

4. Miscellaneous control technologies and treatment technologies

- Fracturing
- Permeable Treatment Barriers
- Continuing Problems in Groundwater MTBE, 1,4-Dioxane, Perchlorate, and NDMA

Interestingly, the book begins with discussions of a failure — well may be not a complete failure, but an incomplete cleanup technology — pump and treat. Initially believed by those in the field to be the most effective method of remediation and not able to reach the required contaminant concentrations in most aquifers. Nyer uses this chapter to discuss the basic component limitations of pump and treat technology.

In the second chapter comes a discussion of “Lifecycle Design”, a concept Nyer says “. . . helps to focus the designer on the main strategies necessary to successfully remediate a site”. The idea is that with projects requirements such as contaminant concentration changing with time, one must account for that in one’s design. Examples of good lifecycle design are spread throughout the other chapters in the book.

The next several chapters are divided into the three major sections as noted earlier in this review.

As I read through the book, I was impressed by Nyer’s (self-described as easy) style of writing. In numerous well-done (credit was given by the author to his employer for assistance) diagrams, charts, tables, design equations are provided along with (much to my liking) numerically worked examples.

Perhaps best of all (at least to the academic reviewer) were numerous real world projects — well-chosen and well-described.

The reader of this review should have discerned by now my admiration for the writer (Nyer) and his superb book. I recommend its purchase.

GARY F. BENNETT

PII: S0304-3894(01)00244-8

Handbook of Pollution Prevention Practices

N.P. Cheremisinoff (Ed.), Marcel Dekker, New York, 2001, 429 pp., US\$ 165.00, ISBN: 0-8247-0542-4

The current “hottest” topic in the environmental field is pollution prevention. The topic is introduced by Cheremisinoff in the following way.

Pollution prevention, rather than concentrating on the treatment and disposal of wastes, focuses on the elimination or reduction of undesired by-products within the production process itself. In the long run, pollution prevention through waste minimization and cleaner production is more cost-effective and environmentally sound than traditional pollution control methods. Pollution prevention techniques apply to any manufacturing process and range from relatively easy operational changes and good housekeeping practices to more extensive changes such as making substitutions for toxic substances, the implementation of clean technology, and the installation of state-of-the-art recovery

equipment. Pollution prevention can improve plant efficiency, enhance the quality and quantity of natural resources for production, and make it possible to invest more financial resources in economic development.

The book (according to the jacket information) “focuses on reducing manufacturing and environmental compliance costs by instituting feedstock substitution, improved operational schemes, recycling and by-product recovery, waste minimization, and energy efficiency policies, and offers project cost accounting tools that assist in evaluating money-saving pollution prevention (P2) options — streamlining environmental management and pollution control practices and presenting step-by-step procedures to improve productivity and product quality”.

Unfortunately, the author who has been involved in publishing more than 150 engineering books has used too many extraneous fillers in the book. He sets out on the course early in the book, when he begins (unnecessarily in my view) to report on all the US pollution laws, in a section entitled “The Regulatory Driving Force” beginning with ambient (air) standards and emission standards. Then he goes over much covered laws such as RCRA, CERCLA, EPCRA, CWRT, SWDA, etc.

Then he discusses ISO 14000 — a valid concept, but only very late in the discussion does he relate it to pollution prevention and then only weakly.

Chapter 2, “Managing Hazardous Chemicals”, is equally remote, a problem further exacerbated by delving into (on the first page of this chapter) a discussion of airborne particulate matter. The P2 practices to reduce the emission of air contaminants are discussed, but little new is given. Nor, in my opinion, is a recitation (description) of air pollution particulate control devices such as inertia separation, bag houses, unique. Why the section is followed by the topic heading Arsenic, Cadmium, Lead and Mercury (toxic metals) is not clear other than to discuss their toxicity.

Chapter 3, “Economics of Pollution Prevention”, contains some useful general material on economics, with some useful information on lifecycle analysis.

Following a chapter on the auditing (for pollution prevention), are chapters on pollution prevention in specific industries, chemical processes, petroleum refinery, metallurgical and miscellaneous (wood preserving, electroplating, etc.).

GARY F. BENNETT