models for predicting the movement and dispersing of groundwater. Those concerned with the potential movement of radionuclides in groundwater systems should be interested in these developments.

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Californium-252 in Teaching and Research

Authors	E. J. Hall and H. H. Rossi
Publisher	International Atomic Energy Agency, Vienna (1974) (Distributed by UNIPUB)
Pages	141
Price	$7.00
Reviewer	Arthur F. Scott

The authors of this small volume state that it was prepared "to promote the safe introduction of the man-made nuclide californium-252 into the teaching programs of universities and research institutes in Member States of the International Atomic Energy Agency." Californium-252 decays both by spontaneous fission and alpha emission and is a source of mixed gamma rays and neutrons. The use and handling of the nuclide, therefore, present special problems for the experimenter. The first part of the book (11 chapters) deals with radiation physics and methods of measuring the quantity and quality of different types of radiation; it also reviews the phenomena generally treated as "biological effects of radiation." The discussion of radiological physics and radiation protection focuses on first principles and on material not easily accessible in published form.

The second half of the book (nine chapters) is a laboratory manual describing a range of experiments in physics and radiobiology. It is stated that "the aim of the manual is to guide postgraduate university students in the safe conduct of instructive experiments involving this mixed gamma-ray and neutron emitter." The introductory experiments illustrate the characteristics of detection instruments and the principles of radiation physics. Five major experiments involving plant and animal material are designed to demonstrate radiation effects. The experimental part of the book contains very interesting material which is well presented. It must be noted, however, that some of the experiments call for special equipment; one experiment, indeed, "can only be performed if a number of californium-252 sources of relatively large radioactive content are available." On the other hand, three experiments are presented as low dose-rate experiments with "californium-252 and/or radium" as sources.

The volume contains two appendices as follows:

Appendix I: Physical Characteristics of Californium-252

Appendix II: Description of Californium-252 Sources and the Prototype Use and Storage Facility (by I. A. Lerch and J. Haider).

The book concludes with a valuable list of references and an excellent bibliography. There is a small special section with "Additional Safety References for Appendix II." The last item in the book is a "Conversion Table: Factors for Converting Units to SI System Equivalents."

Altogether, this small volume merits high praise and, as quoted in the opening paragraph of this review, should serve the goal of the authors admirably. The book can also serve as a useful reference text for courses in radiochemistry and radiobiology. This book, so rich in content, would certainly benefit by the inclusion of an index.

Arthur F. Scott, following the completion of doctoral work at Harvard, spent a year with the late Kasimir Fajans in Munich. In 1923 he joined the chemistry staff at Reed College, and for the next 50 years he served on the College's faculty, except for an interlude of 11 years during which he taught at The Rice Institute in Houston. A year's leave-of-absence (1958-1959) was invested in study and work at the reactor at MIT and at the Hot Laboratory at Brookhaven. In 1948 Scott introduced a course in radiochemistry into the curriculum at Reed College; in 1968 he was given the responsibility of installing a TRIGA reactor (250 kW) on the Reed campus. This reactor now serves a consortium of ten colleges in the Portland area for educational and research purposes. In 1948 Reed established a six months' training program in radiobiology, first under the sponsorship of the Division of Biology and Medicine of the U.S. Atomic Energy Commission and subsequently under the sponsorship of the Medical Branch of the Armed Services Special Weapons Project. Scott was Coordinator of this special program, which was continued on an annual basis for a period of ten years. In 1950, Scott became chairman of the first Radiation Advisory Committee of the Oregon State Board of Health, and in 1968 he was appointed chairman of the Oregon State Nuclear Development Coordinating Committee, serving in this capacity for two years.