

## **NATIONAL DOSE ASSESSMENT WORKING GROUP**

### **PAPER 9-08: REPORT BACK FROM THE SUBGROUP ON HABITS**

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#### **1 INTRODUCTION**

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The Habits sub-group of the NDAWG completed the first stage of its work with the issue of its first position paper relating to retrospective assessments. This has now been published on the NDAWG web site. A meeting was held on 26<sup>th</sup> January 2006 to discuss the future work of the sub-group and the outcome of that meeting is summarised below. Minutes of the meeting are appended as Appendix A.

#### **2 PROSPECTIVE ASSESSMENTS AND TERMS OF REFERENCE**

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It was agreed by the NDAWG main meeting that there is a need for the Habits sub-group to continue its work and prepare a second position paper on the collection and use of habits data for prospective assessments. The need for the group to consider the use of habit data in prospective assessments originates from the outcome of the original CEDA meeting in 2000. The CEDA recommendation was that 'there should be more consistency in gathering survey data and FSA, operators and EA should co-ordinate their requirements for fieldwork. There should be more consistency in the treatment of data for constructing the aquatic and terrestrial critical groups'. At the last NDAWG meeting (November 2005), prospective assessments made for Winfrith were reviewed. That review indicated that different and inconsistent approaches continue to be taken to prospective assessments, including the way habits data are being used in those assessments. The NDAWG meeting view was that too little progress has been made to achieving greater consistency of approach in prospective assessments. The aim of the Habits sub-group is, therefore, to consider the use of habits data in prospective assessments and to identify good practice and areas for improving consistency. We propose to review the current approaches to the use of habit data in prospective assessments and determine the appropriateness of these approaches (taking into consideration factors such as scientific basis, rigour, transparency, realism, degree of caution). The group will consider the approach taken in related areas (e.g. in radioactive solid waste management) and in other countries. We will then identify good practice, including those aspects of the use of habits data that should be adopted consistently by all organisations carrying out assessments and those aspects for

which alternative approaches would be acceptable. Based on these considerations, the following revised Terms of Reference (ToR) are proposed.

The aim of this sub-group is to consider the use of habits data in assessing individual doses and in defining critical groups for both retrospective and prospective assessments. Following an initial emphasis on retrospective assessments, prospective assessments are now to be considered. In particular, in the context of prospective assessments, the sub-group will consider and identify:

- The contexts in which prospective assessments are undertaken;
- The current use of local and national habits data in such assessments;
- The current use of supplementary data in such assessments;
- The types and amounts of data available;
- Locations of groups and of food production currently assumed;
- The need for the acquisition and analysis of additional data, or the processing of existing data collected for other purposes;
- Approaches taken in other countries and IAEA guidance;
- Approaches taken to identifying and defining critical groups in the context of solid radioactive waste disposal;
- The implications of the various approaches used;
- Good practice for habits data use in prospective assessments;
- Approaches that should be used, including any core/common parts that should be adopted in all assessments.

We have noted that prospective assessments are made for nuclear and non-nuclear (small users) sites. Therefore the above TOR (if accepted) will be applied to both situations.

The specific items included as bullet points in the existing ToR have not been included, but they will be taken into account in addressing the issues identified above where appropriate. This revision goes further than the minor change of wording suggested in the minutes of the sub-group meeting, to bring it into line with the proposed scope of the second position paper (see Section 3).

The NDAWG is requested to endorse these updated ToR and to approve work on the preparation of a second position paper.

### **3 PROPOSED TIMETABLE AND STRUCTURE OF THE PAPER**

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Subject to the approval of the NDAWG, the sub-group aims to produce and present its second position paper at the main NDAWG meeting that will be held around Easter 2007. Autumn 2006 was not considered possible, due to the intention to hold a NDAWG review meeting at that time. An outline of the proposed content of the paper is provided as Appendix B. The intention is that Dr M C Thorne should develop that outline into a full draft immediately following the 9<sup>th</sup> Meeting of the NDAWG. Feedback on that draft from members of the sub-group is scheduled to be provided by 31<sup>st</sup> May 2006. Based on this feedback, Dr M C Thorne will prepare a revised draft by 31<sup>st</sup> August 2006. There is no requirement for a meeting of the sub-group prior to 31<sup>st</sup> August 2006. However, it may be necessary to schedule a meeting of the sub-group in autumn 2006 to finalise the paper for submission to NDAWG.

The NDAWG is requested to endorse the proposed timetable, including the possible requirement for an autumn 2006 meeting of the sub-group.

The NDAWG is also requested to endorse the overall structure of the second position paper set out in Appendix B.

