

NATIONAL DOSE ASSESSMENT WORKING GROUP

SUB-GROUP ON PROBABILISTIC MODELLING

1st Meeting held on 26th September 2002, Aviation House London.

1. Present

Chair	Zitouni Ould-Dada	FSA
Regulators/agencies	Cathy Griffiths	RWMAC
	Kelly Jones	NRPB
Specialists/NGOs	Kate Charles	Westlakes Scientific Consulting
	John Hunt	CEFAS
	Mike Thorne	Consultant
Secretariat	Ciara Walsh	NRPB

Apologies: Marian Dunn (EA)

2. Introduction

The chairman welcomed everyone to the meeting and explained the background and objective of this subgroup. The terms of reference, prepared by the NDAWG steering group, were discussed. No changes were proposed and the terms and conditions were agreed.

Terms of Reference

The aim of this sub-group is to consider issues relating to prospective dose assessments. In particular it will:

- Review and comment on FSA's use of 'possible' and 'probable' dose.
- Consider the extent to which assessments should be probabilistic, i.e. a range of doses is estimated rather than a single value.
- Consider issues and studies relating to uncertainty and variability in dose assessments, including the availability of input data.
- Consider issues relating to compliance with dose limits and constraints when probabilistic assessments are carried out.
- Consider how probabilistic results can be presented to the public.

3. Addressing CEDA recommendations

CEDA recommended that FSA should re-examine its use of probability distributions of dose, to derive the possible dose. It also recommended that probabilistic calculations should continue to be explored by all parties.

The recommendations were discussed, and it was noted that the terms of reference of the subgroup are adequate to address the CEDA recommendations.

4. What participants expect from this sub-group?

Each member of the subgroup spoke about what was expected from this subgroup.

They are listed as bullet points below, not attributed to any member, as there was overlap between many members.

It was considered important for the subgroup to reach a consensus on some/all of the following issues:

- How probabilistic results should be compared to single value criteria
- Recommendations on when probabilistic modelling should be carried out
- What does the 97.5th percentile mean? This is not the critical group dose, especially in a distribution with a long tail
- Advice/other members experience on the shapes of distributions
- FSA possible and probable approach
- Degree of pessimism/realism of assessments
- Data required by small users to facilitate probabilistic assessments
- Compliance issues
- Implications of our deliberations for the next generation of models
- Use of common ingestion rate data and age groups
- Use of results from probabilistic assessments
- Transparent presentation of the outcome of assessments to the public so individuals can understand the implications for their lifestyle

5. Discussion of proposed list of topics

6.1 *Sources of uncertainty and variability in the dose assessment process (Topic 1)*

An NRPB report will be published soon on the distribution of risk for exposed groups (which will be circulated to members when published). This contains discussion relevant to this topic, and Kelly agreed to be take the lead for this topic.

It was agreed that all members would send details of reports and details of committees working on issues relevant to this topic to Ciara. This would be collated to be included in the topic report.

Action PM_Subgroup 1.1 Members to send Ciara details of reports and details of committees working on issues relevant to the topic "Sources of uncertainty and variability in the dose assessment process"

6.2 *Distinction between uncertainty and variability and their implications (Topic 2)*

An NRPB internal report highlights the distinction between uncertainty and variability. Kelly agreed to take the lead on this topic, and distribute the report to members for comment.

Action PM_Subgroup 1.2 Kelly to distribute the NRPB internal report which highlights the distinction between uncertainty and variability

Action PM_Subgroup 1.3 Members to comment on the NRPB internal report which highlights the distinction between uncertainty and variability and send comments to Kelly

6.3 *Conceptual model uncertainty (Topic 3)*

It was decided that this topic is currently outside the scope of this group. The topic requires significant effort to make effective progress.

6.4 *Quantifying uncertainty (Topic 4), Probabilistic modelling – software and methods (Topic 5) and Correlation between parameters and its implication (Topic 8)*

It was decided that topics 4, 5 and 8 should be considered together. The members thought it would be useful to be aware what tools are available and in use. The NRPB internal document discussed in 6.2 also deals with software and tools used in NRPB for uncertainty and sensitivity analysis. This will be circulated under Action PM_Subgroup 1.2.

