I highly recommend this book to nuclear medicine practitioners or radiologists performing PET and SPECT studies of the brain. It will clearly interest psychiatrists interested in the imaging methods of the future.

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This detailed and authoritative text is probably the most readable and thorough radiation safety manual available anywhere. The first edition (1972) evolved from a basic course first offered to university personnel handling radionuclides in the early 1960s and has been updated at nine-year intervals in 1981 and now 1990. The new edition like the second edition is organized into six parts, which progress from the basic physics of ionizing radiation produced by radionuclides and x-ray equipment and the fundamental concepts of radiation protection to a detailed review of radiation dose computation and radiation measurements. These sections set the scene for the most useful part of the book, which discusses the regulatory requirements of a radiation safety program with practical advice on meeting them. Finally, the impact of radiation on society is presented in its several facets: the biologic effects of radiation and the sources and levels of radiation, including accidental exposure and the potential exposure from nuclear warfare.

The author clearly regards his mission as a teacher and throughout the text introduces cogent numerical problems to illustrate the use of scientific principles to evaluate radiation safety problems. For example, the section on radiation dose contains 36 working examples, and the section on radiation measurement another 14. The book can therefore be used—and is used—for self study. Indeed, at the end of the book, there is a collection of 25 problems complete with answers which could constitute an examination in radiation safety. The book is also conceived as a reference work and is notable for its 70 tables, many of which contain information that is hard to find; a good example is on p. 308 detailing the maximum activities of radionuclides that may be mailed through the U.S. Postal Service. The sub-title of the book indicates that it is more than a "how to" manual. It is obviously written by a physicist with considerable erudition who uses calculations to make his points. The book's audience extends therefore well beyond the laboratory or clinic using radionuclides and includes professional health physicists through its treatment of specific problems (for example, release of radioactive effluents through a stack and subsequent dilution of the resultant plume). However, the author stops short of providing rigorous mathematical analyses of these problems.

A large fraction of the new edition is unchanged from the previous edition. The major changes are introduced because of new concepts introduced by the principal regulatory agencies and advisory bodies, such as the Nuclear Regulatory Commission, the International Commission on Radiological Protection (ICRP), and the National Council on Radiation Protection (NCRP) whose policies are intertwined. Thus, the concept of effective dose equivalent, which supplements "whole body dose" as an index of hazard, is discussed whereby the dose to different body organs is weighted according to the relative cancer (and genetic) risk and then summed. Similarly, the concepts of derived air concentration (DAC) and annual limit on intake (ALI) have been introduced to replace maximum permissible concentration and maximum permissible body burden. The new edition also contains the new NRC training standards for medical use of radionuclides. In the area of public health, there is reference to the increased estimates of cancer risk arising from the revised dosimetry of the Japanese A-bomb survivors (1986) and their further follow-up (through 1985). The book's revision was completed after the publication of the United Nations 1988 report on cancer risk, but before the release of the U.S. National Academy of Sciences (NAS) report on the same subject (1990). One problem with the revision is the detailed inclusion of cancer risk estimates dating from 1980.