

Book Reviews

Separation of Heavy Metals and Other Trace Contaminants, by R.W. Peters and B.M. Kim (Eds), American Institute of Chemical Engineers, New York, NY, 1985, 207 pages, \$40 (\$20 to AIChE members).

The editors had selected and reviewed 18 papers presented at three AIChE National meetings held late 1983 and 1984. With growing public concern with hazardous chemicals in general, and trace chemicals in particular, this publication on the separation of heavy metals and other trace contaminants from wastewaters is timely and relevant.

This symposium volume is divided into the following chapters, with the number of papers in each chapter shown in brackets:

- Precipitation (3)
- Detoxification (1)
- Electrochemical Operations (2)
- Ion Exchange (2)
- Adsorption (1)
- Filtration (1)
- Biological Treatment (2)
- Fixation (1)
- Membrane Operations (1)
- Thermal Treatment (1)
- Physical Chemical Treatment (1)

One of the most useful papers in the book was written by the editor himself in collaboration with two other researchers. This paper is a 30-page review (with 166 references) evaluating recent metal removal techniques. The authors began with the well-known hydroxide precipitation process; they progressed through carbonate and sulfide treatment; they followed that section by coagulation and separation; and finally ended with emerging technologies. This paper is an excellent addition (and appropriate end) to this excellent state-of-the-art treatment of heavy metal separation problems and processes.

G.F. BENNETT

Innovative Thermal Hazardous Organic Waste Treatment Processes, by H. Freeman, Noyes Publications, Park Ridge, NJ, 1985, 125 pages, \$32.

Written by a member of the U.S. Environmental Protection Agency's (USEPA) Office of Research and Development, Hazardous Waste Engineering Research Laboratory (HWERL), Alternative Technologies Division, Thermal Destruction Branch, in Cincinnati, Ohio, this book contains discussion of 21 thermal processes identified by the USEPA as innovative processes

for treating or destroying hazardous wastes. Several of these processes are described in detail in a special issue of the *Journal of Hazardous Materials* (12(2) (1985) 127–206).

The processes were chosen through two national solicitations for innovative processes and through extensive literature surveys. While the processes differ widely in many respects (i.e. waste streams for which they are designed and/or state of development of the art of treatment), they all have one similarity as they all offer an innovative approach to solving hazardous waste problems.

Technology reviews include:

1. Wet oxidation: wet air oxidation, catalyzed wet oxidation, supercritical fluid oxidation, high temperature wet oxidation.
2. Chemical transformation: aqueous phase alkaline destruction of halogenated organic wastes; catalytic destruction of hazardous waste.
3. Molten glass: Joule heated glass melter, electromelt pyro-converter.
4. Pyrolytic: pyrolytic decomposition, high temperature pyrolysis with oxygen.
5. Molten salt: molten salt destruction.
6. Advanced incinerators: consetherm rotary kiln oxidizer, fast rotary reactor, "Cyclin" cyclone incinerator.
7. Electric reactor: high temperature fluid wall reactor, advanced electric reactor.
8. Plasma systems: pyroplasma, plasma temperature incinerator.

Clearly, Freeman has produced a state-of-the-art report on an area of technology in which the technology is rapidly changing. Most of the processes offer intriguing possibilities for the management of hazardous waste.

G.F. BENNETT

Toxic and Hazardous Wastes, Proceedings of the 17th Mid-Atlantic Industrial Waste Conference, by I.J. Kugelman (Ed.), Technomic Publishing, Lancaster, PA, 1985, 577 pages, \$49.00.

The Mid-Atlantic Industrial Waste Conference has developed into one of the primary industrial waste conferences in the United States covering both wastewater and hazardous wastes. The fact that the conference sponsors produce timely proceedings (the conference was held in June 1985) has helped them attain that status of quality and efficiency. These proceedings contain 47 papers which were presented in the following 11 sessions.

1. General
2. Biological Treatment
3. Pretreatment
4. Physical Chemical Treatment
5. Ground Water