

NATIONAL DOSE ASSESSMENT WORKING GROUP

SUB-GROUP ON UNCERTAINTY AND VARIABILITY IN DOSE ASSESSMENTS

4th meeting held on 7 October 2004, Aviation House London.

Present

Chair	David Webbe-Wood	FSA
Regulators/agencies	David Brazier	EA
	Ray Kowe	NRPB
	Jane Simmonds	NRPB
	Kate Charles	Westlakes Scientific Consulting
Specialists/NGOs	Marcus Grzechnik	CEFAS
	Mike Thorne	Consultant
Apologies: Cathy Griffiths RWMAC		

1. Introduction

David Webbe-Wood welcomed new sub-group member David Brazier from the EA and outlined the aims of the subgroup. Members agreed on the agenda items.

2. Minutes of previous meeting 18 March 2004

Action U&V_Subgroup 3.1 David to report back to the main NDAWG group that the members of the sub-group have agreed with the terms of reference. Completed.

Action U&V_Subgroup 3.2 NRPB to draft topics 1 to 3 for the subgroup paper. Completed.

Action U&V_Subgroup 3.3 Mike to write section on expert elicitation. Completed.

Action U&V_Subgroup 3.4 NRPB to draft topics 5 to 7 for the subgroup paper. Sub-group members to add additional information to it. Completed.

Action U&V_Subgroup 3.5 All sub-group members to write draft on topic 8. Completed.

Action U&V_Subgroup 3.6 David to edit contributions and write introduction to the paper. Completed.

Action U&V Subgroup 3.7 Members to forward to David suggestions for items to be included in the paper on when probabilistic assessments are desirable. Completed.

Action U&V Subgroup 3.8 David to collate suggestions from members into a contents list for the paper on when probabilistic assessments are desirable to be discussed at the next meeting of the subgroup. Completed.

Action U&V_Subgroup 3.9 David to prepare a work plan for the sub-group to put forward to the main NDAWG meeting in April. Completed.

3. Matters arising

There were no matters arising.

4. Production of report on uncertainty and variability in dose assessments

Jane suggested a change in the title of the report from "the use of uncertainty in radiological assessments" to "an overview of uncertainty in radiological assessments". Members agreed on the suggested title.

Structure of document

Members agreed that the order of the sections of the report would be:

Introduction (incorporating the section "the use of uncertainty analysis in dose assessments")

Definitions

Use of expert judgement

Issues involved in uncertainty analysis (incorporating the section "problems in the uncertainty in radiological assessments")

Presentation of results

Examples of relevant uncertainty studies

Some of the titles of the sections will be changed, as discussed below, and there will be a contents page and a brief summary stating what the purpose of the document is.

Introduction

David Brazier suggested the report needed to outline its aim in the introduction. Jane suggested "The aim of this document is to give an overview of the broad topic of uncertainty in dose assessments. It is particularly focussed on assessments of the radiological impact of routine releases of radionuclides to the environment but draws on experiences in other fields".

David Brazier said that the EA did not tend to carry out uncertainty and variability assessments as there was a generally lack of data to quantify uncertainty and a lack of resources and skills, and that there was more emphasis on the presentation of dose issues to the public. David said that an email from John Titley said the EA advised a cautious approach to the use of uncertainty analysis

as there is a question on their use in assessments from a regulatory viewpoint. Kate asked who it was pushing to do uncertainty analysis if it was not the agencies. There was some discussion about the role of uncertainty analysis in assessments.

Action U&V Subgroup 4.1 David Brazier to provide copy of EA (John Titley) email outlining EA's view on uncertainty analysis to be incorporated in the minutes.

David Webbe-Wood will redraft the introduction section including any other comments from members.

Definitions

Members suggested a change to the title of section 2 from "definitions" to "terms".

Members suggested including some of the context of David Brazier's document e.g. having a figure giving an overview of the uncertainty problem.

David Brazier said that the examples did not clarify the differences between uncertainty and variability. Jane said she would not use these examples in the redraft.

David Webbe-Wood asked members to send Jane any comments on this section.

The use of expert judgement

Jane said that the text was too specific to solid waste management and it needed to be more general with the emphasis on routine releases. It is also important to cite other studies particularly the Nord-Cotentin study and the EC/USNRC accident consequence work.

It was agreed that the introduction needed to state there are pitfalls in expert elicitation, it needs to set out what you are trying to achieve, make sure the experts understand the problem, what the context is and what you are asking of them. David Brazier distributed an RIVM document "guidance for uncertainty assessment and communication" which gave generic guidance for expert elicitation.

