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Book Reviews

The Application of Solidification/Stabilization to Waste Materials, by J.L. Means, L.A. Smith, K.W. Nehring, S.E. Brauning, A.R. Gavaskar, B.M. Sass, C.C. Wiles and C.I. Mashni, Lewis Publishers, Boca Raton, FL, 1995, 334 pages, ISBN 0-56670-080-9

This book is essential for anyone dealing with the design, operation or approval of hazardous waste treatment systems utilizing the solidification/stabilization process (S/S). Solidification/stabilization processes are effective in treating a variety of difficult-to-manage wastes, but they are not always the best technology to use and they are often used improperly because many engineers feel S/S is a low-tech process and little can go wrong. This book is intended to present state-of-the-art knowledge about S/S in order to overcome these problems.

It is an adaptation of the USEPA manual entitled *Technical Resource Document on Solidification/Stabilization and Its Application to Waste Materials*, but it is presented in a much more readable format. It is an extensive, and essentially complete, compilation of information on the theory, design, regulation and practice of S/S processes. The book is intended for site personnel who must select an appropriate treatment process, for the engineer who must design the process, for the operator of the facility and for the regulators who must determine if it will meet or is meeting environmental standards. In all cases, the book hits its mark.

Beginning with a description of the position of S/S technologies in the USEPA hierarchy of treatment options, the book goes on to put the process within the regulatory framework of RCRA and CERCLA. An extensive description of available screening procedures is presented, including site-specific baseline information requirements, waste-binder compatibility screening procedures, and procedures for both laboratory-scale screening and performance/optimization testing. Descriptions of both pilot-scale and field-scale demonstrations are also presented. The most complete description of test procedures (physical tests, leaching/extraction tests, chemical tests and microcharacterization techniques) that I have seen in one place is included.

The book really gets into detail when it describes the S/S processes and binders, and the immobilization and potential leaching mechanisms involved. A complete discussion of the advisability of attempting to solidify/stabilize organic wastes (which is a significant problem in the industry) is presented. Even though it is highly detailed, the book is structured in such a way that the reader can easily get the amount of detail desired. It is not a ponderous text.

One of the major plusses of this book is that it gives a very balanced view of the advantages and disadvantages of S/S processes. As much attention is given to pointing

out the shortcomings and limitations of the technology as to its advantages. This is rare in many books today.

I feel that one of the best features of this book is the extensive use of checklists and worksheets included. With these, any competent engineer or regulator should be able to arrive at a well informed decision concerning the validity of using a S/S technology for a particular site, even if he/she has not worked extensively with the technology before. This book should be in the library of anyone dealing with hazardous waste management issues.

PAUL L. BISHOP

Nuclear Communications: A Handbook for Guiding Good Communications Practices at Nuclear Fuel Cycle Facilities, International Atomic Energy Agency, Vienna, 1994, 280 Austrian Shillings, 72 pages, ISBN: 92-0-103794-5

The purpose of this book according to the authors is "... to serve as a guideline in applying good communications practices at nuclear fuel cycle facilities". The book is intended to be "... a compact source of information for people involved in plant operation and management" as well as identifying questions that members of the public may have about different aspects of the nuclear fuel cycle.

The book has four chapters entitled:

1. Energy, Society and the Environment
2. Public Communication and Participation
3. The Nuclear Fuel Cycle and the Environment
4. Specific Issues, Questions and Responses

Although nuclear power yields many societal benefits, the negative public perception of the risk posed by nuclear facilities often clouds the issue of their benefit. Thus, this book that addresses the advantages of nuclear power (in terms of secondary waste production), the safeguards built into the nuclear power industry, and the advantages of fuel reprocessing is a welcoming publication.

Having personally been through a public meeting on on-site (nuclear power plant) storage of spent fuel rods, I appreciate the tough (and often antagonistic questions) that can be asked of the industry. To this end, the nuclear industry spokesperson should, I think, appreciate the "Boxed Questions" in the book – nine separate pages of questions that could be asked of the industrial spokesperson, i.e., "Questions About Nuclear Power Plant Operation" or "Questions About Spent Fuel Disposal".

The material in the four chapters takes the reader all the way from mining of radioactive ore through to disposal of vitrified wastes in geologic deposits.

The technical material will certainly not be new to industrial spokespersons, but the packaging and explanation of it may be. From my perspective, the approach to answering public questions was well done.

GARY F. BENNETT