

Garnier-Laplace et al. Use of effects data from FREDERICA in the ERICA Integrated Approach JER 99

Garnier-Laplace, J., Copplestone, D., Gilbin, R., Alonzo, F., Ciffroy, P., Gilek, M., Agüero, A., Björk, M., Oughton, D.H., Jaworska, A., Larsson, C. M., Hingston, J.L. 2008.

Issues and practices in the use of effects data from FREDERICA in the ERICA Integrated Approach.

J. Environ. Radioact., 99, 1474-1483.

The ERICA Integrated Approach requires that a risk assessment screening dose rate is defined for the risk characterisation within Tiers 1 and 2. At Tier 3, no numerical screening dose rate is used, and the risk characterisation is driven by methods that can evaluate the possible effects of ionising radiation on reproduction, mortality and morbidity. Species sensitivity distribution has been used to derive the ERICA risk assessment predicted no-effect dose rate (PNEDR). The method used was based on the mathematical processing of data from FRED (FASSET radiation effects database merged with the EPIC database to form FREDERICA) and resulted in a PNEDR of 10 Gy/h. This rate was assumed to ascribe sufficient protection of all ecosystems from detrimental effects on structure and function under chronic exposure. The value was weighed against a number of points of comparison: i) PNEDR values obtained by application of the safety factor method, (ii) background levels, (iii) dose rates triggering effects on radioactively contaminated sites and (iv) former guidelines from literature reviews. In Tier 3, the effects analysis must be driven by the problem formulation and is thus highly case specific. Instead of specific recommendations on numeric values, guidance on the sorts of methods that may be applied for refined effect analysis is provided and illustrated.

<http://dx.doi.org/10.1016/j.jenvrad.2008.04.012>