Radionuclide Transfer to Wildlife
WG 5:
Activities

- Key output TRS on transfer to wildlife
- On-line database – can be accessed through PROTECT website linked wiki

  (www.ceh.ac.uk/protect)
- Science presentations on inputs
- Publication in Radiation Environ Biophys

TRS: RADIONUCLIDE TRANSFER TO WILDLIFE

Provide IAEA Member States with data for use in the radiological assessment of wildlife as a consequence of routine discharges of radionuclides to the environment and existing contamination situations.

Submit paper and any other relevant information to the data input reviewers

Reference ID Number	10_91957	**Year**	
Author		**Article Title**	
Publication type	Abstract	**Location**	Electronic
Publication title ADD MORE	Aquatic Toxicology		
Volume		**Part**	
Page Nos			
Reference Language ADD MORE	English	**Translation into English available**	N/A

Please select in order habitat, wildlife group, ICRP RAP and finally, if required, the lifestage box. Following this will ensure the correct lifestage for the ICRP RAP is selected

Habitat	Estuarine (terrestrial)	**Wildlife Group**	Amphibian	**Species Common** ADD MORE	Alder	**Species Latin** ADD MORE	Alnus rugosa
ICRP RAP	Frog	**Studytype**	Field	**Sampling Date**			
Lifestage	None	**Notes**		**Dynamic Info (e.g. biological (1/2)**		**Element/Nuclide**	Ac

MediaType	—	**Media wetdry**		**Media conc**		**Media units**	Bq/m3
N for media		**SD for media**					

Tissue type	Wholebody	**Status of biota**	Wet	**Biota conc**		**Biota units**	Bq/m3
N for biota		**SD for biota**					

Concentration Ratio		**N of CR**		**SD of CR**	

Add All | Add Mid

Database output

Element	Arithmetic Mean	Arithmetic Standard Deviaton	Geometric Mean	Geometric Standard Deviation	Minimum	Maximum	N
Am	5.1e+1	7.1e+1	3.0e+1	2.8e+0	4.2e-1	3.0e+2	38
Ce	6.6e+1	7.8e+1	4.3e+1	2.5e+0	1.4e+1	2.0e+2	5
Co	4.2e+2	3.3e+2	3.3e+2	2.0e+0	1.3e+2	9.6e+2	6
Cs	5.6e+1	6.9e+1	3.6e+1	2.6e+0	5.0e+0	5.2e+2	308
Eu	1.3e+2	NaN	NaN	NaN	0.0e+0	0.0e+0	1
Mn	2.4e+2	NaN	NaN	NaN	0.0e+0	0.0e+0	1
Pu	2.2e+1	7.7e+1	5.9e+0	5.0e+0	2.0e+0	3.6e+2	22
Ra	9.4e+1	1.1e+2	6.2e+1	2.5e+0	9.4e+1	9.4e+1	21
Sb	2.0e+2	NaN	NaN	NaN	0.0e+0	0.0e+0	1
Sr	1.4e+1	1.1e+1	1.0e+1	2.1e+0	3.0e+0	2.8e+1	12
Tc	4.6e+1	5.3e+1	3.0e+1	2.5e+0	1.8e+1	7.8e+1	32
U	1.5e+1	9.8e+0	NaN	NaN	1.5e+1	1.5e+1	2
Zr	5.2e+1	NaN	NaN	NaN	0.0e+0	0.0e+0	1

