

National Dose Assessment Working Group – Total Retrospective Dose Sub Group Meeting

Record of the third meeting held on Friday 23 April, FSA, Aviation House, London.

Present:	Rob Allott	EA
	John Titley	EA
	Paul Tossell	FSA
	Tim Parker	Industry
	Jane Simmonds	NRPB
	Bill Camplin	CEFAS

1. Purpose of meeting

To review options proposed by RIFE project team for assessing total doses from authorised discharges of radioactive waste and regulated direct radiation doses. A paper describing the options and showing results from the use of each meeting had been prepared by CEFAS and was presented at the meeting.

2. Comments on options

Key comments raised during the meeting were:

- Use of results at detection limits can be unhelpful, as they can give unrealistically high estimates of dose and can be misleading when the dose is presented broken down by nuclide and/or by pathway. The example given was actinides discharged to atmosphere. There are relatively high detection limits in milk, which then lead to milk appearing as an important pathway for dose. However, actinides do not transfer into milk readily. The main dose pathway for actinides would normally be inhalation for actinides with milk being a minor contributor. The principles document states that where doses calculated from detection limits exceed $20\mu\text{Sv/y}$ then a more realistic assessment should be made, either through better monitoring in future, extrapolation of data or modelling.
- The Aldermaston/Burghfield assessment excluded inhalation doses which does not give a complete picture of the total dose.
- Fetal doses may need to be considered, but only for certain nuclides.
- The group recognised the importance of conformity with EU BSS, ICRP recommendations and CEDA conclusions. No significant non-conformities were identified.
- There was some support given to retention of the old style system of non-total calculations not only to offer trend info and a check on a new method, but also to allow assessment of special situations such as seaweed/allotments.

3. Scoring of Options

The options considered were:

- Option A. INDIVIDUAL - Full calculation of dose to each individual in habits survey and critical dose derived by cut-off method
- Option B. INDIVIDUAL PLUS - As A, but in year 1, derive the average rates of consumption by the critical group and apply these to future years
- Option C. CONSTRUCT - In year 1, construct a secondary habits dataset made up of all those individuals with habits rates defined to be critical ones, then average the rates (excluding zeros) and apply these to future years

- Option D. TOP-TWO - In year 1, derive critical and average rates for each habits pathway and apply these to future years. Determine doses using the Top-two method previously adopted for terrestrial pathways
- Option E.PROFILING - In year 1, derive profiles of habits rates that correspond to high consumers for each pathway and apply these to future years. Calculate doses for each profile and select the highest dose.

The attendees at the meeting scored the options by cross-comparison of the options with each other for the following attributes:

- Ease of use
- Transparency
- Realism
- Homogeneity
- Scientific rigour

Scores were as follows:

Ease of use:

Option	A	B	C	D	E	Total
A	0	1	1	1	1	4
B	0	0	0.5	0	0	0.5
C	0	0.5	0	0	0	0.5
D	0	1	1	0	0.5	2.5
E	0	1	1	0.5	0	2.5
Total	0	3.5	3.5	1.5	1.5	10

Transparency:

Option	A	B	C	D	E	Total
A	0	1	0	0	1	2
B	0	0	0.5	0	1	1.5
C	1	0.5	0	0	1	2.5
D	1	1	1	0	1	4
E	0	0	0	0	0	0
Total	2	2.5	1.5	0	4	10

Realism:

Option	A	B	C	D	E	Total
A	0	0	0	0	0	0
B	1	0	0	0	1	2
C	1	1	0	0	1	3
D	1	1	1	0	1	4
E	1	0	0	0	0	1
Total	4	2	1	0	3	10

Homogeneity:

Option	A	B	C	D	E	Total
A	0	0.5	0	1	1	2.5
B	0.5	0	0	1	1	2.5
C	1	1	0	1	1	4
D	0	0	0	0	1	1

E	0	0	0	0	0	0
Total	1.5	1.5	0	3	4	10

Scientific rigour:

Option	A	B	C	D	E	Total
A	0	0	0	0	0	0
B	1	0	0	0	1	2
C	1	1	0	0	1	3
D	1	1	1	0	1	4
E	1	0	0	0	0	1
Total	4	2	1	0	3	10

Total:

Option	Ease of use	Transparency	Realism	Homogeneity	Scientific rigour	Total
A	0	2	4	1.5	4	11.5
B	3.5	2.5	2	1.5	2	11.5
C	3.5	1.5	1	0	1	7
D	1.5	0	0	3	0	4.5
E	1.5	4	3	4	3	15.5
Total	10	10	10	10	10	50

4. Conclusions

Option E was found to be the preferred option.