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Water Pollution Abatement: Goals and Costs

In 1972, the Federal Water Pollution Control Act was amended in part as follows: "It is the national goal that the discharge of pollutants into the navigable waters be eliminated by 1985." The record of the hearings preceding enactment of the legislation makes it clear that the phraseology implies an emphasis on pollution arising from point sources and hence controllable.

It now begins to appear that because of the pollution from nonpoint sources, the quality of our navigable waters will be only moderately improved even after capital expenditures of perhaps more than $100 billion. Moreover, a recent report* issued by the Environmental Protection Agency (EPA) points out that capital investment is only the beginning. Once installed, facilities incur annual costs that, over a 20-year period, may amount to five times the cost of the initial facilities. These are costs that will be met by taxpayers and consumers.

The EPA report estimates that to comply with 1977 requirements of "best practicable" water pollution control technology, industry will have to invest an additional $8 billion to improve effluents at existing plants. The sum is modest in comparison with the $60 billion now believed necessary to bring public sewerage facilities up to standards. But cost estimates for the latter have been steadily climbing even faster than inflation, and the report mentions a possible doubling of the cost. The present estimate essentially provides for secondary treatment, that is, a reduction of biological oxygen demand (BOD) by 85 to 90 percent. A long path lies between that and no discharge of pollutants. To remove the last 10 percent usually entails considerably more cost than to abate the first 90 percent.

With these figures as a background, a recent report† by Enviro Control, Inc., to the Council on Environmental Quality comes as a shocker. The report shows that partially treated sewage is only one of the sources of urban water pollution. Urban nonpoint sources constitute a factor of at least comparable magnitude.

The major problem arises in drainage following a storm. When storm and sanitary sewers are combined, the flow far exceeds capacity of storage at treatment plants, and part of the flow must be bypassed. At present, efforts are being made to separate storm and sanitary sewers. The new report shows that this procedure will not be very effective.

The report points out that "between 40% and 80% of the total annual BOD and COD [chemical oxygen demand] entering receiving waters from a city is caused by sources other than the treatment plant." Dog feces, ground-up tires, papers, and plant materials are obvious factors. The report further states, "The runoff of toxic pollutants, particularly heavy elements, is . . . . [substantial]; a typical moderate-sized city will discharge 100,000 to 250,000 pounds of lead and 6,000 to 30,000 pounds of mercury per year."

Urban pollution is supplemented by rural nonpoint sources. Manure from farm animals, most of which is not treated, contains about ten times as much organic matter as do human wastes. Following storms, considerable amounts together with other agricultural wastes are introduced into streams. In addition, natural processes of weathering contribute annually about 200 million tons of inorganic materials, including heavy elements.

Thus it appears that we are approaching a situation in which removal of the last few percent of contaminants from point sources could constitute a costly and almost meaningless enterprise. The time has come for looking at the total picture of water pollution—what is practical, the costs, and the benefits.—PHILIP H. ABELSON

* Environmental Protection Agency, *The Economics of Clean Water–1973* (Government Printing Office, Washington, D.C., 1973), $1.40. † A. M. Vitale and P. M. Sprey, *Total Urban Water Pollution Loads: The Impact of Storm Water* (Publ. PB231-730, National Technical Information Service, Department of Commerce, Springfield, Va. 22151, 1974), $5.50.