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Dedicated to

My Parents (Late)
Thiru K Kuppusamy Jayamkondar
Thirumathi K Arukkani
It brings me immense pleasure to write the foreword for this book which is focusing on radiation protection. There was a long-felt necessity for such a textbook. Dr Thalayan has an extensive experience in the field of Medical Physics and this book sums up his vast experience for the benefit of the readers. The author must be complemented for the lucid style of writing. It contains all the essential aspects of radiological safety. The chapter on "Regulations and Dose Limits" is of particular relevance as it contains details of regulatory aspects. The book will go a long way in helping the Radiation Oncology, Nuclear Medicine, Radiology and Medical Physics Community and will be very useful for the health care providers at all levels in these specialties. The chapters are concise and complete in all aspects. Large numbers of illustrations have been included to explain the subject matter. Bibliographies at the end of each chapter have been included to serve as additional reading material on the subject.

I wish Dr Thalayan all success in his maiden venture.

Prof GK Rath MD
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Preface

It gives me immense pleasure to come out with a textbook on radiological safety, a unique textbook. It is my long-felt dream to have a complete book, on radiological safety, covering the entire fields of radiology i.e., diagnostic radiology, nuclear medicine and radiotherapy.

Radiation is analogous to fire which has both beneficial and harmful effects. The inherent philosophy is to minimize the hazards and maximize the benefits in order to bring down radiation doses within the regulatory control limits by which we can ensure the safety of the occupational workers as well as the patient and public. Hence, it is important that every one should be aware of the safety concepts, dose limits, regulation, waste disposal, etc., to establish a safe work culture while handling radiation sources in the hospital. As such, no single document is available for the above purposes, and the information is collected from safety codes and guides of international and national agencies like IAEA, NCRP and AERB.

An attempt has been made to bring all the relevant information including safety terminology, biological effects, exposure control, monitoring, planning of the installation, quality assurance, regulation, personnel safety, transport, waste disposal and radiation emergency, etc. in the form of a book. The whole objective is to remove misconception about radiation and prepare the minds of younger generation to face the future challenge confidently. This book is intended for postgraduates of medical physics, diagnostic radiology, nuclear medicine and radiotherapy. This book may also find a place for the preparation of RSO examinations for medical physicists.

Moreover, an attempt has been made to bring quantitative data from international reports and recommendations, wherever necessary, with practical examples and illustrations. This may enable the new entrants to plan a radiation facility, carry out quality assurance and radiation survey without much cumbersome and perform the day-to-day medical physicist’s job with ease and involvement. Large numbers of tables and figures are incorporated wherever necessary for better understanding of the reader.

I am very much thankful to my family members for their support and cooperation. I also acknowledge the assistance offered by the Dr Kamakshi Memorial Hospital staff, especially the medical physics colleagues, in the preparation of the text. I also thank Mrs G Shakunthala for neatly typing the manuscript.

I also acknowledge my teachers, by whom I got inspiration and passion towards teaching.

I invite the readers to offer constructive comments for the future improvement of the book.

K Thayalan
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