

Contents

Preface.....	iii
Introduction	1
I. Basic Considerations	3
A. Radiation Quantities and Units.....	3
1. Absorbed Dose.....	3
2. Dose Equivalent.....	3
3. Particle Fluence or Fluence.....	3
4. Kerma.....	3
5. Exposure.....	3
6. Activity.....	4
B. Assessment of Dose Equivalent.....	4
C. Protection Measurements.....	5
1. X or Gamma Radiation.....	6
2. Neutron Radiation.....	6
3. Charged Particle Radiations.....	6
4. Interpretation of Instrument Readings.....	7
5. Instrument Range Requirements.....	7
6. Accuracy.....	7
II. Instrument Characteristics	9
A. Ionization Chamber Instruments.....	9
B. Gas Proportional Counters.....	11
C. Geiger-Müller Counters.....	13
D. Scintillation Counters.....	15
E. Photographic Devices.....	16
F. Solid State and Activation Devices.....	18
III. Choice and Use of Instruments	21
A. Instruments for Surveying, Area Monitoring and Environmental Monitoring.....	21
1. Sealed Gamma-ray Sources, Sources of X Rays and Electrons.....	21
2. Unsealed Sources.....	23
3. Reactors and Sealed Neutron Sources.....	24
4. Charged Particle Accelerators.....	29
B. Individual Monitoring.....	32
IV. Calibration of Instruments	36
Appendix A— Summary of Information on Thermal Neutron Instruments	43
Appendix B— Dose Equivalent Instruments	46
References	48
ICRU Reports.....	55
Index.....	58