

## NATIONAL DOSE ASSESSMENT WORKING GROUP

### PAPER 7-01: SUMMARY OF AGREEMENTS AND ACTIONS FROM 6<sup>TH</sup> MEETING

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6<sup>th</sup> Meeting held on 16<sup>th</sup> November 2004, Aviation House London.

#### 1. Present

Chair	John Cooper	NRPB
Members	Stuart Conney	FSA
	Darren Cutts	FSA
	Philip Day	University of Manchester
	Cathy Griffiths	RWMAC
	John Hunt	CEFAS
	Mike Hurst	British Energy
	Ray Kowe	NRPB
	Andrew Macpherson	DEFRA
	Tim Parker	BNFL
	Pete Roche	Greenpeace
	Jane Simmonds	NRPB
	Andrew Stackhouse	SEPA
	Patrick Stephen	NII
	Mike Thorne	Mike Thorne and Associates Ltd
	John Titley	EA
	David Webbe-Wood	FSA
Steve Jones	Westlakes Scientific Consulting	
Speakers	David Copplestone	EA

#### Apologies:

Rob Allott	EA
John Asquith	Worcester County Council
Michael Gaunt	Rolls-Royce
Ian Hall	Scottish Executive
Barrie Lambert	Consultant
Robert Larmour	Dept Environment (NI)
Nancy Lawton	DTI
Ken Ledgerwood	Dept Environment (NI)
Paul Marks	GE Healthcare
Will Munro	FSA Scotland
Havard Prosser	National Assembly for Wales

## 2. Actions from the fifth meeting and matters arising (Paper 6-01)

Action 5.1 Rob Allott and Patrick Stephen will circulate the rewording of principle 2 to NDAWG after they have sought advice from the HSE. *Completed. Final comments have been requested from members by Friday 19<sup>th</sup> November and then the paper will be published on the website.*

Action 5.2 The Secretariat will publish the RIFE summary table in the next update of the NDAWG web site. *Completed. RIFE summary table can be accessed through the website.*

Action 5.3 Members to submit written comments to the FSA on the paper 5-02 by the end of June. *Completed. The FSA have received comments from NDAWG members*

Action 5.4 The FSA will address members' comments at the next (6<sup>th</sup>) NDAWG meeting. *Completed. The FSA response was discussed under agenda paper 6.08.*

Action 5.5 Members to send any objections on the adoption of option E to Rob Allott/Bill Camplin by Friday 7<sup>th</sup>, and general comments on the paper by the end of June. *Completed. Rob and Bill received members comments. Total dose has been included in the latest RIFE report.*

Action 5.6 The FSA and CEFAS to submit an amended paper (cut down and taking account of members' comments) to be published as an NDAWG paper. *Ongoing. John Titley has asked Bill Camplin to produce amended paper on Total Dose Methodology for RIFE.*

Action 5.7 The Secretariat will produce a one page list of bullet points of key issues of the discussion on presenting dose to the public which will be circulated to members for comment. *Completed. List has been issued to members.*

Action 5.8 The Steering group should consider how estimates of total dose, including natural background could be made. *Completed. This was considered in the September meeting of the Steering group and there was an action on Jane to raise the possibility of producing local pie charts of exposure from all sources. NRPB will produce pie charts on a county basis starting with Cumbria and Cornwall for presentation at the 7<sup>th</sup> NDAWG meeting and will then proceed to produce charts for other counties.*

Action 5.9 The Subgroup on habit data and critical groups to amend the term of reference 'use of habits survey and dosimetric data for infant, child and adult' to include dose to mother. *Completed. To be addressed in Paper 6-07.*

Action 5.10 The Subgroup on habit data and critical groups to redraft subparagraphs 4.1 and 4.2 of the position paper to include more detail on definition of 'locally produced foodstuffs' in the context of prospective assessments. *Completed. To be addressed in Paper 6-07.*

Action 5.11 NDAWG members to pass comment on the ICRP recommendations to the Secretariat by the beginning of October. *Completed. Comments received.*

Action 5.12 The Secretariat will prepare a synopsis of comments for the 7<sup>th</sup> NDAWG meeting so that NDAWG can comment on new ICRP recommendations as a group. *Completed. Secretariat has received comments from several members and NDAWG's draft response is discussed in Paper 6-04.*

