NCRP

NCRP Releases Report No. 150, Extrapolation of Radiation-Induced Cancer Risks from Nonhuman Experimental Systems to Humans

"It has been possible to develop what appear to be useful and relevant extrapolations of radiation-induced cancer risks from nonhuman experimental systems to humans for certain situations." This was one of the conclusions contained in NCRP Report No. 150, *Extrapolation of Radiation-Induced Cancer Risks from Nonhuman Experimental Systems to Humans*. The Report deals with the procedures by which radiation-induced, long-term, or chronic injury (*e.g.*, a reduction of life expectancy or increases in age-specific cancer mortality) measured in laboratory animal species, can be used to estimate risks to humans. The data for such extrapolation procedures are discussed in detail.

This Report undertakes an extensive review of data on radiation-induced cancer in specific major organ systems in several species of laboratory animals. Extrapolation models are described that can be used under certain conditions to apply the extensive database from laboratory animal studies to the evaluation of human radiation risks. Data from laboratory animals are also used for the estimation of genetic risk factors for radiation-induced cancer and for estimating values of dose-rate effectiveness factors and radiation weighting factors.

The primary topics of discussion in this Report include:

- the history of extrapolation from nonhuman experimental systems to humans;
- cells of origin of cancer in different animal species;
- radiation effects at the molecular and cellular levels; and
- extrapolation models.

This Report includes, where appropriate, a set of recommendations and conclusions specific and relevant to each section. These recommendations include the need to:

- obtain and utilize molecular mechanisms underlying the cellular events that lead to cancer in various animal species;
- archive data in a manner that is amenable to meta-analysis; and
- acquire more information on the carcinogenic effects of heavy charged-particle radiation such as that encountered by astronauts during deep-space missions.

The Report is available from the NCRP website in both soft- and hardcopy formats. For additional information contact David A. Schauer, ScD, CHP at extension 20 or email schauer@NCRPonline.org.

The National Council on Radiation Protection and Measurements

7910 Woodmont Avenue, Suite 400 Bethesda, Maryland 20814-3095 Telephone: (301) 657-2652 Fax: (301) 907-8768 http://NCRPonline.org http://NCRPpublications.org For additional information: David A. Schauer *Executive Director*