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Water Pollution Control

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BOOK REVIEWS

WATER POLLUTION CONTROL

by

RALPH A. LUKEN and EDWARD H. PECHAN

Praeger Publishers, New York, 1977

This book is based on an earlier study prepared for the National Research Council of the National Academy of Sciences (NAS) by the two authors and Daniel J. Basta.¹ The NAS study describes the National Residuals Discharge Inventory (NRDI), which, in the words of the book, "... is a systematic procedure for evaluating various aspects ..." of the 1972 Water Pollution Control Act Amendments. These aspects include the costs of the law as well as its likely effect on industrial and municipal effluent discharges and on relative water quality at the regional level.

Of importance to the assessment of the book (as opposed to the original NAS study) is the fact that one aspect *not* investigated was the social value of various aspects of the law. Also of importance to this review is the fact that the authors chose, for reasons unexplained, to base the book on preliminary versions of the NAS study, versions that contained significant errors, which had been corrected prior to a second printing but are left uncorrected in the book.

The book's similarity to the NAS study invites comparisons. On the positive side, it shares many of the virtues of the original. It describes an ambitious analytical effort with frequent reminders of the limitations of the assumptions and methods made necessary by inadequate data and the pressures of time. Such honesty is all too infrequent in governmental reports. Moreover it clearly documents the high cost of the principal feature of the 1972 law: a reliance on uniform national discharge standards regardless of local differences in the assimilative capacity of receiving waters and the number and type of dischargers. A policy which relied on differential technical approaches would apparently be far cheaper.

The book, being shorter and better edited than the NAS study, is much easier to read. However, since much of the technical detail and supporting data have been excised, this gain for the general reader has been at the expense of the specialist.

As the authors note, the book also differs from the original study

1. NATIONAL RESEARCH COUNCIL, THE NATIONAL RESIDUALS DISCHARGE INVENTORY (1976) (available from the National Technical Information Service, Accession No. PB-252 288).

in that it contains a brief legislative history of the Water Pollution Control Act Amendments of 1972; it supposedly “corrects many of the mistakes in the NRDI report . . .;” it discusses “additional policy alternatives, findings, and conclusions based on the NRDI analysis. . . .” This reviewer takes issue with the latter two claims. Rather than correcting errors in the NRDI report, it perpetuates many of the errors in the first printing that had been subsequently corrected. Furthermore, while the NRDI analysis is not inconsistent with the discussion of policy alternatives and related recommendations, their policy conclusions demand far more support than NRDI can provide. It is simply misleading to say that these conclusions are “based” on the NRDI analysis.

The table of discharge estimates (p. 691) illustrates certain significant differences between estimates in the book and the original NAS report. As the authors note, most of the book’s estimates appear to be drawn from computer runs made in 1975.² In general, these estimates are replicated in both printings of the NAS study. However, as the table suggests, because the book merely reproduces estimates from the first printing, it thereby fails to give the reader the benefits of the second printing’s revisions.

Thus the book’s ore mining discharge estimates reflect an original overestimate of gold mining water use by a factor of a hundred times. The paving and roofing estimate reveals that the book shares the first printing’s dislocation of decimal points. The realization that cement processing is not a significant source of BOD, made in the April, 1976 second printing, was apparently forgotten by the book’s publication date of 1977. Finally, while the book’s textile estimates appear exceptional in that they differ from those in both printings of the NAS study, this is not indicative of a revision made after April, 1976. As before, the book’s estimates also come from 1975 computer printouts. However, in this case, the authors selected a printout that excluded the contribution of plants located in coastal counties.

In certain tables of the book the majority of entries differ from both the first and second printings of the NAS study. Many of these changes could, indeed, represent legitimate corrections. However, because of the above examples of substantial errors that found their way into the book, this reviewer does not have much confidence in the quality of the supposed revisions. Part of this uneasiness is due to the fact that in no case did the authors discuss the reasons for their changes.

The other claim for the book’s uniqueness—the inclusion of new

2. Copies of these runs have been made available to the reviewer by Daniel J. Basta.

COMPARISON OF SELECTED DISCHARGE ESTIMATES IN
LUKEN-PECHAN BOOK AND ORIGINAL NAS STUDIES
(million lbs per year)

	<i>Luken-Pechan (1977)</i>	<i>NAS Study First Printing (Jan., 1976)</i>	<i>NAS Study Second Printing (April, 1976)</i>
<i>Ore Mining</i>			
Suspended Solids			
Generation	1,090,555.0	1,090,555.0	604,620.5
1973 Discharge	688,863.7	688,863.7	198,874.0
BPT	8,724.5	8,724.5	4,836.0
BAT	8,724.5	8,724.5	4,836.0
<i>Paving and Roofing</i>			
Suspended Solids			
Generation	5.9	5.9	59.0
1973 Discharge	2.8	2.8	28.0
BPT	1.8	1.8	18.0
<i>Cement</i>			
Biochemical Oxygen Demand			
Generation	103.7	103.7	0
1973 Discharge	103.7	103.7	0
BPT	69.5	69.5	0
BAT	69.5	69.5	0
<i>Textiles</i>			
Biochemical Oxygen Demand			
Generation	256.2	693.8	693.8
1973 Discharge	126.2	382.7	382.7
BPT	25.6	69.4	69.4
BAT	7.7	22.8	22.8
Suspended Solids			
Generation	168.6	529.7	529.7
1973 Discharge	109.8	387.2	387.2
BPT	18.5	58.3	58.3
BAT	3.5	12.2	12.2

policy conclusions supposedly based on NRDI findings—seems to be a half-truth. The first part of the claim is true; the second part is not. However, it should be realized that the source of the half-truth could be an honest confusion between the concepts of cost-effectiveness analysis and cost-benefit analysis and perhaps also between positive and normative analysis.

Both the book and the original NAS study argue repeatedly that the provisions of the Water Pollution Control Act Amendments are not cost-effective. Several alternatives are discussed which appear capable of attaining the law's objectives at lower cost. Such observations, however, by themselves have no normative significance. To argue that a strategy is cheaper does not argue for that strategy unless it is first argued that the objectives of the strategy are worth

its (lower) cost. Nevertheless, the authors appear to have assumed that the observed potential for cost reductions justifies a recommendation to preserve the current deadlines of the law, allowing however for nonuniform technical approaches to be developed through area-wide planning.

Since the NRDI was not designed to assess the social benefits of the pollution control law, it can not by itself justify even the 1977 provisions of the law let alone the more stringent 1983 provisions. Thus while the reader may be in sympathy with the book's recommendations for maintaining the law's current deadlines and relying on the area-wide planning provisions as the basis for any eventual "midcourse corrections," the reader should not be misled in believing that these recommendations are justified by the NRDI analysis.

The Luken-Pechan book costs \$18.50 while the original NAS report costs only \$8.00. The potential reader will have to decide whether the better editing along with the authors' policy recommendations are worth the rather substantial marginal cost. Since the original NAS report contains more supporting detail and more accurate numbers, it was not hard for this reviewer to arrive at the appropriate cost-benefit choice.

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*Resources for the Future, Inc. The author gratefully acknowledges the assistance of Leonard Gianessi in the preparation of this review.