Action 5.13 Rob Allott to co-ordinate discussion on the protection of biota for meeting 6 and to invite speakers. *Completed. This was covered in Papers 6-02 and 6-03.*

Action 5.14 The Steering group and Secretariat to identify a potential list of members and draft terms of reference for the Modelling subgroup. This will be drawn up as a paper and presented at the 6<sup>th</sup> NDAWG meeting. *Completed. This was considered in the September meeting of the Steering group and the terms of reference for the modelling subgroup are included in the NDAWG review Paper 6-09 for later discussion.*

Pete Roche asked about the status of the unusual pathways document (Paper 4-02). This is currently undergoing formatting and will go on the website as NDAWG/2/2004 and there will be a dedicated email address to allow people to send their comments on the paper.

### **3. Overview of work on effects of radiation on biota (Paper 6-02)**

Steve Jones presented his paper summarising current and future work on the protection of the environment from ionising radiation both at a national and international level. The paper identified potential implications for both regulators and operators in the UK. Members' questions were addressed after paper 6-03, which was related to paper 6-02.

### **4. Framework for protection of wildlife and the EA approach (Paper 6-03)**

David Copplestone presented the EA framework for protection of wildlife and its application to several Natura 2000 sites around the Humber estuary. There were a number of points raised on the paper. John Cooper pointed out that the background doses can be very large relative to the anthropogenic increments and that the range of doses received is large. He queried whether this gave any indication of the effects of doses from discharge activity. Steve Jones commented that background doses can vary greatly over the different species and Jan Pentreath was trying to determine background doses for reference organisms. Mike Thorne commented that the keystone species for a particular site would be at a trophic level determined both by radiosensitivity and degree of accumulation of radionuclides and that using different radionuclides of different elements for the alpha analogues (e.g. thorium instead of uranium) would affect the keystone species. David Copplestone informed members that the FASSET database was being expanded to include a range of analogue alphas. Steve Jones stated that the methodology ensured that by protecting any one species the protection of all species would be achieved. Mike commented that the term "reference organism" is misleading. Specifically, reference characteristics are

required for dosimetry, bioaccumulation and radiosensitivity, but these would not necessarily be based upon data for a single species. Tim Parker asked if English Nature are looking at identifying species for future habitat sites. David Copplestone said such work was currently being carried out and there should be some data available in the coming months. Tim asked if  $50 \mu\text{G h}^{-1}$  is the reference screening level. John Hunt added that presenting doses of over the  $50\text{-}100 \mu\text{G h}^{-1}$  could cause concern and noted that the cautious assumptions may lead to significant overestimates in the dose rates presented. David Copplestone said the  $50 \mu\text{G h}^{-1}$  is not a regulatory number at the moment and future work with English Nature is about to get underway to: identify sites which are exceeding screening levels (about 5-6 to-date); to determine the uncertainty in the assessments: to identify sites in which there is a need to carry out some measurements. Philip Day asked if the methodology is producing anything useful in terms of producing levels/indicators that can be used. David Copplestone said that currently they have a screening tool only and that all they can do is compare the information they have with the available literature on radiation effects. John Titley added that there were still 850 other sites in the UK which have to be considered and that the EA first need to decide which sites they want to focus on and decide on the methodology to use .

Pete Roche asked if the papers were for open circulation. Steve Jones said they could be put on the website.

The Chairman concluded that this was a developing area on which NDAWG needed to keep in touch and suggested that it should be a standing agenda item on which Steve Jones and John Titley reported back on an annual basis.

**Action 6.1** Secretariat to include protection of biota on the NDAWG agenda on an annual basis in liaison with Steve Jones and John Titley and to put papers on website.

## 5. ICRP draft 2005 recommendations (Paper 6-04)

Jane gave an overview of the ICRP draft 2005 recommendations.

The ICRP have four supporting documents the first of which should be out on the ICRP website soon. The closing date for the ICRP consultation is 31 December 2004. Members agree that this deadline should be extended or that there should be a second period of consultation after all the supporting documentation has been made available.

Members went through the draft NDAWG response document to agree upon the following changes to the text:

Section 1, paragraph 1. Remove "to the public" from the second sentence.

