

BOOK REVIEWS

ICHIBAN. John A. Auxier, Energy Research and Development Administration, 1977, 120 pp, \$4.75.

The effects of ionizing radiation on man is one of the most important issues of the nuclear age. Immediately after the end of World War II, studies were initiated to investigate these effects on the survivors of the Hiroshima and Nagasaki bombings. The top priority given to this program is typified by its name—Ichiban, which literally means number 1 in Japanese. While the effect of nuclear radiation on man was suspected shortly after Roentgen's discovery of x-rays and qualitatively known from the higher incidence of malignancy among American radiologists, very little quantitative information was available before World War II.

Ichiban is a critical review that documents a history of all the physical studies conducted by the Oak Ridge National Laboratory in conjunction with the Atomic Bomb Casualty Commission to determine the radiation doses received by the survivors of the Hiroshima and Nagasaki bombings. A well-planned survey of every possible survivor was carried out to accurately record all possible factors that might have had an influence on his radiation exposure. In addition, extensive studies of shielding effects on humans were done during the surface explosive tests of A-bombs in the deserts of Nevada up until 1962. These data finally made it possible to calculate individual dose estimates among survivors, designated as Tentative Doses in 1965 (T65D). This document offers a general description of the problems encountered, the sequence of studies performed, and the scientific findings that resulted in the present estimates of dose.

This publication is not meant to give an in-depth understanding of the Ichiban program and if this is desired, the reader is referred to other publications cited in the text. If the reader is interested in the painstaking data collection at various sites, as well as in experiments during Operation Plumbbob (1957), Operation Hardtack (1958), and Operation BREN (1961–1962), however, he should find satisfaction in reading this book.

Incidences of various malignancies among Japanese survivors, based on the T65D study, have been published through the Atomic Bomb Casualty Commission. It should be emphasized that T65D can be considered one of the most reliable experiments involving large human populations. These populations consist of a unique group of acute human exposures ranging from negligible to that considered greater than the mean lethal amount.

Ichiban is not a book for everyone's library but should be read by everyone who makes his living in a related field, regardless of his background. The knowledge derived from this study is invaluable to health physics, nuclear medicine, radiotherapy, and civil defense.

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DIAGNOSIS AND TREATMENT OF INCORPORATED RADIONUCLIDES. Proceedings of a Seminar Held in Vienna, December 8–12, 1975. STI/PUB/411, 1976, 637 pp, \$39.00.

In 1962, the IAEA and WHO jointly sponsored a meeting in Vienna on the diagnosis and treatment of radioactive poisoning. Since that meeting, significant improvements have

been made for diagnosing and evaluating body or organ content of radionuclides. The present report of the proceedings of the meeting held in December, 1975, also co-sponsored by IAEA and WHO, serves to bring information and knowledge in this field up to date.

The majority of papers are written in English, although some are written in French.

Presentations and discussions are mainly confined to the transuranic elements, especially plutonium, although tritium and isotopes of sodium, cobalt, promethium, zinc, and cerium are also investigated. The papers are divided into several sections. The first section contains papers relating to the metabolism of radionuclides, including elimination and retention. Formulae are given for calculating the total expected dose and excretion rate for four patterns of uptake.

The report contains more than adequate information about the factors governing the incorporation of various radionuclides including their physical and chemical characteristics and modes of contamination. The metabolism of plutonium is extensively discussed, and abundant data are given regarding the mode of absorption, transport, tissue deposition in different organs and excretion of this radionuclide.

Another section is dedicated to the assessment of incorporated radionuclides, including measuring techniques and calibration. The development and technical aspects of devices and detectors for the diagnosis of local or systemic contamination are discussed in some detail. Problems related to counting and localization of very low level activity and radionuclides with low energy are particularly stressed.

The next three sections treat the problem of removal of incorporated radionuclides, especially the transuranics, used in studies in animals and humans. This is a most interesting part of the symposium, for it depicts the limitations and uncertainties in the value of different therapeutic approaches. The use of local (surgical) or systemic means of incorporation are extensively and exhaustively discussed. Concerning the latter, emphasis is heavily placed on the use of chelating agents, notably calcium-DTPA and Zn-DTPA, for the treatment of contamination with transuranic elements. Their chemical properties, indications, mode of administration, pharmacologic and toxicologic characteristics are presented. Attempts to provide the reader with guidelines for specific treatments are outlined in some of the papers.

The final section is dedicated to medical first-aid treatment and medical care and supervision of workers. Of special value is the discussion of the multidirectional program developed by the Radiation Emergency Assistance Center and Training Site (REACTS). This program offers an approach for providing medical care and education for physicians and paramedical personnel involved in the handling of radiation exposures and accidents.

In summary, this symposium provides an extensive source of information on the metabolic behavior of radionuclides as well as on methods and techniques for diagnosing and evaluating body or organ content. Also documented are the recent advances in methods of handling patients and implementing the necessary therapeutic procedures.

These proceedings will be helpful to any physician or associated personnel who may be called upon to handle