

Book reviews

Understanding Radioactive Waste

Raymond L. Murray, fifth edition; Battelle Press, Columbus, OH, 2003, 256 pages, soft cover, ISBN 1-57477-135-3, US\$ 12.95

Worldwide energy supply is one of society's major concerns. But how to supply needed energy to industrialized and industrializing countries is the question. Reserves of fossil fuels (coal, gas, and oil) are finite and their combustion yields polluting by-products. Environmentalists favor non-polluting energy sources such as wind or solar radiation, but these generating processes have limited capacity and currently relatively high cost.

Nuclear power production is attractive from a capacity standpoint as well as the minimal amount of polluting by-products. However, the by-product waste of nuclear energy is dangerous and long-lasting, and these properties cause great concern among the public. Unfortunately, much of the opposing rhetoric to utilization of nuclear power is designed to frighten the public while those who support nuclear power downplay the problems. Accompanying the problem is that the reports on the topic are generally written for sophisticated readers. Conversely, *Understanding Radioactive Waste*, however, is written in clear, concise, understandable non-technical language for the layman.

The press release accompanying the book says the following: "The author rejects exaggerated statements about the waste problem at both poles of the debate—assertions by proponents that it is merely a matter of politics, by opponents that technical solution is impossible." In this book, Dr. Murray

- "explains clearly the origin and nature of nuclear by-products;
- explains clearly the origin and nature of nuclear by-products;
- provides facts and figures about nuclear waste and the actions being planned on a national basis;
- provides perspective on the safety of waste isolation systems;
- distinguishes knowledge from opinion whenever possible, in an unbiased and candid manner."

In the first chapter, Dr. Murray notes that in his book he tries to answer questions the reader might have. I was tempted to reproduce the list of 22 questions he addressed, but in the interest of brevity have not done so other than to reproduce the first and last questions on his list. The first

question is "What is radioactivity?" and the last question is "Is the problem of nuclear waste disposal overemphasized compared with other national problems?"

The book is thoroughly up to date with a list of the world's nuclear power plants operating as of 31 December 2002. The United States leads nuclear power production with 99,000 operating kilowatts out of the world's total of 364,000. Discussed at length are, nuclear waste handling and disposal and the safety thereof. Also described are experiments that were undertaken to test the integrity of shipping containers in accidents. Disposal of low-level waste at the waste isolation pilot plant (WIPP) and the proposed high-level disposal site in Nevada are discussed.

New in this edition of the book are discussions of:

- transportation of spent fuel and other nuclear wastes;
- high-level radioactive waste regulations;
- licensing of the proposed repository at Yucca Mountain, Nevada;
- protecting nuclear facilities against terrorist attack.

My overall impressions of this book is that it is well written in very understandable language and clearly is an objective review of the topic by a distinguished scientist.

Gary F. Bennett

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Environmental Impact Assessment: Practical Solutions to Recurrent Problems

David P. Lawrence; John Wiley & Sons, Inc., New York, NY, 2003, 575 pp., ISBN 0-471-45722-1, US\$ 99/95

Prior to reviewing this book, I thought of Environmental Impact Assessment in the narrow sense as outlined by the United States law that requires an evaluation of the impact of major construction on the environment. In this book, the author goes much further as illustrated by the material on the book's cover that says: "When a proposed action threatens the physical, biological, social, or economic environment, a thorough assessment is done and measures are identified to prevent and offset the adverse environmental impacts. This practice is called an Environmental Impact Assessment (EIA), which has regularly been treated, studied, and practiced as a singular process . . . until now."

Drawing from his own extensive personal knowledge of the environmental impact process gained in 25 years of practicing, Lawrence writes with much authority on the topic. After discussion the Conventional EIA in Chapter 2, Lawrence expands the reader's focus with a series of "how to" chapters:

- How to make EIAs more rigorous?
- How to make EIAs more rational?
- How to make EIAs more substantive?
- How to make EIAs more practical?
- How to make EIAs more democratic?
- How to make EIAs more collaborative?
- How to make EIAs more ethical?
- How to make EIAs more adaptive?
- How to connect and combine EIA processes?

In the final chapter, Lawrence writes: "This book began with a not-so-hypothetical scenario. The scenario describes how a well-intentioned EIA process came apart at the seams. The process broke down because of a failure to anticipate, acknowledge, and respond adequately to a series of problems that emerged through the process. The problems arose from inadequately addressed stakeholder demands. The demands (i.e., make the process more rigorous, rational, substantive, practical, democratic, collaborative, ethical, and adaptive) reflect common stakeholder perspectives . . . The procedures and methods presented in the preceding chapters are, at best, conducive to avoiding and ameliorating the recurrent problems."

The book is well written and filled with a series of useful tables and diagrams to illustrate the flow and review of information developed in the EIA. This book will be of much interest to practitioners in the field.

Gary F. Bennett

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Proceedings of the 2002 National Conference on Environmental Science and Technology

Godfrey A. Uzochukwu, Keith Schimmel, Gudigopuram B. Reddy, Shouu-Yuh Chang and Vinayak Kabadi (Eds.), Battelle Press, Columbus, OH, 2003, 394 pp., ISBN: 1-57477-138-8, US\$ 80.00

This book contains 34 papers presented at Greensboro, NC, in September 2002. The presentations covered a wide variety of environmental topics as illustrated by the titles of the seven major sections of the book: (1) Bioprocessing, (2) Bioremediation, (3) Environmental Justice, (4) Fate and Transport, (5) Innovative Environmental Technologies, (6) Pollution Prevention Separation Processes and (7) Risk and Economics. The papers found in the proceedings were the result of asking each presenter to submit a six-page paper detailing his/her work. In the main, the authors appear to have followed this request. Therefore, the information is concisely presented.

Unfortunately, the quality of the writing is variable and at times very poor. Although peer review was claimed, I fear that a technical editor was not employed. Some of the papers would have benefited from further editing. Additionally, I found that some of the papers were strangely placed under the topic headings. For example, NO_x removal from catalytic cracking gases was placed in the Pollution Prevention chapter.

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