The second chapter, Findings and Conclusions, is clearly the most important chapter in the text. Indeed, I might have put this chapter first in the book. In this chapter, the author discusses the findings of his report, noting (among other things):

– beverage containers comprise 5.5% (1990) of the weight of the US municipal solid waste stream

– source reduction by using less material to make a container, selling concentrated beverages, or reusing containers by refilling are good pollution prevention strategies

– one-way containers dominate the U.S. market

– with a sufficient number of fillings, the refillable bottle can reduce the environmental impact associated with materials extraction and container manufacturing

– recycling containers saves energy

– energy used in washing refillable bottles is more than offset by savings in energy that would be required to make additional new bottles

– a review of the literature shows that one-way bottles use more energy overall than refillable bottles

– for the delivery of a beverage, the amount of water needed to wash refillable bottles is small in comparison with the water used in manufacturing new one-way bottles.

The foregoing are some of the many conclusions reached by the author, but he has studied the problem and its complexities well, and I believe fairly assessed the diverse impacts of the problem. Indeed, he has tried to balance the equities of recycling versus disposal.

Case histories of two firms' successful recycling programs are given.

A one hundred-item bibliography is found at the end of the report.

GARY F. BENNETT

Recycling and Reuse of Industrial Wastes, L. Smith, J. Means and E. Barth, Battelle Press, Columbus, OH, 1995, $34.95, 116 pp. ($8\frac{1}{2}$ by 11 in. format) ISBN: 0-935470-89-1

Both morally and legally, industry (world-wide) is being encouraged and sometimes forced to reduce its production of hazardous waste. To that end, the authors of this book define their purpose in writing it:

"The intent of this handbook is to assist pollution prevention efforts by encouraging recycling and reuse of wastes found on Superfund or Resource Conservation and Recovery Act (RCRA) Corrective Action sites. This handbook outlines specific technologies for recycling and reuse of materials that require remediation at contaminated sites. Case studies within the handbook document applications of these technologies to real-world conditions."

This book is unique among waste minimization treatment books since it focusses on cleanup-derived wastes rather than newly generated industrial hazardous wastes.

This handbook discusses recycling and reuse options from a wide variety of wastes: organic and inorganic; liquid and solid, i.e., petroleum-contaminated sludges,

propellents and explosives, rubber goods, polymers, plastic fluffs, metal-containing solutions, soils, sludges and sediment, foundry sand, ashes, batteries and mercury-containing compounds.

Chapter 2 starts the recycling discussion by using two tables to illustrate recycling technology options and two summary tables to help the user quickly identify candidates for recycling and technologies for waste material, i.e., liquid organic solvents could be treated by the following applicable recycling technologies:

- distillation (3.1)
- energy recovery (3.2 and 3.3)
- decanting (3.4).

The number following the technology refers the reader to the next chapter (3) and section (1, 2, etc.) where the technology is discussed.

The second table of the chapter reverses the order (of the first chapter) and presents the technology first (i.e., distillation) and then records the contaminants in columns (it is useful for media, end-use and limitations). There are 37 discussed technologies and 137 cited references.

Chapter 4 discusses the need for product quality specifications for petroleum refining, organic chemistry, metals for reuse, hydrometallurgical processing, etc.

Chapter 5 is perhaps the most useful (for me, at least). It was a most interesting discussion of eight successful case studies of examples of commercial recycling of complex waste materials. The studies were:

- Use of spent abrasive blasting media as aggregate in asphalt.
- Use of spent abrasive blasting media as a raw material for Portland cement making.
- Physical separation to recover lead particulate from soils at small-arms practice ranges.
- Processing lead-containing wastes from Superfund sites in a secondary smelter.
- A treatment train for recovery of petroleum from an oily sludge.
- Solvent recovery using small onsite distillation units.
- Thermal desorption to clean soil for reuse.
- Pumping to recover coal tar liquids.

Each case study includes sections on site and waste description, technology description, recycling benefits, economic characteristics, and limitations.

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Environmental Law Handbook, 13th edition, by Thomas F.P. Sullivan (Ed.), Government Institutes, Inc., Rockville, MD, 1995, 538 pp., $79, ISBN: 0-86587-450-6

Recently, an attorney told me that the U.S. Environmental Law encompasses more pages in the Code of Federal Regulations than the tax regulations. Given the pervasiveness and complexity of the U.S. tax code, this is a sobering thought. Given also that one can be fined extremely heavily or even be imprisoned for