

# Medical Applications and Biological Effects of Radiation

*Sarita Kanwar*

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## 1 Abstract

With the development of radio-therapeutic oncology, computer technology and medical imaging technology, radiation therapy has made great progress[5]. Radiation's benefits were initially realised in the use of X-rays for medical diagnosis, and then later with the discovery of radiation and radioactivity. The desire to take advantage of the medical benefits led to a reasonable assessment of the hazards and resulting consequences. Only the most evident effects of large doses of radiation, such as radiation burns, were noticed in those early days, and protection efforts were concentrated on preventing them, mostly for practitioners rather than patients[2]. In this term paper we will be discussing about the various sources of radiation, medical applications of radiation and how the damage produced by ionizing radiation in biological molecules affects the body cells.

## 2 Introduction

Modern techniques in nuclear medicine have proven to be powerful tools for diagnosis and treatment of an increasing number of diseases[3]. However, they all add to the patient's radiation exposure. As a result, constant attention should be paid to reducing the radiation dose involved. The risks associated with a specific nuclear procedure should be known in order to weigh its advantage against its disadvantages[1]. These risks depend on the dose and dose and dose-effect relationship. The discipline involved in dose calculation is called dosimetry. The combination of the results of dosimetry and dose-effect relation allows the estimation of the risk associated with a certain nuclear procedure[4].

People would appreciate that radiation has quiet and useful applications in our daily lives once they understand it. New difficulties in terms of worldwide levels of radiation exposure continue to emerge, new biological information on the impacts of radiation exposure is becoming available[6].