source for teaching but a useful companion and reference. The most profitable place perhaps for such a text is on the general reading shelves of a science library where it might capture a convert to mass spectrometry.

M D A Finnie
Mass Spectrometry Unit
Amersham International plc
Cardiff Laboratories
Forest Farm, Whitchurch,
Cardiff, Wales

29 January, 1986

The Experimental Basis for Absorbed-Dose Calculations in Medical Uses of Radionuclides

NCRP Report No. 83 September 30, 1985 pp 109
Pub: National Council on Radiation Protection and Measurements, Bethesda, MD 20814 USA
Price: $13.00US
ISBN 0-913392-76-6

"The Experimental Basis for Absorbed-Dose Calculations in Medical Uses of Radionuclides" is one of five new publications from the National Council on Radiation Protection and Measurements and continues the series of high standard publications from the NCRP.

It achieves admirably its intended purpose, that is "to review the current status of the methods used to estimate the radiation absorbed doses to humans from internally deposited radionuclides". The introduction and historical discussion of dose calculation methods leads logically to the MIRD formalism and the need to estimate cumulative activities in body organs (Chapters 1 - 3). Compartmental modelling is mentioned, but no mathematical treatment is given, nor is there any comment on measurements of activity excreted from the body, or how such measurements might be used to build up a picture of the time course of activity in 'source' regions. Presumably the authors considered this point outside their remit. Chapter 4 discusses the current techniques for in-vivo measurements of activity, concluding that positron tomography provides the most accurate quantitative technique available and in Appendix A a complete formalism for non-tomographic, dual opposed systems is developed. Chapter 5 discusses in-vivo measurements of absorbed dose while Chapter 6 compares measurements with calculated values.

In their conclusions, the authors declare that their intention was to assess the reliability and limitations for use in dosimetry of various factors such as:

the mean energy emitted per unit cumulated activity
the absorbed fractions
the target organ mass
the S value
the source activity
the cumulated activity in source organs

paying particular attention to the methods available for quantitative determination of the distribution of radioactivity in the body using external radiation detectors.

It will come as no surprise to workers in the field that the NCRP recommends that improving the biological kinetic data merits the highest priority. This is the first of 14 recommendations listed in Chapter 8. One also strongly endorses recommendation 2, that is that extensions to the S tables should be made more readily available to users.

In general terms the report is a definitive yet readable overview of the subjects dealt with. Two printing errors were noticed. The tilde mark has crept into the wrong A in Table C.1 and the equation for S in Table 7.1 is incorrect because m_k should be in the denominator.

This report is certainly recommended reading for those persons engaged in applications of radionuclides in medicine as well as a reference text for Health Physicists in general.

R G Soundy
Corporate Safety Unit
Amersham International plc
Amersham
Bucks
England
8 January 1986