

## NATIONAL DOSE ASSESSMENT WORKING GROUP

### PAPER 11-02: SUMMARY OF 10<sup>TH</sup> (OPEN) MEETING

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10<sup>th</sup> Meeting held on 15-16<sup>th</sup> November 2006, HPA Chilton.

#### 1. ***Introduction and welcome by Chairman of Open meeting***

The Chairman Professor Bryn Bridges welcomed everyone to the meeting and gave a brief background to NDAWG. In October 2000 the Food Standards Agency held a Consultative Exercise on Dose Assessments (CEDA) to discuss methods for assessing radiation doses to the public from authorised radioactive discharges to the environment. One of the recommendations of the CEDA process was that a national dose assessment working group should be set up and this led to NDAWG. NDAWG has now been in existence for over 4 years and the purpose of the open meeting is to review the work done by the group so far and to discuss with a wider audience what should happen to NDAWG in the future. The Chairman outlined the agenda for the meeting including domestic arrangements.

#### 2. **Introductory remarks from Chair of NDAWG - John Cooper (Paper 10-01)**

John Cooper gave a brief overview of the terms of reference of the group, how NDAWG works, membership and the aims of open meeting.

There were several questions about the function of NDAWG and who the 'users' of NDAWG output are and how they can keep up to-date with NDAWG matters. The Chairman said the role of the group is to promote the use of consistent 'best practice' concerning assessment methodologies, and it was agreed that this would be added as a new term of reference for the group. He recognised the need to promote the work of the group via the website which could be linked from other websites, or by articles in peer reviewed journals.

#### 3. **Overview of the NDAWG work programme - Jane Simmonds (Paper 10-01)**

Jane outlined the work NDAWG has carried out in the last 4 years, including the work of the subgroups, the reports issued and the NDAWG website.

There were questions on the accountability of NDAWG. Jane said that NDAWG is directly accountable to no one and has to self-review. The group should perhaps be more accountable to peer scientists, for example through publishing papers in journals. There are no known equivalent groups in Europe. Regarding funding, the FSA and EA support some members of the group but otherwise the group is self funding. There may be the possibility of funding by the European Commission but this is unlikely. The role of the subgroup on communication was discussed. Jane said the subgroup was currently looking at different

aspects of the communication of dose and risk. In addition there was a poster and questionnaire on presenting radiation doses to the public which she hoped attendees would fill in. There was also a question on the feedback from the main NDAWG group to the subgroups. Jane said there was feedback from the subgroups in the main group meetings in addition to links between main group and subgroup members.

#### **4. Topic 1 – Principles for prospective and retrospective dose assessment – Rob Allott (Paper 10.02)**

Rob outlined the background and contents of the documents on the principles and guidance for the prospective and retrospective dose assessment of public doses. Interim guidance on prospective doses for the purposes of authorisation was published in 2002 as a joint paper from the EA, SEPA, NIDoE, FSA and NRPB (now HPA). NDAWG recognised a similar need for comparable principles for retrospective assessment of total doses and established a subgroup on retrospective dose. This led to the publication of a second document by NDAWG (NDAWG/2/2005).

There was a question as to whether a further intercomparison exercise of dose assessment methodologies should take place. Rob said if there were a suitable site then it would be useful to repeat the exercise to see if the situation has improved. It was suggested that the new build process might provide such an opportunity. There were different views on the extent to which assessments should agree but it was commonly agreed that certain inputs should be the same (e.g. effective stack heights, milk intakes, etc). It was also agreed that it would be better to present doses in bands rather than implying a greater degree of accuracy than is the case. The question of treating certain workers as members of public was discussed, for example refuse collectors who may be handling radioactivity. Appropriate wording in the two principles documents covers this.

#### **5. Topic 2 – Collection and use of habit data, including the assessment of total dose – Bill Camplin (Paper 10-03)**

Bill Camplin gave a presentation on the collection of relevant habit data for use in dose assessments for controlled releases with particular emphasis on the assessment of total dose integrated across all pathways.

There was some concern that the use of the 1/3 rule for defining critical group habits is not robust. However, this approach is consistent with ICRP advice and with a good number of observations and is more robust than approaches based on the extreme individual. For habit data it is important to ensure reliability across different age groups as less data are available for children. Child data often comes from parents who have in depth knowledge of their diets. There was a discussion on homogeneity in habits and dose and how adding doses from some pathways e.g. direct radiation and mollusc consumption may introduce uncertainties. The profiling method may mitigate some of these uncertainties. Bill was asked if the people being questioned are interested in knowing their dose. He said people were interested and specific information is provided based on published doses. Though some people are suspicious, as habit collectors are perceived to be working for nuclear industry

most were happy to contribute. It is important for prospective assessments that patterns of behaviour people might adopt in the future should be considered and not just what they are currently doing.

