

BOOK REVIEWS

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



Advanced Reactors: Physics, Design and Economics (Proceedings of the International Conference held in Atlanta, Georgia, September 8-11, 1974)

Editors J. M. Kallfelz
R. A. Karam

Publisher Pergamon Press

Pages 843

Publication Date 1975

Reviewer Craig B. Smith

In the Preface, the editors state that the "purpose of the conference was to bring together experts in the fields of physics, design, and economics of advanced reactors, to discuss and exchange information pertinent to the development of such reactors."

On reading the book, it seems that the goal was achieved. The book is divided into eight parts, corresponding to the sessions of the Conference. These parts discuss current national programs for advanced reactors, primarily programs in France, the Federal Republic of Germany, Japan, the United Kingdom, the USSR, and the U.S.; economics; theory; experiments and analysis; cross-section data; sensitivity analyses; design problems; and operational experience.

Overall, the quality of the material is quite good and this collection of reports should be useful to both the generalist and the specialist in

the advanced reactor field. Its primary appeal to *Nuclear Technology* readers would be to those involved in advanced reactor design and development programs.

Although the title and organization of the book deal with advanced reactors in general, emphasis has been placed on sodium-cooled fast breeder reactors. There is some discussion of gas-cooled fast reactors, pebble bed reactors, molten salt reactors, and other types, but they are not treated in any depth.

The book reinforces the impression one has that the U.S. is falling behind other industrial nations in nuclear technology development. Japan, France, and the Federal Republic of Germany, all of whom depend heavily on energy imports, have energetic national programs for construction of prototype breeder reactors. The French lead this race with a 250-MW(e) demonstration plant (Phenix), first delivering electricity to the grid in Dec. 1973. Even the USSR, which does not suffer the same dependence on imported fuels, has an aggressive program; a plant rated at 150 MW(e) (plus process steam) has been operating since 1973; a 600-MW(e) plant is under construction and due for startup in 1977.

Meanwhile, the U.S. flounders along with a program—viewed in terms of progress-to-date—that must be characterized as slow, costly, and so far, not very productive. The U.S. Clinch River Breeder Reactor demonstration plant is not even due for criticality until the 1980's.

The format and appearance of the book are acceptable and both the editors and Pergamon should be com-

plimented on presenting this volume to the public quickly, rather than two or three years after the conference.

C. B. Smith is presently a principal in Applied Nucleonics Company, a nuclear engineering firm located in Santa Monica, California. Formerly, he was assistant director of UCLA's Nuclear Energy Laboratory. His current research deals with nuclear energy, reactor safety, and nuclear fuel cycles. He consults in this field, both in the U.S. and abroad. In addition to a PhD in nuclear engineering, he is a registered nuclear engineer in the State of California.

Krypton-85 in the Atmosphere—Accumulation, Biological Significance, and Control Technology (NCRP Report #44)

Author National Council on Radiation Protection and Measurements (NCRP)

Publishers NCRP

Pages 79

Publication Date July 1, 1975

Reviewer Norman A. Baily

This is the latest addition to the invaluable series published by the National Council on Radiation Protection and Measurements (NCRP). This careful assessment of potential environmental pollution by this

radionuclide, which is highly mobile and nonreactive in the atmosphere, that might result from the projected growth of nuclear power plants is an invaluable source for those concerned with such problems. In addition to a short review of the physical, biological, and radiological properties of ^{85}Kr , this handbook gives estimates and projections of future sources, and the gross quantities of the radionuclide to be expected.

Such topics of concern such as the geophysical behavior, dose, concentration, and biological effects are reviewed, and a comprehensive bibliography on these topics is given. Also discussed is the important problem of the removal and disposal

of ^{85}Kr from waste gases. Contrary to the general uninformed opinion, it is clearly shown that the major source of this contaminant will be fuel reprocessing plants.

This handbook, like most in this series, will serve as a guide and source of ready reference to persons working in the fields of health physics and those aspects of nuclear engineering dealing with waste products and their disposal. In addition, as is the case with other handbooks published in this series for the past 30 years, it will be a reference guide and an educational source for students, engineers, and others interested in environmental pollution problems associated with our expanding nuclear industry.

Norman A. Baily earned his doctorate in physics from Columbia University. He is a professor of radiology at the University of California, San Diego. He is a member of the National Institutes of Health Radiation Study Section, Chairman of the Committee on Radiation Physics of the American College of Radiology Commission on Radiologic Units, Standards and Protection. He has been a member of the U.S. Air Force, Scientific Advisory Board, and past president of the Southern California Chapter of the AAPM. He has published over 100 scientific papers covering the areas of both macro- and microdosimetry, radiation biology, radiological imaging, image processing, and holography.