Session 5

New Developments in Understanding Radiation Effects

Evidence for Variation in Human Radiosensitivity and its Potential Impact on Radiological Protection

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Radiological protection standards generally assume all members of the population are equally sensitive to the adverse health effects associated with radiation exposure. It has become very clear over recent years that genetic and lifestyle factors can play important roles in the susceptibility of individuals to a range of diseases; thus, the same might apply to radiation-associated disease. There is evidence accumulating from studies at many levels of biological organisation – cells, experimental organisms and humans – that a range of radiosensitivity exists in the populations. A key factor required to exploit such knowledge for radiological protection purposes will be the availability of robust and accurate ways to assess the sensitivity of an individual or population sub-group. In addition, there will need to be careful consideration of the ethical aspects relating to use of individual sensitivity information. These ethical considerations are very likely to be exposure contextdependent, and require careful risk-benefit balance consideration before practical application.