


# Garnier-Laplace et al. A multi-criteria weight of evidence approach to ecological benchmarks JRP

**Garnier-Laplace, J., Della-Vedova, C., Andersson, P., Copplestone, D., Cailles, C., Beresford, N.A., Howard, B. J., Howe, P., Whitehouse, P. 2010.**

A multi-criteria weight of evidence approach to derive ecological benchmarks for radioactive substances.  
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Dose rate benchmarks are required in the tiered approaches used to screen out benign exposure scenarios in radiological ecological risk assessment. Such screening benchmarks, namely the predicted no-effect dose rates (PNEDR), have been derived by applying, as far as possible, the European guidance developed for chemicals. To derive the ecosystem level (or generic) PNEDR, radiotoxicity EDR<sub>10</sub> data (dose rates giving a 10% effect in comparison with the control) were used to fit a species sensitivity distribution (SSD) and estimate the HDR<sub>5</sub> (the hazardous dose rate affecting 5% of species with a 10% effect). Then, a multi-criteria approach was developed to justify using an assessment factor (AF) to apply to the HDR<sub>5</sub> for estimating a PNEDR value. Several different statistical data treatments were considered which all gave reasonably similar results. The suggested generic screening value of 10  $\mu\text{Gy h}^{-1}$  (incremental dose rate) was derived using the lowest available EDR<sub>10</sub> value per species, an unweighted SSD, and an AF of 2 applied to the estimated HDR<sub>5</sub>. Consideration was also given to deriving screening benchmark values for organism groups but this was not thought to be currently appropriate due to few relevant data being currently available.

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