Section 2, paragraph 1. Add "NDAWG recommends another round of consultation once all supporting documents have been made available"

Section 2, paragraph 2. Split into two: firstly expand the issue of risk versus natural background, ICRP need to spell out what risk to dose relationship is adopted and how they derive it. The second issue is that ICRP should make a clear distinction between dose limit and constraint. Section 3.2, bullet point 1. Replace last sentence with "This is particularly the case as constraints can now range up to 100 mSv effective dose".

Section 3.2, bullet point 3. Replace with "Is there a case for a different radiation weighting factor for low energy beta emitters particularly tritium given its association with DNA and recent studies indicating an RBE of about 2".

Section 3.3, bullet point 5. Remove this bullet point.

Section 3.3, bullet point 6. Replace with "Is there a case for a collective dose criterion level of 1 manSv  $y^{-1}$  along with the 0.01 mSv  $y^{-1}$  minimum value constraint?"

Section 3.4, bullet point 2. Change first sentence to "The introduction of age-averaged dose coefficients and habits is a major change to the system of protection and having discussed this idea before we feel that it is inappropriate".

Section 3.4, bullet point 3. Change first sentence to "NDAWG supports the concept of collective dose and agrees that it is important to disaggregate it".

Section 3.4, bullet point 4. Change first sentence to "It is important to recognise that although the definition of collective dose is as given in paragraph 198, collective doses are not calculated in this way in practice". Change the fourth sentence to read 'possible to obtain accurate information'.

Section 3.4, bullet point 5. Members agreed that ICRP needs to clarify its attitude to the inclusion of considerations of uncertainty in radiological impact assessments and take it on board more strongly. The CERRIE report would be informative.

**Action 6.2** Steve Jones to email Jane with an addition to the paragraph about uncertainty.

Section 3.5, bullet point 1. Add "Distinction should not be made between natural and artificial radionuclides as long as it is the immediate source that is important".

Section 3.5, bullet point 3. Change sentence to "The use of such exclusion levels implies a de minimis dose level below which there is no concern and this has implications for the collective dose concept that requires further discussion".

Section 3.6, exchange bullet point 1 with bullet point 2.

Section 3.6, bullet point 5. Change 1<sup>st</sup> sentence to "It is not clear whether the ICRP intend to develop dose rates per unit environmental concentration for different classes of organisms".

Section 4. ICRP needs to define some of its terms. Reiterate that another consultation period is essential once the foundation documents are available.

**Action 6.3** The secretariat will redraft the report of comments on the ICRP recommendations and recirculate to members before submission to the ICRP before the 31/12/2004 deadline.

## **6. Report back from Subgroup on uncertainty and variability in dose assessments, and draft paper for discussion (Papers 6-05 and 6-06)**

David Webbe-Wood informed members of the progress of the Subgroup. The minutes of the 4<sup>th</sup> sub-group meeting contain an annex by David Brazier (EA) which is for use within NDAWG only and will not appear on the website. David Webbe-Wood gave an outline of the first report from the subgroup an "overview of uncertainty in radiological assessments". The sub-group are considering the next term of reference, which was to consider issues relating to compliance with dose limits and constraints when probabilistic assessments are carried out. This will be addressed in a second paper which David Webbe-Wood will present at the main NDAWG meeting in April 2005. He will then ask the main committee if they require anything further from the sub-group.

**Action 6.4** Members to comment on the first paper from the Uncertainty subgroup by the end of 2004, David Webbe-Wood to finalise the document for publication on the website by the end of January 2005.

## **7. Report back from Subgroup on habit data and critical groups (paper 6-07)**

Mike Thorne gave an outline of the second meeting of the sub-group. Mike has written a draft position paper which was discussed at the sub-group meeting resulting in numerous actions. The report will be redrafted before the next main NDAWG meeting in April 2005 and will be presented at that meeting.

## **8. FSA total dose methodology – response to members comments**

David Webbe-Wood thanked members for their verbal and written comments on the methodology. There are two major changes resulting from NDAWG comments which will be implemented between now and the summer. Firstly, the identification of the critical group; the FSA critical group will now be based on the mean dose of all those individuals who receive a dose > 1/3 of the maximum dose. This will ensure the FSA methodology is following ICRP recommendations on homogeneity. The second change is to adopt two different assumptions on the location of where people live and agricultural production takes place. There

was some discussion between members on these assumptions ranging from issues relating to small users to the use of fixed distances from nuclear sites for food production. Tim Parker suggested that a realistic approach may be to look at data on the size of holdings and land use to identify areas where people are producing food.

