

must be made of the very thorough referencing in both the main section and in most of the supporting papers, a very worthy asset in this book.

Herbert L. Volchok (PhD, Columbia University), a senior scientist in the Environmental Studies Division of the U.S. Atomic Energy Commission Health and Safety Laboratory in New York City, has worked primarily on the distribution and effects of the long-range long-term fallout from nuclear weapons tests with emphasis on the earth's surface and the oceans. Lately, this effort is partially shifting toward the environmental effects of more local contaminating events such as nuclear reactor and reprocessing plant effluents as well as local and global studies of stable trace metals.

Nuclear Techniques in Environmental Pollution

(Proceedings of a Symposium, Salzburg, 1970)

Editors IAEA

Publisher Unipub, Inc.

Pages 810

Price \$22.00

Reviewer Manchery P. Menon

This book is comprised of the proceedings of a 1970 symposium in Salzburg sponsored by the International Atomic Energy Agency. This volume, containing 54 technical papers presented by scientists from 33 countries, depicts the global concern for pollution problems and presents the nuclear techniques and methodology for the measurement and a better understanding of environmental pollutants.

The first paper, by Mott, gives an excellent review of the various nuclear techniques currently being pursued for pollution studies, with plenty of references. Many of the papers are largely concerned with the measurement of pollutants using such techniques as activation analysis, isotope-ratio measurement, x-ray fluorescence, activable tracer method, radiotracer technique, etc. Because of its high sensitivity, the activation analysis technique con-

tinues to be the method of choice, in many instances, to determine the trace elements in air pollutants, oil spillage, and aquatic environment. However, if the chemical state of the species in question is sought, some other technique such as electron spectroscopy, as recommended by Gordon, is to be employed. A novel technique perfected by the scientists of Brookhaven National Laboratory uses a dual-tracer system and isotope-ratio measurement for locating the source of air pollution with oxides of sulfur and for tracing plume emerging from power plant stalks. Instrument systems such as an electron capture detector to measure sulfur compounds and an auto exhaust monitor for the detection of carbon monoxide, hydrocarbons, and oxides of nitrogen in air have also been described.

There are only a few papers dealing with the transport, diffusion, and dispersion of atmospheric pollutants. The ⁸⁵Kr tracer grid system described by Nielson and Wogman to follow the atmospheric transport and diffusion process, is worthy of mention. Other studies included the transport and transformation of pesticides and other pollutants in air, water, and soil. Particularly excluded from the proceedings are papers on fallout studies involving naturally and artificially produced radionuclides. In the past, fallout studies have provided much information about the movement of airborne particulates.

The problem of mercury contamination which has generated considerable interest is discussed in detail in at least five papers. Application of radiotracer techniques for coastal pollution studies and sewage treatment problems is convincingly demonstrated in a number of papers.

Besides the content of the papers, the lively discussion included at the end of each paper in the book also exposes the reader to points of view other than that of the author on any given topic. This compilation is no doubt a useful reference book for those who are either interested or engaged in the environmental pollution studies.

Manchery P. Menon is professor of chemistry at Savannah State College. He came to Savannah in 1967 from Texas A & M University where he served in a dual capacity as

associate professor of chemistry and as the associate research chemist in the Activation Analysis Research Laboratory. He holds a PhD degree in inorganic and nuclear chemistry (University of Arkansas) and also has one year's post-doctoral training at the Massachusetts Institute of Technology. He also worked as summer faculty employee in Oak Ridge National Laboratory (1966) and in the IBM Thomas Watson Research Center (1969). He is the author and/or co-author of many publications in such areas as nuclear fission, activation analysis, and radiochemistry.

Dynamic Studies With Radioisotopes in Medicine

(Proceedings of a Symposium, Rotterdam, 1971)

Editors IAEA

Publisher Unipub, Inc.

Pages 901

Price \$24.00

Reviewer Harold L. Atkins

This volume consists of the proceedings of the symposium held in Rotterdam, August 31 to September 4, 1970 under the auspices of the IAEA. It is a worthy successor to *Dynamic Clinical Studies with Radioisotopes* (1964) published by the U.S. Atomic Energy Commission, Division of Technical Information. Many authors included in the earlier volume are also represented by contributions to this recent work.

The volume is divided into a number of sections which cover the following: theoretical aspects, techniques and instruments, thyroid function studies, renal function studies, hepatic and splenic function studies, mineral metabolism, regional blood flow, cardiac function, and pulmonary function. Each section is preceded by a general review paper which more or less summarizes past and present developments with some glimpses into the future. Of the 71 papers, 15 are in French, the rest in English.

It is interesting to note the rapid advances in techniques and instrumentation that have occurred since the 1964 publication. The use of the gamma camera with multichannel

analyzer or computer has improved the accuracy of anatomical localization of regions of interest. Many of the studies described can now be used for clinical application although most of the reports describe very specialized research studies not applicable at this time to routine clinical evaluation.

A few of the described studies might be questionable, particularly the one involving administration of ^{75}Se -selenomethionine for placental localization. For those who are primarily clinicians the mathematical treatment of data in a few papers will seem somewhat formidable. However, anyone involved in nuclear medicine should find this volume very valuable for bringing up to date

the theory and practice in an area of vital interest today. The review papers in particular are extremely helpful in providing an overall picture. The opening paper by Veall on theoretical aspects was especially clear and informative.

Many involved in the nuclear medicine field are primarily interested in organ imaging. However, the advantage of radioisotopic techniques is in being able to trace radiopharmaceuticals throughout the various phases of uptake, clearance, etc. The dynamic aspects of these processes can provide information far beyond that obtained in anatomical delineation of organs. This volume tells us what our capabilities are today in this field.

Harold L. Atkins is a scientist in the Medical Department of Brookhaven National Laboratory where he heads the Nuclear Medicine Service. His main research concerns development of radiopharmaceuticals and the radiobiology of ^{252}Cf related to interstitial neutron therapy. Dr. Atkins graduated from Harvard Medical School and trained in Radiology at the hospital of the University of Pennsylvania. Following this he was on the staff of the Yale-New Haven Medical Center and the Columbia-Presbyterian Medical Center before coming to Brookhaven National Laboratory in 1963. He is an associate professor of radiology at the State University of New York at Stony Brook.