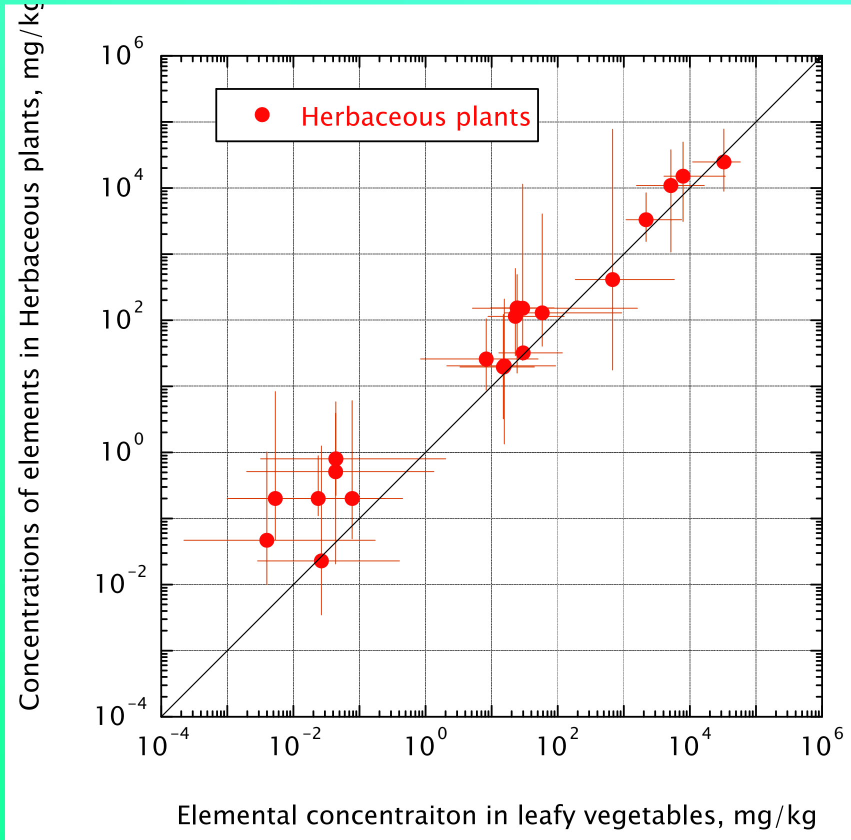
With sources…

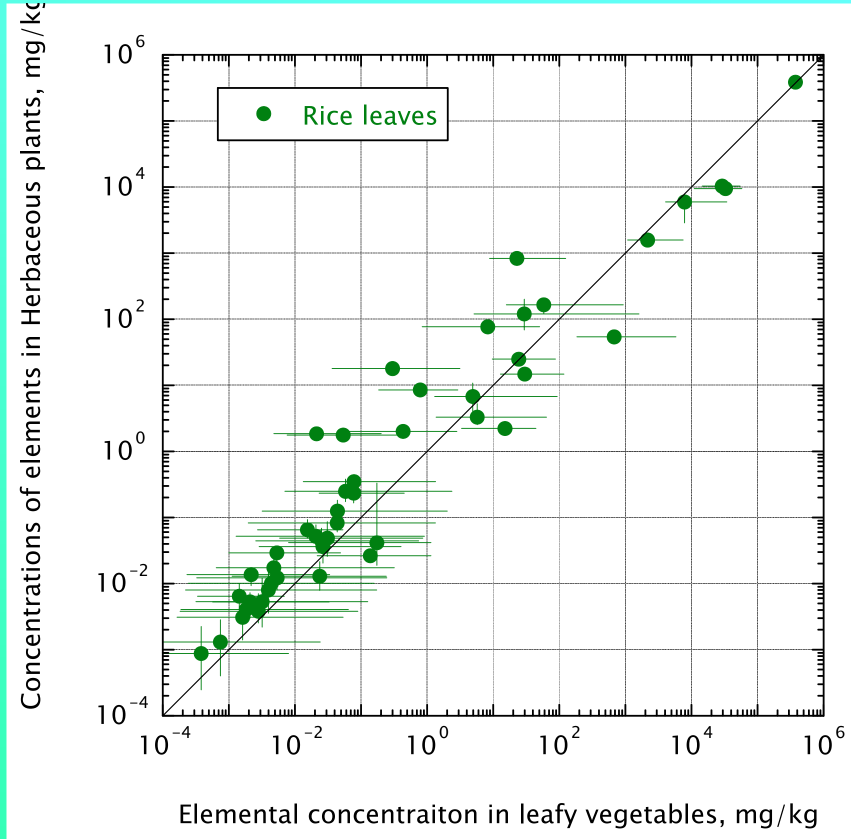
Results for Marine - Benthic fish

Element	Arithmetic Mean	Arithmetic Standard Deviaton	Geometric Mean	Geometric Standard Deviation	Minimum	Maximum	N	RefID
Am	51.05395	71.42399	29.68868	2.8328	0.42	296	38	97,135,191
Ce	66.2	77.98406	42.84184	2.54191	13.5	200	5	139,241,245
Co	421.66667	325.48159	333.79318	1.98111	130	960	6	113,118,248
Cs	57.07717	69.46415	36.2357	2.59417	5	517	311	1,104,113,135,153,171,184,185,192,213,230,237,243,245,248
Eu	130						1	241
Mn	240						1	248
Pu	21.67273	77.06452	5.86738	5.03578	2	360	22	90,97,135,204,245
Ra	94	106	62.36779	2.47393	94	94	21	205
Sb	200						1	248
Sr	13.55833	11.22267	10.44451	2.05935	3	28	12	154,184,245
Tc	46.125	52.6386	30.39824	2.49229	18	78	32	135
U	14.5	9.75177			14.5	14.5	2	206
Zr	52						1	139

Can elemental composition data of crop leaves be applied to tree leaves and wild grass?

