

the application of ozone to drinking water treatment. As more concern is expressed about by-products of chlorine treatment (e.g. trihalomethanes) the use of ozone for water disinfection will increase.

This book was written for practicing engineers, water treatment plant managers, and others interested in ozonization. The purpose of this book is to provide guidance on the various applications of ozone, and appropriate system design and operation.

Chapter I provides a historical introduction to ozone use, tracing its roots to Merilens' recognition in 1886 that ozone could disinfect polluted water. Ozone's use in the United States and Europe is discussed.

Chapter II is devoted to the review of aqueous ozone chemistry, toxicology, analytical methods, and the physics of ozone production and gas transfer. Chapter III provides a bridge between fundamental chemistry and physics (Chapter II) and the specifics of design (Chapter IV). In this chapter, 10 different ozone applications are discussed in detail; e.g. iron and manganese removal, taste and odor removal, taste and odor control, etc.

Chapter IV presents the basics of ozone system design. Included are performance of treatability studies, ozone generation, contacting and diffusion, instrumentation, ozone destruction, corrosion consideration, system retrofit, and performance evaluation. Aspects of system operation are discussed in Chapter V. Included are principles of operation, reliability, maintenance, training and safety.

Chapter VI presents information on economics of ozone system design, construction and operation. The emerging process of ozonization combined with hydrogen peroxide and ultraviolet light are briefly discussed.

The book is a comprehensive compilation of the state-of-the-art of ozone technology as applied to drinking water production. It is a monumental work that will be the standard of the field for years to come.

GARY F. BENNETT

*Nitrogen Oxides Control Technology Fact Book*, compiled by L.L. Sloss, A.K. Hjalmarsson, H.N. Suud, L.M. Campbell, D.K. Stone, G.S. Shareef, T. Emmel, M. Malbodi, C.D. Livengood and J. Markussen, Noyes Data Corporation, Park Ridge, NJ, 1992, ISBN 0-8155-1294-5, 635 pp., \$86.00.

This book describes technologies for the control of nitrogen oxides emissions, primarily from the combustion of coal. More than 115 control systems are documented and a section on control costs is included.

The control systems discussed cover NO<sub>x</sub> reduction during combustion by flue gas denitrification, and by combined denitrification and desulfurization. NO<sub>x</sub> control systems commercially available from various manufacturers and those currently under development by private or governmental research

organizations worldwide are presented. For each system, the following data are given:

- Information on the system
- Process application
- Pollution reduction capability
- System diagrams (if available)
- Supplier/manufacturer

The book is, as many of the Noyes Data books are, a combination of several reports prepared for government agencies (in this case: U.S. EPA, DOE, and IEA Coal Research):

- Systems for Controlling NO<sub>x</sub> from Coal Combustion
- Sourcebook: NO<sub>x</sub> Control Technology
- Recent Developments in Combined Control of SO<sub>2</sub> and NO<sub>2</sub>
- Combined NO<sub>2</sub>/SO<sub>2</sub> Removal in Spray-Dryer FGD System
- Opportunities for Integrated Pollution Control Retrofits
- Retrofit Costs for SO<sub>2</sub> and NO<sub>x</sub> Control Options at 200 Coal-Fired Plants

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*Hazardous and Industrial Wastes: Proceedings of the 24th Mid-Atlantic Industrial Waste Conference*, edited by B.E. Reed and W.A. Sack, Technomic Publishing, Lancaster, PA, 1992, ISBN 0-87762-974-9, 759 pp. \$85.00.

Sponsored by 14 universities, this annual conference was held at West Virginia University in Morgantown, West Virginia in July 1992. These proceedings contain 66 of the 80 papers presented at this conference.

Major topics (session theme) and the number of papers published in each were:

- Pollution prevention/waste minimization - 6
- Groundwater flow - 3
- Sludge treatment - 3
- Issues - 3
- Treatment technology - 20
- Site remediation - 21
- Waste management - 3
- Energy from wastes - 4
- Solids disposal - 3

Given the list above it is obvious the papers span a wide range of topics, from laboratory studies to proven technology; from theory to established practice; from a student design contest problem to expert systems for waste treatment.

The papers were photoreproduced yielding variable type fonts. An index is provided for the current volume as well as for the proceedings from the preceding five conferences.