ERICA Tool

The ERICA Tool

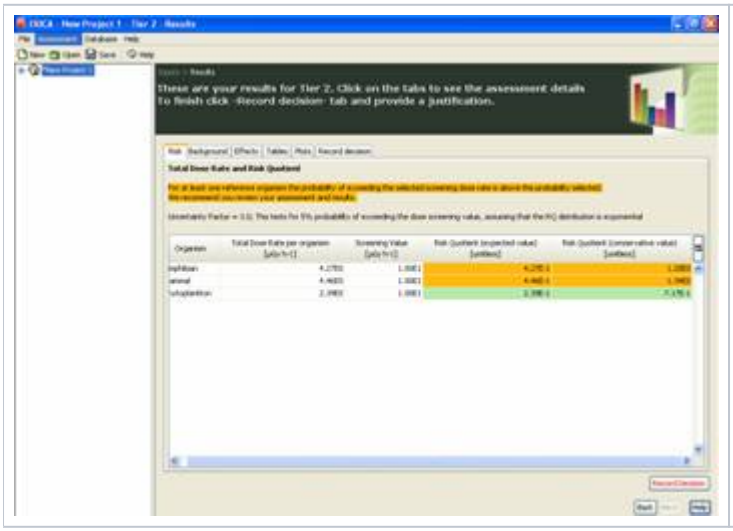
The ERICA Tool is a software system that has a structure based upon the tiered ERICA Integrated Approach to assessing the radiological risk to terrestrial, freshwater and marine biota. The Tool guides the user through the assessment process, recording information and decisions and allowing the necessary calculations to be performed to estimate risks to selected animals and plants. Tier 1 assessments are media concentration based and use pre-calculated environmental media concentration limits (EMCLs) to estimate risk quotients. Tier 2 calculates dose rates but allows the user to examine and edit most of the parameters used in the calculation including concentration ratios, distribution coefficients, percentage dry weight soil or sediment, dose conversion coefficients, radiation weighting factors and occupancy factors. The user can also input biota wholebody activity concentrations in Tier 2 if available rather than rely upon concentration ratios. Tier 3 offers the same flexibility as Tier 2 but allows the option to run the assessment probabilistically if the underling parameter probability distribution functions are defined. Results from the Tool can be put into context using incorporated data on dose effects relationships (using the FREDERICA database) and background dose rates. The Tool has simple transport models embedded to enable conservative estimates of media activity concentrations from discharge data if measurements are not available; the transport models are taken from IAEA (2001) *Generic models for use in assessing the impact of discharges of radioactive substances to the environment. IAEA Safety Report Series 19 STI/PUB/1102*.

ERICA Tool

A revised version of the ERICA Assessment Tool (ERICA 2.0) with substantial changes, has been released.
To download: https://erica-tool.com/

The ERICA Tool is being maintained by a consortium comprising the Norwegian Radiation Protection Authority, Environment Agency (England and Wales), UK Centre for Ecology & Hydrology (UK), IRSN (France) the Swedish Radiation Safety Authority and CIEMAT (Spain).

The ERICA Tool has been applied by both the developers and independent users in intercomparison exercises of the IAEA's EMRAS programmes.



Key documentation on the ERICA Tool

Brown, J.E., Alfonso, B., Avila, R., Beresford, N.A., Copplestone, D., Hosseini, A. 2016
A new version of the ERICA tool to facilitate impact assessments of radioactivity on wild plants and animals.
J. Environ. Radioact. 153, 141-148.
http://dx.doi.org/10.1016/j.jenvrad.2015.12.011

Avila, R., Beresford, N.A., Brown, J., Hosseini, A. 2014 .
Response to Authors. The selection of parameter values in studies of environmental radiological impacts.
J. Radiol. Prot. 34, 261-262.
https://doi.org/10.1088/0952-4746/34/1/L01

Brown J.E, Beresford N.A. Hosseini A. 2013.
Approaches to providing missing transfer parameter values in the ERICA Tool - How well do they work?
J. Environ. Radioact. 126, 399-411.
http://dx.doi.org/10.1016/j.jenvrad.2012.05.005

Brown, J.E., Alfonso, B., Avila, R., Beresford, N.A., Copplestone, D., Pröhl, G., Ulanovsky A. 2008.
The ERICA Tool. *J. Environ. Radioact*., 99, 1371-1383.
Abstract

Beresford, N.A., Barnett, C.L., Howard, B.J., Scott, W.A., Brown, J.E., Copplestone D. 2008.
Derivation of transfer parameters for use within the ERICA Tool and the default concentration ratios for terrestrial biota.
J. Environ. Radioact., 99, 1393-1407.
Abstract

Hosseini, A., Thorring, H., Brown, J.E., Saxen, R., Ilus, E. 2008.
Transfer of radionuclides in aquatic ecosystems - Default concentration ratios for aquatic biota in the Erica Tool.
J. Environ. Radioact., 99, 1408-1429.
Abstract

Ulanovsky, A., Prohl, G., Gomez-Ros, J.M. 2008.
Methods for calculating dose conversion coefficients for terrestrial and aquatic biota.
J. Environ. Radioact., 99, 1440-1448.
Abstract

Beresford, N., Brown, J., Copplestone, D., Garnier-Laplace, J., Howard, B.J., Larsson, C-M., Oughton, O., Pröhl, G., Zinger, I. (eds.) 2007.
D-ERICA: An INTEGRATED APPROACH to the assessment and management of environmental risks from ionising radiation. Description of purpose, methodology and application.
Full text

Galeriu D, Beresford, N.A., Melintescu, A., Avila, R. and Crout, N.M.J. 2003. Predicting tritium and radiocarbon in wild animals Contributed Papers Conf. on the Protection of the Environment from the Effects of Ionizing Radiation (Stockholm, 2003) (Vienna: IAEA) pp 186-9 (IAEA-CN-109).

The ERICA Tool also contains a comprehensive help function.

Brown, J.E., Alfonso, B., Avila, R., Beresford, N.A., Copplestone, D., Hosseini, A. 2016 A new version of the ERICA tool to facilitate impact assessments of radioactivity on wild plants and animals J. Environ. Radioact. 153, 141-148.