The Chairman said that NDAWG would like to see the revised methodology including the results of calculations once they are available.

## **9. Report back from members**

### *9.1 CERRIE*

Andy Macpherson briefed members about the final CERRIE report which has just been published. The Secretariat had several copies of the report to issue to NDAWG members. Jane also had several copies of the COMARE 9<sup>th</sup> report: advice on a report by CERRIE. Members should get in touch with the Secretariat if they require further copies of either of these reports.

### *9.2 ICRP*

The next ICRP committee meeting is in March 2005 when all committee members are up for re-appointment. There will be a new committee (Committee 5) on the protection of the natural environment.

### *9.3 NUCLEAR DECOMMISSIONING AUTHORITY*

Nancy Lawton of the DTI was asked to inform members about the current status of the Nuclear Decommissioning Authority (NDA). She could not come to the meeting but sent a short brief which was handed to members.

### *9.4 ORGANICALLY BOUND TRITIUM (OBT)*

Jane informed members of some recent work within the Dose Assessments department in NRPB on the uptake of OBT in rats which were fed contaminated flounders. This work has implications for the ICRP model for uptake and implies an increase in the dose coefficient from  $4.2 \cdot 10^{-11} \text{ Sv Bq}^{-1}$  to  $6 \cdot 10^{-11} \text{ Sv Bq}^{-1}$ .

## **10. NDAWG review (paper 6-09)**

### *9.1 TERMS OF REFERENCE*

Members reviewed the terms of reference to see whether they were being carried out. The following specific points were raised:

Reference 4 – to identify, discuss and evaluate research which will progress dose assessment methods. NDAWG should identify gaps in the research database. It

was agreed that the output work from the sub-groups will identify gaps in the research and will be listed as an agenda item for discussion at a future meeting.

It was suggested that NDAWG could submit papers on its work to the Journal of Radiation Protection.

**Action 6.5** The Secretariat will prepare an item on NDAWG activities, papers and the website for publication in the news section of the Journal of Radiation Protection.

**Action 6.6** Action on the Steering group to consider if another CEDA meeting is required.

### *9.2 FUTURE WORK PROGRAMME*

When the outputs from the working groups are available the gaps in research and the work programme should be identified at a future meeting.

### *9.3 SUBGROUP ON MODELLING*

The subgroup on Modelling will replace the Retrospective Assessments subgroup which has finished its work. Rob Allott has agreed to chair the modelling subgroup with NRPB and FSA also providing a representative on the group. Members are asked to suggest other possible members. The terms of reference for the sub-group have been drawn up by the Steering group and need to be formally agreed.

**Action 6.7** All to suggest possible members for the modelling subgroup and to comment on the proposed terms of reference by the end of December 2004.

### *9.4 COLLATING ONGOING RESEARCH*

The Secretariat has now received contributions from several NDAWG members. These contributions are on the website. Members were encouraged to send more contributions to the research database.

### *9.5 WEBSITE*

The website has received a favourable amount of interest with 2523 visits between May-October 2004 with 2175 files downloaded.

### *9.6 NDAWG MEMBERSHIP*

Pete Roche will remain as an NDAWG member as an independent consultant expressing a Greenpeace stance.

The Secretariat has asked Terry Kelly (UKAEA), the new chairman of the Emergency Planning Society's Nuclear Issue Group, for a replacement for John Asquith as a Local Authority representative on NDAWG.

Paul Marks is moving post within GE Healthcare whose representative on NDAWG will be Dr David Tattam who will attend the next meeting

## 11. Date of next meeting

The next meeting will take place on 14<sup>th</sup> April 2005 at FSA, Aviation House, London.

## 12. Summary of Actions

**Action 5.6** The FSA and CEFAS to submit an amended paper (cut down and taking account of members comments) to be published as an NDAWG paper. *Ongoing. John Titley has asked Bill Camplin to produce amended paper on Total Dose Methodology for RIFE.*

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