1. ERICA Tier 3

To try using Tier 3 in ERICA restrict your assessment to the oystercatcher (see Table 4), insect larvae and molluscs, consider only Cs-137 and Th-234. You can assume you have measured water concentrations for the Natura 200 site (mean±SD) as follows:

Cs-137 = 0.05±0.01 Bq/l

Th-234 = 0.01±0.005 Bq/l

2. Creating an organism in RESRAD-BIOTA (Level 3)

Information in Table 4 will help you to create an organism representative of an oystercatcher.

You also need concentration ratio values (or Bivs) for prey items. For this exercise restrict your assessment to Th-234 and Cs-137 and assume the following concentration ratio (biota:water) values for the prey items:

Insect larvae

Cs-137 = 10000

Th-234 = 100

Molluscs

Cs-137 = 460

Th-234 = 100

You can assume you have measured water concentrations for the Natura 200 site (mean±SD) as follows:

Cs-137 = 0.05±0.01 Bq/l

Th-234 = 0.01±0.005 Bq/l

3. Replace the RESRAD-BIOTA default values with those from ERICA – what happens?

Run ERICA at Tier 2 for Th-234 and Cs-137; select freshwater mammal only.

Assume Cs-137 = 0.05±0.01 Bq/l

Th-234 = 0.01±0.005 Bq/l

Record predicted wholebody activity concentrations and RQ values

Using the same input water conentrations for Th-234 and Cs-137 run RESRAD-BIOTA at Level 2 and record results for aquatic animal

Re-run at RESRAD-BIOTA Level 2 but replace the RESRAD-BIOTA default kd and CR (Biv) values for aquatic animal with the ERICA defaults. Record results

Are results different to when you previously ran RESRAD-BIOTA at Level 2?

Are they more/less similar to the outputs from the ERICA Tool than before?

4. What happens if assume different geometries for internal and external exposure in RESRAD-BIOTA

Select Am-241, Cs-137 and H-3 and enter 1 Bq/kg in water and sediment for each.

Create two aquatic organisms using Level 3:

1) Organism A – select geometry 4
2) Organism B – use advanced and select 'use different geometries …' then geometry 1 for external and geometry 8 for internal

Class both as aquatic animals [and use weight of 1 kg]

Enter 1 Bq/kg in tissue for each organism

Then run model for Organisms A and B only and select the 'dose report'.

Are the results for the two organisms similar or very different?

5. Is size (within reason) important for dosimetry – investigate with the ERICA Tool?

Select Tier 2 and marine ecosystems.

Select Cs-137, H-3 and Am-241

Select pelagic fish (default weight 0.6 kg) and mammal (default weight 180 kg)

Enter 1 Bq/kg for sediment and organism; 1 Bq/l for water

Run and compare dose results … are they different or similar?