### **4 USE OF NATIONAL SURVEY DATA**

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In the first position paper prepared by the sub-group, the use of national survey data was only briefly discussed. However, it was noted at the 8<sup>th</sup> NDAWG Meeting that much more could be said on the role of such data in informing assessments. Discussion and evaluation of such data arises naturally in the context of the second position paper, so the sub-group proposes to examine this topic in some detail. It is not considered to be within the remit of the sub-group to extract data from national surveys for use in radiological assessments. However, the sub-group will consider what information is available in those surveys, and how that information could be processed to make it available in a form suitable for radiological assessment purposes. In this context, the sub-group has already noted that current guidance relies on national survey data that are out of date. Therefore, it is clear that recommendations will need to be developed on what work should be put in place to update current guidance.

The NDAWG is requested to take note that the Habits sub-group will set out recommendations on analyses of national survey data for use in radiological assessments, but will not undertake those analyses. The recommendations made are likely to be relevant to both retrospective and prospective assessments.

## **5 RESPONSES TO THE SUB-GROUP ON MODELLING**

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The paper prepared by the sub-group on modelling identifies various issues relating to habits data. These issues were discussed by the habits sub-group. Responses are included in the record of the habits sub-group meeting (Appendix A).

## **6 MEMBERSHIP OF THE HABITS SUB-GROUP**

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No changes to the existing membership are proposed. However, it would be advantageous to augment that membership with a representative of small users who is actively involved in assessment of doses to the public.

## APPENDIX A: MINUTES OF THE NDAWG HABITS SUB-GROUP, 26<sup>TH</sup> JANUARY 2006, FSA LONDON

### Present:

Mike Thorne	–	MT	(Mike Thorne & Associates, Chair)
Darren Cutts	–	DC	(FSA, Secretary)
Mike Gaunt	–	MG	(Rolls Royce)
John Hunt	–	JH	(CEFAS)
Rachel Smith	–	RS	(HPA-RPD)
John Titley	–	JT	(EA)
David Webbe-Wood	–	DWW	(FSA)

### Apologies:

Peter Roche	–		(Independent, rep: Greenpeace)
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### 1. Minutes of the Last Meeting and Actions Arising

The minutes of the last meeting were agreed as an accurate account. All outstanding actions were also completed during the production of the first position paper.

### 2. Issues Arising from the 8<sup>th</sup> NDAWG Meeting

RS raised the issue of national surveys and whether it was in the remit of the habits subgroup to examine these. The minutes of the 8<sup>th</sup> NDAWG only mention this as a proposal. MT suggested the steering group should guide us on this.

JH stated that there was a push from CEDA to develop prospective assessments. These would require national data, however national data tended to be in a format not suitable for prospective assessments. The habits subgroup terms of reference only state that prospective assessments should be looked at in the future as such the terms of reference need to be updated.

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*Action 4/01: MT to approach steering group to clarify NDAWG position on national habits surveys.*

*Action 4/02: MT to update and feedback to main NDAWG revised terms of reference.*

### **3. Extension to Scope of the Habits Subgroup to Include Prospective Assessments.**

The structure of the second position paper describing the standard approach to prospective assessments was discussed. The draft outline suggested was included in the minutes as Annex I along with any captured thoughts. (This has not been reproduced, as the updated information is now provided in Appendix B.)

It was stated that it was not the remit of the group to provide data for national surveys. The paper should discuss what we currently use, but also suggest what we should have to perform an assessment describing a structured methodology.

RS commented that we need to revisit national surveys and review information as the basis of the current guidance is out of date. There are also problems with the presentation and content of the data, which are not likely to be fit for purpose. A recommendation that NDAWG should review national data was made. MT added that we need a standard set of numbers by pathway based on a national survey, but also a caveat for 'special local' cases. MT asked for descriptions of the national survey, local non-nuclear issues and the review document of the CEFAS habits surveys around the UK.

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*Action 4/03: RS to write a brief on the current national survey for NDAWG.*

*Action 4/04: JT to describe non-contentious local habits around non-nuclear sites.*

*Action 4/05: DC to obtain and give a copy of the CEFAS project (FSA code RP171, April 2000) to MT.*

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RS and DWW mentioned that any description of land use in the second position paper should include both current and future use using a suitable time scale. It is important to distinguish between the typical 20 years used for a nuclear site and the current use for a one off release. What could the land be reasonably used for, planning permissions etc? What output are we trying to get, is it a realistic dose or a maximum reasonable value?

### **4. Application of National and Aggregated Data in Retrospective Assessments**

MT noted that much on this issue had already been discussed in determining the structure of the second position paper. However, it was important that the second position paper mentioned that the first position paper only touched upon national survey data as that paper was primarily concerned with retrospective dose assessments. The second position paper will be looking at prospective dose and will therefore need to go into detail about national data. However, it is important to mention that national data are relevant for retrospective assessments.

