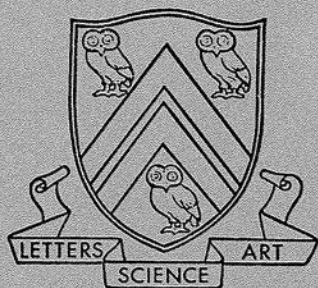


RICE UNIVERSITY STUDIES



ENVIRONMENTAL POLLUTION **A Challenge to Science and Technology**

A. W. BUSCH, Editor

EMILIO Q. DADDARIO
ROBERT N. RICKLES
BILL ELLIOTT

ARTHUR W. BUSCH
CALVIN H. WARD
J. VENN LEEDS, JR.

Proceedings of Rice University Research Sponsor Seminar

RICE UNIVERSITY STUDIES

JOURNAL OF WILLIAM MARSH RICE UNIVERSITY

RICE UNIVERSITY STUDIES, successor to the RICE INSTITUTE PAMPHLET, is a quarterly journal of writings in all scholarly disciplines by staff members and other persons associated with Rice University.

EDITOR: Edward Norbeck

ASSOCIATE EDITOR: Katherine F. Drew

ASSISTANT EDITOR: Mimi G. Cohen

RICE UNIVERSITY STUDIES COMMITTEE

Edward Norbeck, Chairman, Thomas W. Donnelly, Katherine Drew,
S. W. Higginbotham, Richard O'Neil, George G. Williams

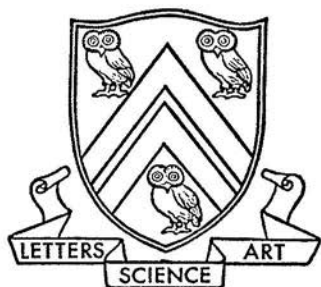
INFORMATION FOR AUTHORS

Manuscripts submitted for publication should be addressed to the Editor, Rice University Studies, Rice University, Houston, Texas. When preparing manuscripts contributors in the humanities and social sciences are requested to follow the MLA Style Sheet; contributors in science and mathematics are requested to follow the established procedures of major journals in their special fields. Notes and references will appear at the end of the manuscript.

Individual numbers of Rice University Studies are available at \$2.25 plus cost of postage and handling from Rice Campus Store, P. O. Box 1892, Houston, Texas 77001.

Second class postage paid at Houston, Texas.

RICE UNIVERSITY STUDIES



ENVIRONMENTAL POLLUTION A Challenge to Science and Technology

A. W. BUSCH, Editor

EMILIO Q. DADDARIO
ROBERT N. RICKLES
BILL ELLIOTT

ARTHUR W. BUSCH
CALVIN H. WARD
J. VENN LEEDS, JR.

Proceedings of Rice University Research Sponsor Seminar

PUBLISHED BY
WILLIAM MARSH RICE UNIVERSITY
HOUSTON, TEXAS

VOL. 53, SPECIAL NUMBER

SPRING 1967

Foreword

This seminar on Environmental Pollution appropriately coincides with announcement of the establishment of the Environmental Science and Engineering Program as an interdepartmental activity of the University. The Program will focus academic attention on problems that are rapidly approaching the status of national emergencies, and will recognize an established and effective interdepartmental activity led by Professor Busch, who has been designated Chairman of the Program.

The Environmental Science and Engineering Program offers the Master of Science and Doctor of Philosophy degrees. Applicants for admission to the Program may hold the baccalaureate or masters degree in any of the sciences, mathematics, or engineering.

The Program serves as the focal point for university-wide study and research in the broad man-environment problem spectrum. The participation of faculty members from the departments of Chemical and Electrical Engineering, Architecture, Biology, Economics, Geology, and Psychology indicates the extent of this interdisciplinary activity. Graduate students enrolled in any of these departments and interested in environmental problems for thesis topics may use facilities of the Environmental Science and Engineering Program and are eligible for financial assistance from the Program.

Candidates for the Master of Science or Doctor of Philosophy degree may pursue a course program designed both to complement and supplement their background. This is accomplished through major and minor emphasis areas although formal minors are not required.

The philosophy behind this approach to environmental problems is presented in the faculty lectures contained in this volume while the need for such an approach is clearly indicated by the remarks of Congressman Daddario, Dr. Rickles, and Judge Elliott.

The contribution to be made to Rice University and its work, of which this new program is typical, by the Research Sponsors is a vital factor in the continuing growth of our capabilities in higher education, particularly at the graduate level. This seminar, made possible by Research Sponsor funds, is an example of such contributions, and we are grateful to them for their continuing support.

W. E. GORDON
Dean of Engineering and Science
RICE UNIVERSITY

RICE UNIVERSITY STUDIES

VOLUME 53, SPECIAL NUMBER

SPRING 1967

THE ADEQUACY OF TECHNOLOGY FOR POLLUTION ABATEMENT <i>by Emilio Q. Daddario</i>	1
INDUSTRY'S ROLE IN POLLUTION ABATEMENT <i>by Robert N. Rickles</i>	11
REGIONAL PLANNING FOR ENVIRONMENTAL POLLUTION CONTROL <i>by Bill Elliott</i>	15
THE RICE UNIVERSITY APPROACH TO GRADUATE STUDY AND RESEARCH IN ENVIRONMENTAL SCIENCE AND ENGINEERING <i>by Arthur W. Busch</i>	21
EFFECTS OF ENVIRONMENTAL POLLUTION ON ECOLOGICAL SYSTEMS <i>by Calvin H. Ward</i>	25
THE SYSTEMS APPROACH TO ENVIRONMENTAL POLLUTION CONTROL <i>by J. Venn Leeds, Jr.</i>	35
ROSTER OF PARTICIPANTS IN RICE UNIVERSITY RESEARCH SPONSOR SEMINAR	41
RICE UNIVERSITY RESEARCH SPONSORS	44

