

and then to meet with the plant management who control the plant discharges, stressing that no confidential data is desired, and that the meeting could be cost-effective to the plant.

A very comprehensive set of worksheets, written in simple language is complemented by details of the US Environmental Protection Agency's (EPA's) toxic (TRI) release inventory and the EPA Toxic Chemical Release Inventory Forms, required since 1988 if the plant has 10 or more full-time employees and is within the Standard Industrial Classification (SIC) codes 20 to 30. Included are lists of the original 308 chemicals and 20 chemical categories which must be reported, with corresponding CAS numbers. State contacts are included for TRI information, an overview of the known health effects of TRI chemicals. Right-to-Know information and a useful glossary.

This volume is well worth study by plant management, as well as by the citizens groups who have expressed concern of plant discharges so both can arrive at better understandings of what more can be done to reduce all toxic releases. Well-written and organized, it is a worthwhile addition to our approaches to modern life.

HOWARD H. FAWCETT

*Volumetric Leak Methods for Underground Fuel Storage Tanks*, by J.W. Maresca Jr., M. Siebel, R.D. Roach and J.W. Starr, Noyes Data Corp., Park Ridge, NJ, 1990, ISBN 0-8155-1230-9, 356 pp., \$ 57.00.

In the United States, there are several million underground storage tanks containing petroleum products, hazardous chemicals and hazardous wastes. It is estimated that 10 to 25% of the tanks and/or their associated piping may be leaking and these leaks pose a serious threat to groundwater quality – and groundwater is the major drinking water source for more than one-half of the United States' population.

In 1984, the US Congress embodied in the Hazardous and Solid Waste Amendments to RCRA requirement that the US Environmental Protection Agency (US EPA) develop regulations for the detection of releases from underground storage tanks. The resulting regulations, promulgated in September 1988, state that all volumetric tank test methods must, within two years, have the capability of detecting leaks as small as 0.1 gal/h with a probability of detection of 95% and a probability of false alarm of 5%.

Twenty-five commercially available volumetric leak detection methods were evaluated in this study. The book produced by US EPA consultants contains two reports of their work. The book contains the chronology of experiments, a thorough explanation of the engineering principles underlying the experiments and a comprehensive analysis of results of the 25 devices tested. The

US EPA determined that five of the methods evaluated, once they modify their criteria for determining whether or not a tank is leaking, have the capability to meet US EPA regulation.

GARY F. BENNETT

*How to Meet Requirements for Hazardous Waste Landfill, Design, Construction and Closure*, by US Environmental Protection Agency, published by Noyes Data Corp., Park Ridge, NJ, 1990, ISBN 0-8155-1242-2, 123 pp., \$ 45.00.

The US Environmental Protection Agency's (US EPA's) minimum technological requirements for hazardous waste landfill design were set forth by the US Congress in the 1984 Hazardous and Solid Waste Amendments to RCRA. These amendments covered requirements for landfill liners and leachate collection and removal systems as well as leak detection systems for landfills, surface impoundments and waste pits. In response to these Congressional Amendments, the US EPA has issued proposed regulations and guidance on the design of these systems and on construction quality assurance, final cover and response actions for responding to landfill leaks.

The book is based on a US EPA Technology Transfer Seminar held in 1988. It contains text, slides and transcripts of five speakers from the US EPA, consulting firms and universities. The seminar and the resulting book outlined in detail the minimum technology provisions and proposed regulations. It also provides detailed information on the construction of hazardous waste facilities that comply with these regulations.

A listing of the chapter titles reveals the book's scope and coverage:

- (1) Overview of minimum technology guidance and regulations for hazardous waste landfills
- (2) Linear design; clay liners
- (3) Flexible membrane liners
- (4) Elements of liquid management at waste containment sites
- (5) Securing a completed landfill
- (6) Construction, quality assurance and control; construction of clay liners
- (7) Construction of flexible membrane liners
- (8) Liner compatibility with wastes
- (9) Long-term consideration—problem areas and unknown
- (10) Leak response action plan

GARY F. BENNETT