

1) Natural sources : Man is exposed to natural radiation from time immemorial. (c) Internal radiation : Man is also subjected to internal radiation, i.e., from radioactive matter stored in the body. These radioactive materials, quantities of uranium, thorium, and related substances, and the dose on the body is about 2 mrad per year on the body as a whole, but may be as high as 70 or 80 mrad. Areas exist (e.g., Kerala in India) where there are rock formations containing uranium, it can be as high as 2,000 mrad a year. (ii) Atmospheric radiation: The external radiation dose from the radioactive gases radon and thoron in the atmosphere is rather small : about 2 mrad per year. (b) Environmental : (i) Terrestrial radiation: Radioactive elements such as thorium, uranium, radium and an isotope of potassium (K^{40}) are present in man's environment, e.g., soil, rocks, buildings. Natural background radiation arises from three sources : (a) Cosmic rays : The cosmic rays which originate in outer space are weakened as they pass through the atmosphere. It has been calculated that a commercial jet pilot receives about 300 mrad per year from cosmic radiation (1). to approximately 0.1 rad a year.