

ivations for allowed transitions, calculation of matrix elements based on a single particle model, beta decay of polarized nuclei, and muon decay.

The authors have provided a very excellent summary and review for those interested in the weak interactions; it is reading to be well recommended.

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THORIUM UTILIZATION

Title Utilization of Thorium in Power Reactors

Publisher International Atomic Energy Agency, 1966

Pages iv + 376

Price \$8.00

Reviewer J. H. Kittel

This book contains the Proceedings of a Panel on the Utilization of Thorium in Power Reactors. The panel was convened by the International Atomic Energy Agency in June 1966, in Vienna. The Proceedings consist of 23 summary papers and a section entitled "Summary Report and Recommendations." The summary papers include contributions from Australia, Brazil, Canada, France, Germany, India, Italy, Japan, the Netherlands, Sweden, the UAR, the USA, and the USSR. As might be expected, the subject matter of the papers varied according to the interests of the countries represented. These interests range from extensive effort to assess thorium ore reserves, to detailed studies of both thermal and fast converter-breeder fuel cycles.

The principal US effort on thorium

utilization is at ORNL. This is reflected by the fact that the six US papers given at the Conference were prepared by ORNL authors. The US papers provide a comprehensive survey of developments in thorium technology at Oak Ridge, and also include discussions of several thorium converter reactor designs. On the other hand, relatively little information appears in the US papers regarding advancements in thorium technology at sites other than ORNL. Also, this reviewer could find no discussion of mixed fuel cycles, or mention of US studies on the use of thorium in large fast reactors to maintain negative sodium void coefficients.

The "Summary Report" that appears at the beginning of the book is an excellent review of the present state of development of thorium utilization in power reactors. This section should be read by all who are interested in learning where and how thorium is being introduced into the world's power reactor economy.

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AN ORGANIZED, INTELLIGENT APPROACH

Title Radioactivity and Human Diet

Editor R. Scott Russell

Publisher Pergamon Press, 1966

Pages xi + 552

Price \$15.00

Reviewer Stanton H. Cohn

It has become commonplace to state that the problem of the radio-

active hazard currently facing mankind is new only with respect to degree, inasmuch as man has always existed in a radioactive environment. This point of view fails to emphasize that man's awareness of this aspect of his environment is only recent, and further, that concomitant with this awakening interest there is a significant potential increase in the amount of radioactivity in the environment. While current production and testing of weapons utilizing radioactive materials have added small amounts of activity to the total quantity of radiation in the earth and its atmosphere, the prospect of harnessing energy from radioactive sources for fulfilling the power requirements of future generations points to the prospect of a manifold increase in the concentration of radioactivity about us in the near future.

Radioactivity in the environment can affect man in three ways: radiation from external sources can penetrate the body; radioactive material can be inhaled; or it can be ingested where it subjects the body to chronic radiation until eliminated. Of the three, ingestion of radioactively contaminated food represents the greatest potential radiation hazard in respect to worldwide fallout.

Radioactivity and Human Diet deals with assessing the hazard to man resulting from current levels of radioactive fallout in our environment. Specifically, the data on the transport and movement of radionuclides from the atmosphere to soil and up through plants to animals and finally to man are reviewed. Each phase of the movement of the major radionuclides through the terrestrial food chain and aquatic food chain is considered separately. While much of this material has been presented in the report of the UN Scientific Committee and reports of National committees both in the United States and the United Kingdom, this book represents an attempt to collect all the pertinent background data under one cover.

The primary emphasis of the book is on quantifying the incorporation of ^{90}Sr , ^{131}I , and ^{137}Cs into food and their subsequent uptake by man. Strontium-90 is the fission product of greatest potential hazard to man, followed by the iodine radioisotopes and ^{137}Cs . While emphasis is placed on presenting existing data on all