## **6. Topic 3 – Guidance on simple dose assessment tools – Rob Allott (Paper 10.04)**

Rob gave an outline of the simple dose assessment tools available for use by non-nuclear users of radioactive substances. He described the tools, compared the scope of the tools and their limitations, and provided guidance on when it is most appropriate to use each assessment tool.

Attendees asked what was the position on PC-CREAM, a computer system which is also widely used for carrying out dose assessments. A new version should be ready next year which will include fetal doses and a new marine model. The EC RP-72 document, which supports PC-CREAM, will also be updated. Rob clarified the term 'short term release' as a planned, not accidental, release lasting for a period of up to 0.5 hour for atmospheric releases and over a period of month for releases to water. Rob also gave an update on the EA work on phosphorus-32 in the river Cam. There are low levels of <sup>32</sup>P in fish and the concentrations in water are below the limit of detection. There may need to be more site specific monitoring of rivers known to have discharges of <sup>32</sup>P.

The EA initial assessments methodology is used by EA and is aimed at small users but may also be useful for nuclear operators. The Chairman asked for feedback from small users in the audience. Small user representatives said a website would be useful and simple assessment methodologies particularly those giving guidance on policies. The NDAWG secretariat then outlined the contents of a new 'non-nuclear' user page on the NDAWG website and welcomed any contributions. The question was raised about certification to accredit people as having competence for external consultancy on uncertainty in radiological assessments. Contact has been made with the RPA2000 certification body to see whether this scheme could be amended or expanded to include competency assessments for radiological assessors. There was concern that such a scheme might be too complex for small users and that it is more a question of getting assessments approved by the regulator and so the regulator needs to be helpful in this respect by providing dialogue. It was noted that Scotland was not represented on the NDAWG Steering Group and it was felt that SEPA should be included on the NDAWG steering group.

## **7. Topic 4 – Uncertainty and variability in dose assessments – David Webber-Wood (Papers 10-05)**

David gave an overview of uncertainty and variability within dose assessments and providing guidance to those who need to review assessments taking into account uncertainty.

There was discussion as to whether the focus on uncertainty was justified as it is so complicated it is difficult to give any advice. Uncertainty studies often concentrate on uncertainty in parameters when uncertainty in model conceptualisation may lead to far

greater uncertainty. Probabilistic analysis is expensive on resources and it may be better to concentrate on one-off studies and provide a reference source of examples of uncertainty. The first report of the uncertainty and variability subgroup gives such examples. There may be some guidance from the US Centre for Disease Control (USCDC) on methodologies for uncertainty. It may also be helpful to compare dose assessments with human measurements to give confidence. Regulators prefer a single number to work with, but for presentation of risk to the public it may be better to acknowledge the uncertainty.

## **8. Topic 5 – Doses to wildlife – David Coplestone (Paper 10-06)**

David discussed the Environment Agency approach for undertaking dose assessments to wildlife in compliance with the EU Birds and Habitats Directives for the UK Natura 2000 sites.

David was asked if the sensitivity of man versus biota to radioactivity and if doses to biota rather than people would lead to restriction on discharges. He said it is difficult to compare since some organisms are closer to discharge sources than people, but that it is unlikely that the EA would have major problems regulating in terms of biota. The EA is looking at the use of biomarkers and reference levels.

There was a question of the possible synergy between chemical toxicants and radiation. This is difficult to assess. There is a biomarker approach for chemicals but sites are passed/failed separately on chemical toxicants and radiation.

## **9. Topic 6 – Presenting information to the public – David Collier (Paper 10-07)**

David presented his personal experiences on the provision of information on low level radiation issues through various studies including those carried out for the FSA and in collaboration with the HPA.

There was some discussion about whether people were interested in risk, it may be too subjective, and people may prefer to know about dose, hazard and probability in order to make decisions. The problem with calculating risk from dose and a risk factor is that it does not give an adequate reflection of risk many years after exposure.

There is a COMARE medical practices sub-group whose work may be of interest. They are publishing a report on CT screening of asymptomatic individuals which addresses the issue of communication to make people more aware about radiation. DEFRA are concerned with communicating to the public risks involved with incineration of low-level radioactive wastes. Local Authorities will have to include in planning applications facilities for non-nuclear disposals and may be interested in collaborating with NDAWG on communication issues.

There was a discussion about monitoring around sites. Monitoring and action gives people confidence and trust. However some risks (cancer, leukaemia) may not be present for decades and it is not feasible to monitor these.

## **10. Topic 7 – Review of progress on CEDA - David Webbe-Wood (Papers 10-08)**

David gave a review of the CEDA exercise and its findings and what FSA has done to implement them. He reviewed what NDAWG has done and still needs to do.

