Unfortunately, a comparable presentation of PWR burnup methods is lacking. The paper by Spinrad covers burnup considerations in PWR's and refers to papers previously published by the International Atomic Energy Agency on the subject of burnup analysis of PWR's. However, none of these is comparable in depth and detail to Crowther's paper.

The book leaves few countries with water moderated (light or heavy) reactors unrepresented. The list includes the United States, the United Kingdom, France, Belgium, Italy, Canada, Czechoslovakia, Yugoslavia, Norway, Japan, Sweden, and the USSR. A paper by representatives of each of these countries is included.

Burnup code names sprinkled throughout the book embrace purely functional titles such as TREDA (tridimensional), tongue twisters such as SUBURV and SQUIFID, unpronounceable acronyms like LKDV and LKVS, inconsistent code designations like TRICYCLE I and TRICYCLE II, and biblical genealogy code names such as METHUSELAH, etc.

The uninitiated reader should not expect to learn how to calculate burnup from this book, and he will certainly be overwhelmed by the multiplicity of codes used in the art of reactivity and burnup calculations.

However, to the experienced reactor physicist, who has thought long long and hard about the complexity of the three-dimensional puzzle of burnup, reactivity, and power distribution, the book might well suggest a number of novel approaches, reconfirm a few suspicions, and offer reassurances, by revealing that the experts, too, have encountered difficulties in three-dimensional source convergence, or with prediction of power peaking above partially inserted control rods.

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MUCH ABOUT MUTAGENS

Title Neutron Irradiation of Seeds Technical Reports Series No. 76

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Reviewer W. Ralph Singleton

This is a report of a study-group meeting on coordination of research in the use of neutrons in seed irradiation (Vienna, July 25-29, 1966) and of a working group meeting on recommendations for a neutron seed irradiation program (Vienna, December 12-16, 1966).

This paperback booklet of ~100 pages sets forth principles and recommendations for seed irradiation. Although primarily concerned with neutron irradiation, it compares x rays, gamma rays, and such chemicals as EMS and DES. The main purpose of the meetings was to attempt to establish uniform procedures of radiation and uniform reporting of results. With many reactors of different types (>61 pool-type reactors operating in 31 countries) operating under different conditions and for many purposes, it is extremely difficult to obtain comparable dosages for different reactors. Neutron dosimetry is not as well established as that for x rays or gamma rays. Greater uniformity in reporting results should result from the two conferences held in Vienna.

The roster of participants of the conference contains persons well informed on the use of radiation in producing genetic changes for use in genetic studies and in plant breeding. Such persons on the IAEA staff were Bjorn Sigurbjornsson, Calvin Konzak, and Knut Mikaelsen. In addition, there were representatives from 16 countries.

The publication consists of the following divisions: 1) summaries and abstracts of papers, 2) reports, 3) recommendations, and 4) special reports. Users and potential users of radiation for mutation breeding will find the section on recommendations particularly helpful. This section mentions that the IAEA Mutation Advisory Group is preparing a "Manual of Mutation Breeding," This should be most useful.

One of the conclusions seems pertinent. "It is recognized that, as a general practice, no one mutagen should be used exclusively. Therefore, unless knowledge of mutagenic specificity dictates otherwise, chemical mutagens and physical mutagens, other than neutrons (such as x rays and gamma rays) should be investigated."

The IAEA is serving a useful function in holding conferences such as the one reported here and in furthering cooperation between researchers on the use of mutagens, including neutrons, in genetic and biological research.

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