K. Tagami & S. Uchida, NIRS, Japan





Transfers to Marine Biota: Developments of a Phylogenetic Bioaccumulation Model

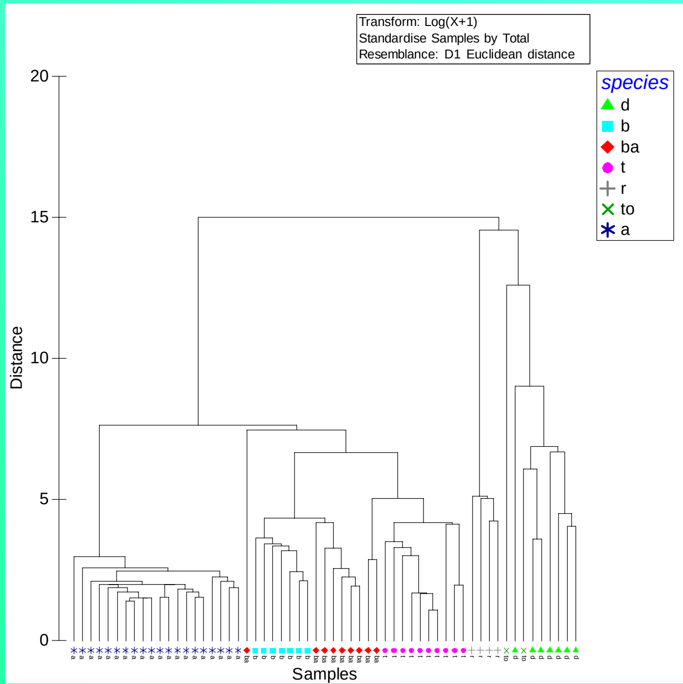
Jeffree et al , MEL, IAEA

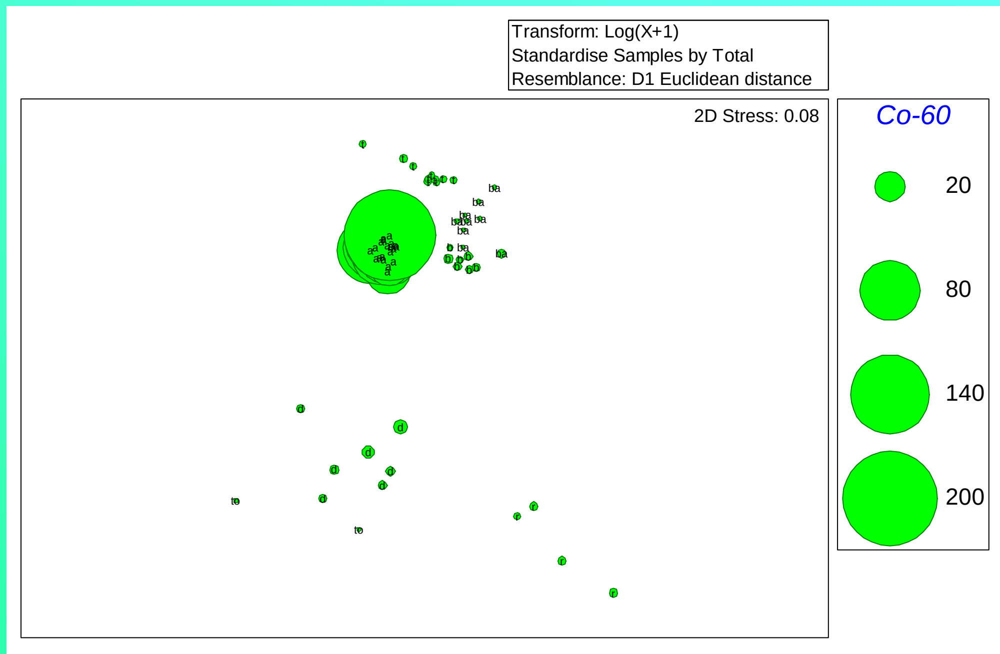
- Hypothesis:
  - Evolutionary divergent organisms have different patterns of bioaccumulation of trace elements
  - The greater the period of divergence the greater the differences

