. The accuracy of the

tables seems to be quite good and the listings are thorough and complete. This reviewer believes that it is going to be a good addition to the library of practicing engineers and scientists who need a complete set of the thermodynamic properties of water and steam.

Efstathios E. Michaelides has been at the University of Delaware since 1980 where he now holds the position of associate professor. He studied at Oxford University, England (BA, 1977), and Brown University (MS, 1979, and PhD, 1980). During 1986 he served as acting chairman of the mechanical engineering department at the University of Delaware. His research interests are in the areas of energy conversion, multiphase flow, geothermal energy applications, and particulate flows. He has contributed 65 articles and reports to the scientific and technical literature.

Hazardous Waste Management: In Whose Backyard?

<i>Author</i>	Michalann Harthill
<i>Publisher</i>	Westview Press, Boulder, Colorado (1984)
<i>Pages</i>	205
<i>Price</i>	\$22.00
<i>Reviewer</i>	Geoffrey G. Eichholz

This book presents a series of papers presented at an American Association for the Advancement of Science symposium in 1981. As the subtitle indicates, the intent of the session was to address regulatory and institutional issues raised by the need to find acceptable sites and acceptable methodologies for disposing of hazardous wastes. Considering the political sensitivity of the subject and the specific subtitle, the authors do not really come to grips with the political realities, though one of the authors discusses public participation in siting and pro- and anti-siting tactics. The issues raised are all familiar to those who have fought similar problems in relation to radioactive waste disposal and this volume

provides some useful parallels to that situation. The contributors include lawyers, environmental policy analysts, regulators, engineers, hydrologists, and the science adviser to Love Canal area residents.

Love Canal figures prominently as an example of political entanglements and the problem of obtaining a realistic assessment of past and projected health impacts. One chapter deals with the site selection process for radioactive waste repositories and advocates a geographic filter process for screening prospective sites. At this time (1986) the screening process has reached a focused stage with a limited number of potential disposal sites, largely superseding the coarser mesh proposed here.

Despite the delay in publication, most of the other papers are still valid in discussing subjects that have become increasingly of concern also on low-level radioactive waste disposal, such as the application of the Resource Conservation and Recovery Act, the application of the Superfund for decontaminating sites, and the problem of balancing industrial needs against public resistance.

For the waste management specialist this is an instructive volume to read; it may console him to think that there are many other people out there who share his problems.

Geoffrey G. Eichholz is Regents' Professor of Nuclear Engineering at the Georgia Institute of Technology, which he joined in 1963. He obtained his PhD in physics at the University of Leeds, England, and was awarded the DSc degree in 1979. He edited the book Radioisotopes Engineering and is the author of Environmental Aspects of Nuclear Power and Principles of Nuclear Radiation Detection, both published by Ann Arbor Science Publishers. His research interests include the migration of radioactive wastes, environmental surveillance problems, radiation detector development, industrial radiation applications, nuclear materials technology, and the health physics of nonionizing radiations.

Geology and Radwaste

<i>Author</i>	A. G. Milnes
<i>Publisher</i>	Academic Press, London (1985)
<i>Pages</i>	328
<i>Price</i>	\$60.00
<i>Reviewer</i>	Geoffrey G. Eichholz

This book, published as part of the Academic Press Geology Series, can be described as a geology primer for all who are involved politically or technically in the problem of

waste site siting or site evaluation. It presents a brief, at times too concise, discussion of the various geologic media that have been considered as host rocks, their past, and their potential future.

The first part of the book, in ~50 pages, summarizes the sources and principal characteristics of radioactive waste and reviews the various methods of disposal for high- and low-level wastes that have been practiced or proposed. The bulk of the book is entitled "Earth Science Perspectives" and provides a general review of such matters as crustal evolution, the water cycle, and geologic time frames. Two chapters discuss surface processes, such as weathering, chemical transport, and denudation and deposition processes, with Maxey Flats, uranium mill tailings degradation, and two erosion sites selected for illustration. To the specialist these examples are not really linked closely enough to geologic phenomena to permit a good site assessment.

The next three chapters deal with the formation and characteristics of sedimentary, igneous, and crystalline rocks, including such topics as the enclosure of shale or bedded salt in sedimentary rocks and the characteristics of Hanford basalt and Nevada tuff, and various alteration processes. Finally, physical and chemical processes in the upper crust are presented, as are ocean processes, such as deep sea sediments and radioactive accumulations, and continental glaciation. A brief final part reviews attempts to predict geological processes and their evolution and to evaluate potential repository sites. This in many ways is the hardest part of the procedure, and the discussion does not draw a clear picture of the long evolutionary time scales involved nor of the problem of reaching a decision in a reasonable time on the basis of informed, but necessarily never complete geologic information. The author sees this as a challenge, but does not really set up any guideposts.

To the practicing nuclear engineer this book can provide much valuable background information needed in assessing waste disposal sites, supply him with a working vocabulary, and, perhaps, explain why geologists will never commit themselves to the possibility that sufficient data that are needful may have been obtained about a given site.

The book is well illustrated, documented with an extensive bibliography, to 1984, and has an adequate index.

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