

Although this book appears to be written for the layman (to understand economics) it really contributes, I feel, little to the environmental field (at least from the perspective of an environmental engineer).

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Zero Pollution for Industry: Waste Minimization Through Industrial Complexes, N.L. Nemerow, Wiley, New York, 1995, \$54.95, 217 pp. ISBN: 0-471-12164-9.

In the preface, Nemerow begins with the following statement: "After more than 50 years of active participation in all aspects of the industrial waste treatment field, I have concluded that governmental regulations alone will not alleviate the environmental damage caused by industrial wastes. Some consideration must be given to the economic consequences of these waste discharges."

That admonition from a respected contributor to the environmental literature must be carefully considered. Nemerow has written several books (I counted at least five in this chapter's reference footnotes) and many more papers, generally on the environmental impact of discharges (*Scientific Stream Pollution Analysis*, McGraw-Hill, New York, 1974) or industrial wastewater treatment (*Liquid Wastes of Industry - Theories, Practice and Treatment*, Addison Wesley, London, 1971). This new book goes beyond treatment to the heart of the problems.

In the first chapter, Nemerow outlines the rationale for his book: achieving a sustainable environment by minimizing use of environmental resources by striving for zero pollution. There are three general methods to attain zero pollution, according to the author, who presents them in order of probable acceptance by industry:

1. Recovery and reuse within the same plant
2. Recovery and sale of wastes to other manufacturers
3. Bringing the producer and (waste) user together in one industrial complex

However, costs to industry are a key component of acceptance of the "new order". Thus, Nemerow states: "...before we begin any program involving the reduction of wastes to a minimum, we must understand the overall economics of pollution. For, if it were not for the cost involved, there would be no resistance by industry to provide pollution control."

That statement is followed by Chapter 2, entitled "Economics of Zero Pollution". Both costs and benefits (including general environmental benefits) are discussed.

The first step in zero discharge is waste minimization. How to accomplish this goal by reuse and recovery is discussed in Chapter 3. Next, waste minimization by recovery and external sales of products is covered (Chapter 4). Chapter 5 describes in detail the system of environmentally balanced industrial complexes. Environmentally balanced industrial complexes are simply a selective collection of compatible industrial plants located together in one area (complex) to minimize both environmental impact and industrial production costs.

Examples (drawn from the author's own experience) of compatible industrial complexes are given: pulp and paper mill; tannery; sugarcane; textile; fertilizer-cement; fossil fuel power plant; steel mill-fertilizer-cement; plastic; cement-lime and power plant; and lumber mill.

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Industrial Organic chemicals, by H.A. Wittcoff and B.C. Reuben, John Wiley, New York, NY, 1996, \$74.95, 531 pp. ISBN: 0-471-54036-6

The authors of this book come with a long list of other texts (and audio tape courses) published. Between them, Wittcoff and Reuben have published six texts and created two ACS topic courses over almost a 51-year period.

In the preface, the authors write: "In this book, our main objective is still to present the technology of the organic chemicals industry as an organized body of knowledge, so that both the neophyte and the experienced practitioner can see the broad picture. Nonetheless, we have expanded its new processes but many apparently that are significant because they scope to include not only less important reactions give rise to the more profitable specialty chemicals. The lesser volume chemicals have been clearly delineated as such, and the reader who wishes to see the industry on the basis of its large tonnage products can omit these sections". To that end, the authors have included the following:

- A survey of the organic chemicals industry that stresses economic and environmental factors and alternative reaction pathways
- A review of the seven basic raw materials derived from petroleum and natural gas
- A discussion of the latest processes and reactions, including metallocene catalysts, which yield more profitable specialty chemicals

The book has 16 chapters. Chapter 1 shows how the chemical industry fits into the overall economy and then defines the industry in terms of its characteristics. The following several chapters discuss chemicals (classes) from natural gas and petroleum and chemicals and polymers from ethylene, propylene and the C₄ stream, C₅ stream, benzene, toluene, xylenes, and chemicals from methane, alkanes and coal.

Next are chapters on classes of compounds, fats and oils, and carbohydrates. Two final chapters discuss how polymers are made and industrial catalysis.

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Basic Hazardous Waste Management, 2nd edn, by W.C. Blackman, Jr., Lewis, Boca Raton, FL, 1995, \$59.95, 397 pp. ISBN: 1-56670-168-6

To begin a book review, I page through a book reading chapter titles, glancing at tables and scanning photographs. In performing this task for *Basic Hazardous Waste*