- tested by short-term experimental bioaccumulation from seawater; ^{54}Mn, ^{60}Co, ^{65}Zn, ^{109}Cd, ^{110m}Ag, ^{75}Se, ^{134}Cs, ^{241}Am, ^{51}Cr

- Outcomes
  - Differences demonstrated can be interpreted in terms of differences in physiology and anatomy
  - Has identified 'at risk' taxa, relative to reference organisms

The Cephalochordate: Amphioxus





All amphioxus group together, distinct from teleosts and chondrichthyans, but closer to teleosts

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Reptiles: Mike Wood, Liverpool U

The CR database

- 251 data lines (n=856)
  - Snakes (13 species)
  - Lizards (16 species)
  - Turtles and tortoises (8 species)
  - Crocodilians (3 species)
- 35 elements in freshwater reptiles
  - Am, As, B, Ba, Ca, Cd, Ce, Cm, Co, Cr, Cs, Cu, Fe, Hg, K, La, Mg, Mn, Mo, Na, Ni, Pb, Po, Pu, Ra, Rb, Sb, Se, Sr, Th, U, V, Y, Zn, Zr
- 15 elements in terrestrial reptiles
  - Am, C, Cs, Cu, K, Mn, Ni, Pb, Po, Pu, Sr, Tc, Th, U, Zn
- 10 elements in freshwater reptile eggs
  - As, Cd, Cr, Cu, Fe, Hg, Mn, Pb, Zn

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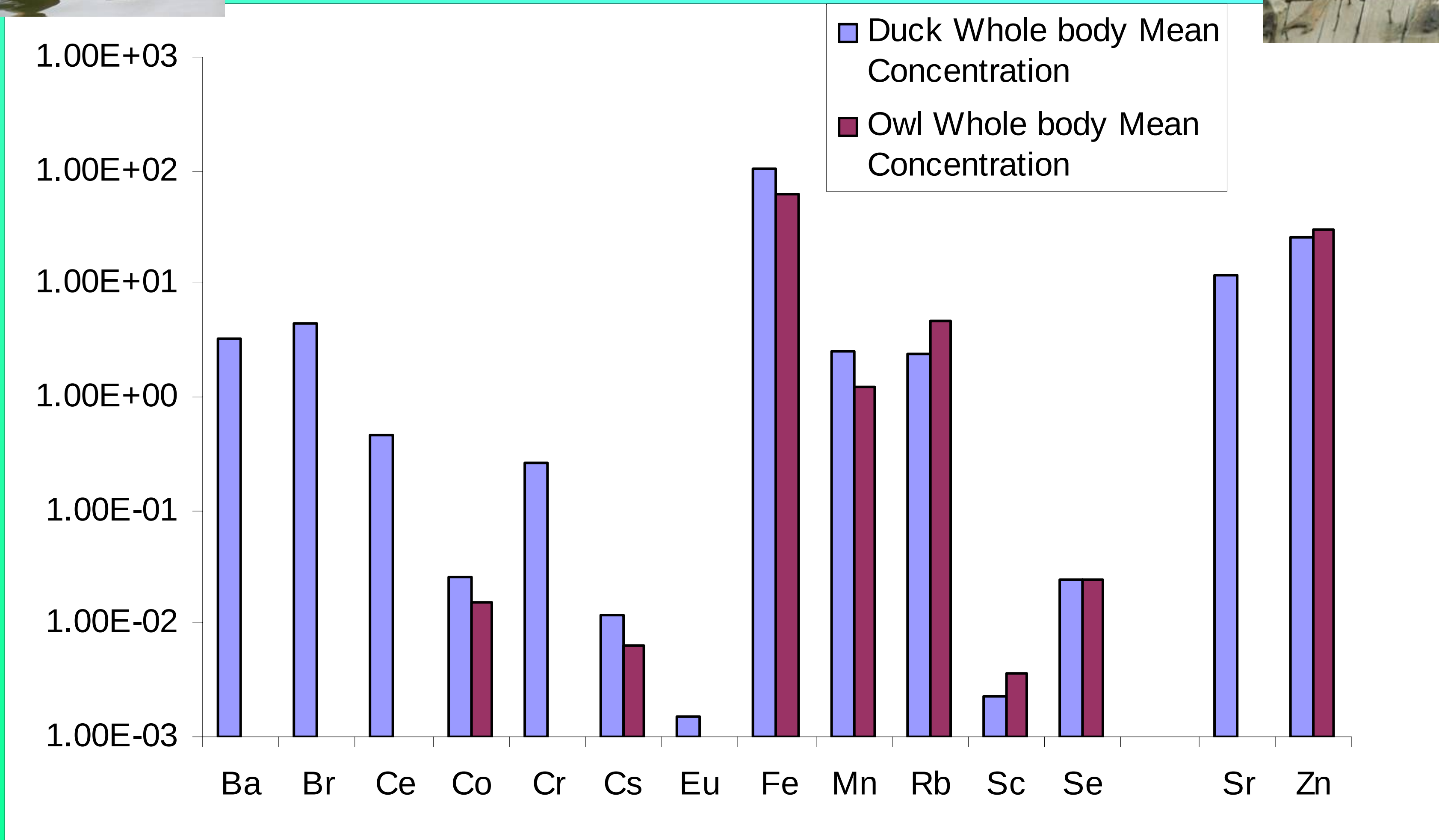
Birds: CEH, UK and UMB, Norway



