

Real et al. Effects of exposure on plants, fish and mammals relevant data JPR 24

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Effects of ionising radiation exposure on plants, fish and mammals: relevant data for environmental radiation protection
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In order to develop a framework for the assessment of the environmental impact of radiation, it is necessary to establish the relationship between exposure (dose rate, accumulated dose) and the effects that may be induced in plants and animals. With this purpose in mind, the data available on effects induced by ionising radiation in various wildlife groups have been reviewed as part of the FASSET project. This paper has highlighted that the available information on the effects of low dose rate, continuous irradiation ($<10^3 \mu\text{Gy h}^{-1}$) is reasonable for plants, fish and mammals, but is scarce or non-existent for other wildlife groups. Thus, the effects induced in plants, fish and mammals after chronic exposure to radiation are presented in this paper. The fragmentary nature of the available, relevant information has made it very difficult to characterise the desired dose rate--response relationships in any detail. However, it can be broadly concluded that, although minor effects may be seen at lower dose rates in the most sensitive species and systems, the threshold for statistically significant effects in most studies is about $10^2 \mu\text{Gy h}^{-1}$. The responses then increase progressively with increasing dose rate and usually become very clear at dose rates $>10^3 \mu\text{Gy h}^{-1}$ sustained for a large fraction of the lifespan.

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