It was decided it would be useful to ask others working in the field about their experiences using different tools. The following actions arose from these discussions:

Action PM_Subgroup 1.4 **Ciara to provide the NDAWG Press Release for use for the actions PM_Subgroup 1.5 and 1.6**

Action PM_Subgroup 1.5 **Mike to draft an article for the SRP website and circulate for comment. This article will detail the work of NDAWG, the work of this subgroup and the information required on uncertainty/sensitivity analysis tools.**

Action PM_Subgroup 1.6 **Kelly to submit article prepared by Mike from Action PM_Subgroup 1.5 to the eBulletin published on the NRPB website, or to publish it directly on the website.**

Action PM_Subgroup 1.7 **Cathy to contact HSE to circulate article prepared by Mike from Action PM_Subgroup 1.5 in their newsletter.**

6.5 *Calibration and validation of probabilistic models (Topic 6)*

It was agreed that it would be require too much effort to carry out this work at present, but that this topic may be considered in the future.

6.6 *Application of probabilistic modelling in solid waste management (Topic 8)*

This topic is outside the scope of NDAWG, however it was decided it may be useful to read documents on work in this field.

Action PM_Subgroup 1.8 **Mike to circulate documents relevant to the topic "Application of probabilistic modelling in solid waste management".**

6.7 *Review and comment on FSA's use of 'possible' and 'probable' dose (Topic 10), How probabilistic modelling can usefully inform decisions (Topic 7) and Presentation of results from probabilistic modelling (Topic 9)*

It was decided that Zitouni would take the lead on these topics. None of the topics proposed specifically dealt with compliance, and it was agreed Topic 7 would be reworded to take compliance into account.

Action PM_Subgroup 1.9 **Kelly and Mike to draft a position paper for Topic 7 ("How probabilistic modelling can usefully inform decisions")**

Action PM_Subgroup 1.10 Zitouni to reword Topic 7 ("How probabilistic modelling can usefully inform decisions") to take account of compliance

6.8 *Liaison with other organisations and working groups (e.g. IAEA, ICRP, SRP etc) (Topic 12)*

Various other organisations were discussed with whom we should liaise. These include BIOPROTA, IUR, ADMLC, EA, ICRP.

ICRP has decided for legal reasons not to publish reports on uncertainty in dose coefficients. However, the individual scientists are being encouraged to publish the reports themselves.

A short letter will be written (using the article written by Mike from Action PM_Subgroup 1.5) to introduce this subgroup to other organisations.

Action PM_Subgroup 1.11 Ciara to write a short letter to introduce this subgroup to other organisations, and distribute to relevant organisations and working groups.

6.9 *Workshops on Uncertainty and variability and Standards setting in the context of probabilistic modelling*

Workshops would be considered at a later stage.

No other topics were identified by members. The terms of reference were cross-referenced with the topics identified above the subgroup did not omit any topic within the remit.

6. Topics to be discussed at the next meeting

Topic 10 (*Review and comment on FSA's use of 'possible' and 'probable' dose*) will be discussed at the next meeting.

It was decided that meeting should start at around 10:30 and continue until 15:30, with a break for lunch. The progress of the subgroup will remain as a standing item on the agenda.

The subgroup expects to meet every four to six months. Documents will be exchanged between meetings for comments.

7. Working plan to present at the next NDAWG meeting

A draft position paper on the following topics will be presented to NDAWG as follows:

Topic 10 (*Review and comment on FSA's use of 'possible' and 'probable' dose*) will be presented at the 3rd NDAWG meeting.

Topic 7 (*How probabilistic modelling can usefully inform decisions*) will be presented at the 4th NDAWG meeting.

Topic 9 (*Presentation of results from probabilistic modelling*) will be presented at the 5th NDAWG meeting.

8. Date of next meeting

The next meeting will be held in 13th March 2003 at FSA, Aviation house, London.

9. Summary of Actions

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Action PM_Subgroup 1.2 **Kelly** to distribute the NRPB internal report which highlights the distinction between uncertainty and variability

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Ciara Walsh 21st October 2002