Element	CR					
	Duck			Owl		
	n*	Mean	SE	n*	Mean	SE
Ba	1	7.96E-03	3.71E-03			
Br	3	9.93E-02	1.23E-02			
Ce	5	1.50E-03	4.22E-04			
Co	11	4.43E-03	4.18E-04	3	1.67E-03	5.80E-04
Cr	3	3.52E-03	3.10E-03			
Cs	11	4.70E-03	7.25E-04	2	1.69E-03	1.99E-04
Eu	5	1.64E-03	4.29E-04			
Fe	11	7.71E-03	5.40E-04	5	2.19E-03	5.14E-04
Hg	5	8.67E-03	3.75E-03			
Mn	11	8.25E-03	7.63E-04	2	1.71E-03	2.59E-04
Rb	11	4.22E-02	1.16E-02	5	9.56E-02	2.45E-02
Sb	7	6.91E-01	3.17E-01	1	5.24E-03	1.58E-03
Sc	11	5.09E-04	7.54E-05	3	3.25E-04	3.07E-05
Se	6	3.69E-02	6.97E-03	2	2.94E-02	4.77E-03
Sr	11	3.78E-02	2.44E-03			
Zn	11	3.91E-01	3.38E-02	2	2.36E-01	5.48E-02

Radiological protection of the environment - sharing knowledge - Radiological protection of the - Windows Internet Explorer

http://wiki.ceh.ac.uk/display/rpemain/Radiological+protection+of+the+environment+-+sharing+knowledge;jsessionid=089C8FDA7

Dashboard › Radiological protection of the environment - Sharing Knowledge › Radiological protection of the environment - sharing knowledge

Radiological protection of the environment - sharing knowledge

1 Added by Sabera Patel, last edited by Nicholas Beresford on Jan 23, 2010 (view change)

Table of Contents

Expand all Collapse all

Introduction

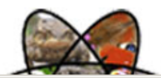
It is now generally accepted that there is a need to explicity demonstrate that the environment is protected from authorised discharges of radioactive substances. In response a number of assessment tools (models) have been developed. As the need for environmental assessment increases there is a requirement to ensure that regulators, industry and their representatives are: conversant with assessment objectives; know how to use available tool; can interpret the results; understand the implications of how the tools are used.