**5. Arrangements for Production of a Second Position Paper.**

It was agreed that the group should aim to produce and present the second position paper at the main NDAWG meeting which will be held in Easter 2007. Autumn 2006 would not be possible due to the NDAWG review meeting held at that time.

- 1<sup>st</sup> Draft by Friday 10<sup>th</sup> March 2006 (skeleton draft).
- Issue at the same time (above) a report of the subgroup meeting to NDAWG.
- Feedback from group on the first draft by 31<sup>st</sup> May 2006.
- Revised Draft by MT by 31<sup>st</sup> August 2006.
- Possible meeting before final production if necessary.

**6. Membership of the Habits Subgroup.**

MT was happy to remain as chair and there were no objections to this. It was noted that there was a problem in getting NGO's and small users to attend. RS identified a potential small user, but the group was asked whether they could come up with possible names and relay them to the group. In general the main NDAWG group through the steering group should make an effort to identify NGO's and small users.

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*Action 4/06: ALL to identify possible members of both subgroup and Main NDAWG.*

*Action 4/07: DWW to raise the issue of the low number of NGO and small users on the NDAWG groups.*

**7. Addressing Specific Issues Raised by the Modelling Subgroup.**

- The Habits Subgroup should review generic consumption data for allotment, small holdings and similar sites.

MT said that there was a need to evaluate to determine whether this was a significant food issue. RS noted that there were small amounts of information but the small area of an allotment would mean food would be limited in amount. DC added that the CEFAS habits surveys contain information on allotment uses although this is not published explicitly. MT, commented that in the light of limited specific information, it would be prudent to develop a methodology drawing on standard information on allotment sizes etc. However this discussion would be fed back to the modelling subgroup.

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*Action 4/08: MT to feedback information to modelling group.*

- The habits subgroup should consider seasonality.  
DWW stated that you can look at the detail of the National database which does contain seasonal variation but does not show local produce. Complications occur with the storage of crop, a 'time dependant issue'. Do we consider short-term releases to occur at the time of maximum production and worst case wind direction? Other issues of regional variations, continuous cropping and making preserves were raised. It was thought ADAS would have agricultural information and should be contacted. However, the question was thought to be vague and in reply, the Habits subgroup will ask for clarification.

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*Action 4/09: MT to feedback information to modelling group.*

- The habits subgroup should consider releases to freshwater. Large variability's exist between rivers, particularly as many discharges go to small rivers where little or no information on habits is known. The nuclear site habits surveys contain some information on discharges to freshwater, additionally there is likely to be information on type of fish and weights from angling clubs. JH added that monitoring data in upland lakes in England, Scotland and Wales was performed as part of the Chernobyl response, this may contain habits information. Seasonality of fishing was also thought to be an issue, particularly the 'legal basis' for fishing.

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*Action 4/10: DC to collate Fresh Water habits data from relevant sites for the next NDAWG subgroup meeting.*

*Action 4/11: JT to find out seasons for coarse fishing etc.*

- Review generic habit data for leisure activities. The current habits survey contains generic information for in-water, on-water and on beach substrate activities. DC noted that the surveys do state whether the observation was dog walking, swimming etc., this can be found in the new round of habits surveys. The modelling subgroup will have to highlight pathways which it believes are significant and are missing from surveys.

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*Action 4/12: MT to ask modelling subgroup which leisure activities they are interested in.*

- Review seaweed fertiliser issue. DWW confirmed that the FSA was commissioning research on this pathway. The Research Requirements Document has been published with proposals expected in February. The project is expected to last 2 years and will include the habits pathway.
- Short term releases to the marine environment and personal exposure. Seasonal variation and exposure from leisure activities has already been discussed in response to previous questions.
- Short term releases to sea washed pasture. MT suggested that this was no different to the other considerations already discussed.

- Occupancy of Sewage Works.

It was noted that two recent surveys had been performed for Cardiff and Amersham where there were discharges to sewage works. 2000h/y was suggested as a maximum occupancy as this is the typical working year.

JT stated that a survey is required, but that this information should be available from the operational procedure of each site.

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*Action 4/13: JT to examine the Cardiff and Amersham Habits Surveys to identify occupancy data.*

*Action 4/14: MT to investigate the availability of operational procedures.*

#### **8. Preparation of a report to the Forthcoming NDAWG Meeting.**

The report will contain information on the proposed structure and layout of the second position paper, and a note on the proposed revised Terms of Reference. It will also contain complete responses to the modelling subgroup questions. The forward work programme as discussed under section 5 and NGO membership issues will additionally be included.

