

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.



- A. **The Volume Reduction of Low-Activity Solid Wastes** (Technical Reports Series No. 106)
- B. **Bituminization of Radioactive Wastes** (Technical Reports Series No. 116) (International Atomic Energy Agency, Vienna)

<i>Editors</i>	IAEA
<i>Publisher</i>	Unipub, Inc. (1970)
<i>Pages</i>	A. 44 B. 135
<i>Price</i>	A. \$2.00 B. \$4.00
<i>Reviewer</i>	John O. Blomeke

These two pamphlets are recent additions to a series of publications that is intended by the IAEA to serve as state-of-the-art summaries of various aspects of nuclear technology. In the present instance, the subjects of concern pertain to the treatment of low- and intermediate-level solid wastes. To gather most of the information that appears in such documents, the IAEA usually convenes a small panel of experts from member states for informal presentation and discussion of the data and operating experience that bear on the chosen subject. From having served on such panels in Vienna, this reviewer can attest to the fact that this is a relatively painless way to undertake a technical review. Of course, after the panel adjourns, the Chairman and the Scientific Secretary are left with the less than enviable task of writing the final document and obtaining the subsequent endorsement of their colleagues who have long since returned to face the exigencies of their daily jobs. Since the U.S. is among the more technically advanced countries in atomic energy, I believe it can be

fairly stated that we have traditionally contributed more information on these occasions than we have received; however, as we know, the worm is slowly turning and these two reports are cases in point. Most countries, through choice or necessity, have made less use of the land environment for disposal of radioactive wastes than we have; hence, they have been forced by economic considerations to develop and practice methods of collection, sorting, volume reduction, and packaging that were compatible with their plans for subsequent storage, shipment, or disposal. It is no surprise, then, that European technology in radioactive waste incineration, compaction, and bituminization surpasses our own.

Technical Reports Series No. 106, *The Volume Reduction of Low-Activity Solid Wastes*, presents a conveniently brief summary of the relatively sophisticated facilities for sorting, shredding, and incinerating wastes that exist most notably in France, England, West Germany, and Belgium. With its bibliography of 42 references, it serves as a useful background document for those who may need to first acquire a familiarity with the principal problems that are involved. Anyone confronted with the problem of designing a modern facility for handling solid wastes, however, will find the recent studies carried out for the general manager's Task Force on AEC Operational Radioactive Waste Management to be required reading: *Compaction of Radioactive Solid Waste*, WASH-1167 (June 1970); and *Incineration of Radioactive Solid Wastes*, WASH-1168 (August 1970). Perusal of these latter AEC reports leaves one with the impression that past and present U.S. practices in low-level solid waste management are due to undergo a change.

Bituminization (incorporation of low- and intermediate-level liquids

and sludges in various types of asphaltic matrices) is believed by many to represent an improved method of treatment over the simpler and more familiar practice of cementation. This is due to the higher concentrations of waste residues (several times as much) that can be achieved in the final products, and to the lower leachability of radionuclides (typically more than two orders of magnitude less leachable by water). Bituminization of radioactive wastes was first used in Belgium about 10 years ago. Since that time virtually all developed countries have done research and development in this field, and many have one or more fully operational plants in existence. R. E. Blanco and his colleagues at ORNL worked on a bituminization process for several years, but the technique has never been used in this country because of the potential hazard the asphaltic products would pose in the event of a fire. It is evident, however, that the rest of the world does not share our reluctance to accept bituminization. Technical Report Series No. 116, *Bituminization of Radioactive Wastes*, is replete with interesting and potentially useful information on processes, product characteristics, and economics contributed from 14 countries (including the U.S.). A surprising amount of attention is being given to this approach.

J. O. Blomeke (PhD, chemical engineering, Georgia Institute of Technology, 1951) dates his interest in nuclear energy to 1944 when he first went to work at the Metallurgical Laboratory of the University of Chicago, and later at Clinton Laboratories in Oak Ridge. Since 1950 he has been associated with ORNL where his principal concerns have been in engineering, economic, and safety evaluations of radioactive waste management.