Action U&V_Subgroup 4.2 Mike to write annex for section on the use of expert judgement explaining the various terms and setting out what the process entails.

Action U&V Subgroup 4.3 Members to send comments and additional material on expert judgement to Mike by 15th October.

Issues involved in uncertainty analysis

This section will be renamed "Potential pitfalls involved in uncertainty analysis on dose assessments" and will be combined with the section "problems in the uncertainty in radiological assessments".

The first bullet point needs to reference work going on in this area and the last sentence needs to be removed. Marcus remarked that it should be clear that variability needs to be considered alongside uncertainty in the context of this point.

Action U&V_Subgroup 4.4 All sub-group members to send Jane comments and additional material on the sections "issues involved in uncertainty analysis" and "problems in uncertainty in radiological assessments" and "Terms" for 15th October.

In bullet point 5 the word "obvious" should be replaced with "easiest" so as not to infer people should always select triangular distributions.

In the final bullet point it should be stressed that in the context of dose assessments for multiple pathways and multiple nuclides there is a tendency for uncertainties to cancel out. In the last sentence add in "for routine releases" after "dose assessments"

Presentation of results

Jane will move the David Collier example into this section and cite his published paper on this matter.

The use of uncertainty analysis in dose assessments

This section will form part of the introduction.

Examples of relevant uncertainty studies

The Gossens and Kelly reference will be moved to the section on expert elicitation.

Action U&V_Subgroup 4.5 Marcus to provide Jane with example(s) on aquatic studies, Mike to provide Jane with an example on solid waste assessment by 15th October.

Kate gave permission for her document on problems associated with probabilistic assessments to be cited as an example. It was suggested the BIOMASS work on fruit could also be referenced.

Members agreed that David Brazier's paper is a useful reference to problems with uncertainty analysis in general that may be of interest to NDAWG and that the best way to cite it is as an annex to the minutes which will not appear on the website. It will also have the disclaimer that it will not be available for dissemination outside of NDAWG.

Action U&V Subgroup 4.6 David Brazier to seek clearance with the EA for the use of his report “On the management of communication of uncertainty in quantitative assessments” within NDAWG only.

Action U&V Subgroup 4.7 David Brazier to send the sub-group secretary a WORD version of his report.

Conclusions

David Webbe-Wood will draft a brief conclusions section outlining what the purpose of the document was.

The timescales for production of a final draft for the main NDAWG meeting on the 16th November was discussed. The Secretary needs to issue papers for the meeting some two weeks (5th November) in advance.

Action U&V Subgroup 4.8 Members to send David Webbe-Wood revised sections and additional material by 29th October.

Action U&V Subgroup 4.9 David Webbe-Wood to finish revised draft of first document to NDAWG secretary by 5th November.

Action U&V Subgroup 4.10 Sub-group secretary to issue actions from 4th sub-group as soon as possible.

5. Future work of the sub-group

Members discussed the second paper on the second term of reference which is to give some guidance on when a probabilistic assessment or some semi-quantitative uncertainty analysis is required. Mike suggested a title for the paper “performing assessments in the presence of uncertainty”. An outline of sections was given:

Introduction – the context should indicate in what circumstances uncertainty analyses should be carried out e.g. if a preliminary assessment indicates individual doses exceed 20 μ Sv then you should consider carry out an uncertainty study. This should be related to the first principles paper.

The second section heading could be “iterative approach” and should indicate what factors need to be taken into account.

The third section should illustrate some practical examples.

The fourth section would outline the role of an uncertainty analysis as a research tool, for example, looking at new pathways, problems with particular radionuclides.

Action U&V Subgroup 4.11 Members to send David Webbe-Wood contributions to second sub-group report “performance assessments in the presence of uncertainty” by 17th December.

Action U&V Subgroup 4.12 Sub-group secretary to remind members about their contributions on second sub-group report by 20th November.

6. Future work of the sub-group

David outlined the next term of reference the sub-group, which was to consider issues relating to compliance with dose limits and constraints when probabilistic assessments are carried out. It may be that this may be addressed in the second paper. David will be presenting the second paper at the main NDAWG meeting in April 2005 and will then ask the main committee if they require anything further from the sub-group.

7. AOB

None.

8. Date of next meeting

The 27th of January 2005 was suggested as the date for the next meeting.

9. Summary of Actions

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Ray Kowe, 20 October 2004