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*Action 4/15: MT to produce Habits Subgroup report for the NDAWG group.*

#### **9. AOB.**

A suggestion was made to change the wording of the terms of reference. Reference to prospective assessment being reviewed at a 'later date' should be changed to 'being considered'. See action 4/02.

#### **10. Date and venue of the next meeting.**

No set date was fixed for the next meeting as this would be dependent on the development of the second paper.

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Incidents Division**

## **APPENDIX B: PROPOSED OUTLINE OF THE POSITION PAPER ON HABITS DATA FOR PROSPECTIVE ASSESSMENTS**

1. Introduction
  - 1.1 Terms of Reference
  - 1.2 The Scope of a Prospective Assessment
  - 1.3 Issues Addressed in This Report
  - 1.4 Audience
    - 1.4.1 Users of Prospective Assessments
    - 1.4.2 Users of This Report
  - 1.5 Structure of the Report
2. Regulatory Context
  - 2.1 Legislation and Regulations
  - 2.2 Purpose of a Prospective Assessment
  - 2.3 Organisations Involved in Preparing and Reviewing a Prospective Assessment
  - 2.4 Reporting of a Prospective Assessment
3. Current UK Approach
  - 3.1 Approach Adopted at Licensed Nuclear Sites
    - 3.1.1 Source-Pathway-Receptor Analysis
    - 3.1.2 Characterisation of Receptors
      - Occupancies and locations relevant to external exposure
      - Occupancies, locations and respiratory characteristics relevant to inhalation
      - Consumption of local foods
      - Consumption of non-food materials
    - 3.1.3 Timescales over which Characterisation is Valid
    - 3.1.4 Use of Habits Data from Local and National Surveys
      - Available national surveys: content, interpretation and reporting
      - Available local surveys: content, interpretation and reporting
      - Supplementary sources of information
      - Selection of sources of information
      - Combination of sources of information
    - 3.1.5 Illustrative Example of an Assessment
  - 3.2 Approach Adopted at Other Licensed Sites
    - 3.2.1 Source-Pathway-Receptor Analysis
    - 3.2.2 Characterisation of Receptors
      - Occupancies and locations relevant to external exposure
      - Occupancies, locations and respiratory characteristics relevant to inhalation
      - Consumption of local foods
      - Consumption of non-food materials
    - 3.2.3 Timescales over which Characterisation is Valid
    - 3.2.4 Use of Habits Data from Local and National Surveys
      - Available national surveys: content, interpretation and reporting
      - Available local surveys: content, interpretation and reporting
      - Supplementary sources of information

- Selection of sources of information
  - Combination of sources of information
- 3.2.5 Illustrative Example of an Assessment
- 4. International and Overseas Guidance and Practice
  - 4.1 International Guidance
  - 4.2 Overseas National Guidance and Practice
- 5. Conclusions and Recommendations
  - 5.1 Purpose and Scope of a Prospective Assessment
  - 5.2 Pathways and Receptors to be Included
    - 5.2.1 Standard Pathways and Receptors
    - 5.2.2 Additional Pathways and Receptors
  - 5.3 Sources of Data
    - 5.3.1 National Survey Data
      - Scope
      - Interpretation
    - 5.3.2 Local Survey Data
      - Scope
      - Interpretation
    - 5.3.3 Supplementary Data
  - 5.4 Selection and Application of Data
    - 5.4.1 Hierarchy of Sources
    - 5.4.2 Handling Missing Data
    - 5.4.3 Quantifying Uncertainty

## Notes

The description of approaches currently adopted at both Licensed Nuclear Sites and Other Licensed Sites will comment on both similarities and differences between assessments for different sites and between different assessments of a single site. The illustrative assessment of a Licensed Nuclear Site is likely to be for Winfrith and that for an Other Licensed Site may be for the Royal Marsden Hospital (Sutton).

In discussing appropriate habits data, consideration will be given to how data may have to be adapted to the extent of resources available, e.g. in terms of the extent of contaminated land or the size of a contaminated stream. Particular consideration will be given to defining appropriate habits data for recreational areas and in urban environments.

In commenting on the use of local and national survey data, it will be emphasised that the two sources can be used in combination. For example, consumption rates for adults may be based on local data, but consumption rates for children and infants may be obtained by scaling those adult values by ratios of consumption rates at different ages derived from national survey data.

Supplementary data will include miscellaneous information such as that obtained from freshwater fish surveys or angling club records, research studies on soil and sediment consumption, anecdotal evidence and estimates based solely on arguments of plausibility.