

PREFACE

Radiation has become such an integral and indispensable part of contemporary life that its omnipresence is largely imperceptible. Although the word “radiation” still causes a sense of fear among common man, radiation-based appliances have become increasingly commonplace in our daily lives. Right from everyday appliances like microwave oven or smart gadgets like mobile phone to highly advanced and complex devices used in disease diagnosis/treatment and R&D activities, radiation has played a pivotal role in the technological advancements made by mankind over the last century. However, there is still unreasoned fear of radiation which originates from the common, but incorrect, perceptions that intimately link radiation to the health of a person with a pessimistic outlook.

Hundreds of biological processes are involved in maintaining proper growth and health of any living organism, be it a unicellular bacterium or a multi-cellular human being. Further, all living entities have originated and evolved in an atmosphere comprising radiation. In view of the public fear and the evident beneficial effect of radiation, it is very important to have accurate scientific understanding of the effect of exposure of radiation on various biological systems. An advanced and detailed understanding of the biological effects of radiation on living entities will help in overcoming this unreasoned fear of radiation among public.

The beneficial effects of radiation exposure are well documented in literature. R&D efforts are in progress throughout the globe to identify several other beneficial applications of radiation in coming years. With this background, this book intends to showcase some of the proven beneficial effects of ionizing radiation in biological systems which are primarily carried out at Bhabha Atomic Research Centre and other institutes of the Department of Atomic Energy by scientists in their respective field of expertise.

This book chronicles the application of radiation for the benefit and socio-economic development of mankind. It gives an updated and succinct account of the outstanding contributions of scientists of DAE towards application of radiation in various fields of biological sciences such as healthcare, agriculture, food preservation and defence against nuclear warfare. Our research in high background radiation areas has clearly established that the fear associated with high background radiation exposure is completely ludicrous.

We would like to express our sincere gratitude to Dr. Ajit Kumar Mohanty, Chairman, Atomic Energy Commission and Secretary, Department of Atomic Energy and Shri Vivek Bhasin, Director, Bhabha Atomic Research Centre for their support and encouragement in writing this book. Dr. S. Adhikari, Associate Director, KMG & Head, Scientific Information Resource Division and his colleagues for their help in publishing the book. We are thankful to all the authors for their contribution.

Although due care and attention was exercised to uphold the scientific and intellectual sanctity of the contents of the book, inadvertent errors may have skulked due to oversight. I sincerely hope that the book is able to successfully accomplish the endeavour that was intended and readers are able to appreciate the magnificent rainbow of biological research in DAE.

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