

# **Characterization Of The Radiation Effects On Wildlife Inhabiting Contaminated Area And Influence Of The Dose Estimate**

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## *Abstract*

Several years after the major nuclear accidents occurring at Chernobyl and Fukushima, studies conducted on the fauna and flora chronically exposed to radiation often led to contradictory conclusions. The purpose of these *in situ* studies was to understand and predict the consequences of the long term exposure to ionising radiation on the native populations and *in fine* on the structure and development of the ecosystem. However, publications relating to species of invertebrates, vertebrates and plant, report either no effect, or varying intensity of effects on development, growth, behaviour and reproduction. The differences between species in radiation sensitivity and adaptive capacities over generations can partially explain these results. Furthermore, the lack of consistency on the observed long-term impact of radiation on wildlife can be endorsed by the heterogeneity in the methods used for the dose rate estimates, which may introduce a bias in the comparison of the results. Indeed, most studies only reported external dose rates and did not consider the contribution of all radiation types (including alpha, beta and gamma emitters). Moreover, to establish robust dose-effect relationships the contribution of internal contamination to the total dose rate absorbed by wildlife must be considered, according to the mode of life of the organism (e.g., ingestion, inhalation, dermal absorption). This highlights the complexity of the studies to correctly understand the effects induced by the chronic exposure to radiation and the benefit that would be provided by a multidisciplinary approach, including an accurate dose estimate, to draw robust conclusions on the environmental consequences of a nuclear accident.