The Decline of Galveston Bay. A Conservation Foundation Study


This is a brief, somewhat cursory, overview of the pollution of the estuary that receives the effluvia from the thriving metropolitan area of Houston, Texas, Galveston Bay. The research, writing, and analysis of this book is attributed to Leon Monroe Cole, University of Texas, Austin; Victor L. Emanuel, University of Houston; and Bruce C. Driver, a Conservation Foundation consultant. A Ford Foundation grant supported a series of field investigations by The Conservation Foundation inquiring into the perpetual conflict between natural resource development and environmental protection to which the Nation has become so sensitive. This is the last of the series.

This study was intended, in Sydney Howe’s words, “to identify the policies and practices, public and private, that have constituted negligence toward water and related land resources in the (Houston) ship channel and Galveston Bay area.” The book succeeds in this, although it falls a bit short of its other stated intent; “to define and document the failures (or absences) of men and laws which national, state and local practice have permitted, and to advance amends.”

Galveston Bay was chosen for study not so much as a case history of abuse of a water resource, but to examine the supposition underlying national water pollution control efforts that interacting governmental jurisdictions can accomplish the public will. In keeping with the popular myth about Texas, Galveston Bay presumably offers a larger-than-life example of water pollution control circumstances that are common elsewhere in the United States. The authors think that the Houston situation is a “perfect model” for examining the dichotomy between national environmental concerns and “reliance upon an economic system that treats pollution as an external cost of doing business and that has therefore prospered and grown at the expense of environmental quality.” A reader will be quickly convinced that no better prototype of this dichotomy need be sought.

In 34 pages the stage is set with a too-brief description of the development of booming Houston and its impact on the environment, with the U. S. Corps of Engineers hovering in the background. A less satisfactory account is given of the Bay’s ecology and its “ecological image,” that is, the perception of its ecological state by the inhabitants of the Houston area.

Seventy-one following pages attempt to examine the roles of federal, state, and local governments sharing responsibility for water pollution control in Galveston Bay. After the abilities and records of these governmental entities are sketched out, conclusions are drawn and recommendations offered for improving the nation’s water pollution control program. An appendix by Dr. Cole discusses activities of the Texas Water Quality Board and their feasibility for mathematical modeling.

Despite the 1972 publication date and numerous references to the Federal Water Pollution Control Act Amendments of 1972 (passed on 18 October 1972), most of the information presented seems to have been collected when Federal water pollution control activities still depended upon persuasion, good will, and enforcement conferences. Except for these references, which may have been added in proof, this brief report might well have been published in 1971.

Degradation of Synthetic Organic Molecules in the Biosphere


This paperback book contains 16 of the conference summary and a list of contributors. The symposium was sponsored by the National Research Council at request by the Secretary of Agriculture for assistance in answering the question of how to dispose of wastes and production practices. Unlike papers of most symposia, this one advances in related fields of study, each paper was addressed to one area, with little or no overlap. No other specialties represented.

As many pesticides and other nonnatural compounds are used in the environment by biological processes, papers explore possibilities for the disposal of natural pesticides and other man-made compounds by microbial or photodecomposition. The points made are summarized:

1) Microbes are able to attack methoxyl groups and convert them into hydroxyl. In some persistent chlorines methoxyl can provide a biodegradable chlorine that is replaced by methoxyl, thus rendering the pesticide, a much less resistant compound to degradation.
2) 2,4-D is biodegraded by removal of the side chain to form 2,4-dichlorophenol, a compound also formed by exposure of 2,4-D to radiation.
3) It is suggested that the oxygenating species in chemical reactions is singlet oxygen. In photosynthetic plants, and animals generally employ the same mechanism of attack, i.e., addition of molecular oxygen to the compound through mixed function oxygenase isms, for example, oxidize naphthalene to naphthalene as a prelude to breaking down the naphthalene by further oxidation into compounds serving as a source of energy for growth.
4) The importance of cytochrome P-450 was suggested in initiating reactions used by pseudomonads in the degradation of camphor.

Natural resource professionals and concerned citizens, Texans, should read this book to understand better how pollution is controlled (or noncontrolled) in the United States. Pollution control professionals should read it to gain additional insight into how their efforts are perceived by natural resource-minded professionals.—DAVID W. DUKES, Director, Southeast Environmental Research Laboratory, Environmental Protection Agency, Athens, Ga.