The Natural Environment Research Council has provide funding, under the *Knowledge Exchange* programme, to develop training packages (including on-line training materials) on radiological environmental assessment aimed specifically aimed at regulators and industry and those who may conduct assessment on their behalf. The project is lead by the Centre for Ecology & Hydrology with collaborators from the England & Wales Environment Agency, Institute for Radiological Protection and Nuclear Safety (IRSN) and Westlakes Scientific Consulting. The training programme will be focussed towards the use of the ERICA Tool however

News

Title	Author	Date Posted
This wiki replaces the PROTECT project website	Nicholas Beresford	Jan 22, 2010
First training course dates	Nicholas Beresford	Jan 21, 2010
New version of RESRAD-BIOTA	Nicholas Beresford	Dec 17, 2009

More News items



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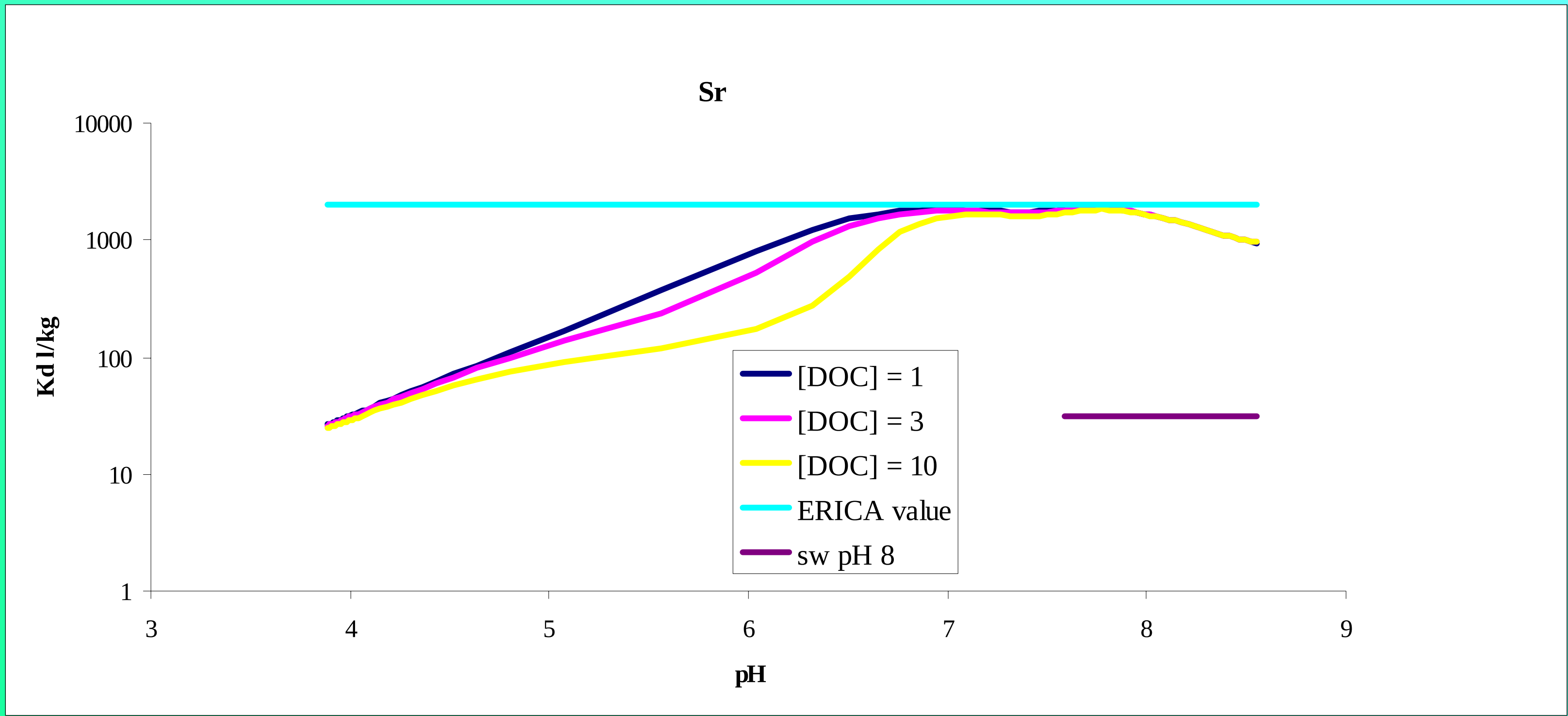
Future

- Data entry to May 09
- Summer meeting June/July, location ?
  - Review revised text
  - Consider data tables for CR and conversions
    - Trends, extent of change in values compared to initial ERICA Tool database
    - QC
    - Wildlife group sub divisions?

The Kd "problem"



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Does it matter

- Too High Kd values
  - Will give low water conc – low whole body conc – therefore NOT conservative
  - Will give high sediment conc – higher external exposure - >90% of most metals in sediment