The SEPA perspective on NDAWG is that it complements the link with RIFE and produces work that regulators would view as useful. However, SEPA do not currently recommend operators to follow NDAWG recommendations. SEPA do not have any representation on the Steering group of NDAWG.

The HSE said they find NDAWG useful as it pulls together dose assessments considering all sources (including direct shine).

The Chairman asked for feedback from non-regulators. The website activity shows NDAWG is being taken note of but does not indicate how it is being used.

A non-nuclear user said that NDAWG advice has to be accepted by regulators for it to be useful for small users.

An independent representative thought the subgroups have a clear purpose and their output is useful and well used.

Others thought NDAWG was hampered by lack of resources and funding.

## **11. Discussion on how well NDAWG has carried out its role and the future of the group – (Paper 10-09)**

The paper outlined the actions NDAWG had taken to meet its terms of reference and considered what should happen to NDAWG in the future, including the immediate work programme:

Meeting 11 – use of collective dose and environmental monitoring for retrospective dose

Meeting 12 – impact of radioactive particles and outcome of research into phosphorus in freshwater

Meeting 13 – atmospheric dispersion and contaminated land issues

There followed a discussion of the role and future of NDAWG with the following agreed outcomes:

- NDAWG should still continue and make recommendations on good practice.
- Where necessary NDAWG should seek views from other people on its recommendations.
- SEPA will be invited to be on the Steering Group.
- Additional independents, NGOs and Local Authority people should be invited to be on NDAWG plus industry, perhaps by being corresponding members.

- The Steering group should consider establishing links with other countries especially Ireland.
- NDAWG to consider publishing in scientific journals.
- NDAWG should keep a watching brief on contaminated land issues and if necessary in a few years time consider further involvement.
- NDAWG should consider further its role in relation to solid waste disposals (different types and possible need to expand membership).
- Accidents should not generally be considered by NDAWG.
- NDAWG should continue to keep a watching brief on doses to wildlife and consider further if necessary.
- Future work
  - Further authorisation dose assessment comparison.
  - A consolidated guidance document on best practice.
- NDAWG should identify issues that other groups/regulators should take forward.
- Priorities for future work:
  - Validation of sewer dose methodologies especially external doses.
  - Source terms where source is not monitored.
- NDAWG needs to consider other ways of informing people on its work. – tell associations and other groups about work. Keep an e-mail distribution list to inform people about new developments.

## 12. Attendees

Rob	Allot	Environment Agency
David	Brazier	Environment Agency
Bryn	Bridges	Chairman
Bill	Camplin	CEFAS
Ian	Chell	Department of Health
Melanie	Clark	Devonport Royal Dockyard Limited
Ronald	Clayton	Radoch Services Ltd
David	Collier	Faulkland Associates
Stuart	Conney	Food Standards Agency
John	Cooper	HPA RPD
David	Copplestone	Environment Agency
Andrew	Corns	GE Healthcare
Therese	Crawley	Oxford Radcliffe Hospitals NHS Trust
Paul	Dale	SEPA
Ann	Davidson	Defence Science and Technology Laboratory
Katie	Davis	Nirex
John Philip	Day	University of Manchester
Ian	Fairlie	Consultant

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Dudley Unit	Goodhead	Medical Research Council Radiation and Genome Stability
Marcus	Grzechnik	CEFAS
Colin	Hunt	AWE plc
John	Hunt	CEFAS
George	Hunter	SEPA
Claire	Johnson	Westlakes Scientific Consulting Ltd
Alison	Jones	HPA RPD
Stephen	Kelly	Clyde Naval Base, MOD
Amjad	Khursheed	Khursheed Consultants Ltd
Ray	Kowe	HPA RPD
Barbara	Lambers	Serco Assurance
Barrie	Lambert	Independent
Pamela	Lloyd	Enviros Consulting Ltd
Roy	McGunigall	HM Naval Base Devonport
Katherine	Mondon	DEFRA
Amanda	Moreton	Guy's & St. Thomas' NHS Foundation Trust
Simon	Morgan	Nirex
Bruce	Moss	Agri-Food & Biosciences Institute
Murdo	Murray	Babcock Engineering Services
Jonathon	Nicholls	AWE plc
Mike	Poole	Nirex
Adrian	Punt	Enviros Consulting Ltd
Catherine	Retberg	Springfields Fuels Limited
Carol	Robinson	Enviros Consulting Ltd
Jane	Simmonds	HPA RPD
Chris	Smith	Enviros Consulting Ltd
Patrick	Stephen	Health and Safety Executive (NII)
Jill	Sutcliffe	Natural England
Jonathon	Taylor	Aurora Health Physics Services Ltd
Mike	Thorne	Mike Thorne and Associates Limited
John	Titley	Environment Agency
Evelyn Julie	Tooley	Enviros Consulting Ltd
Richard	Wakeford	University of Manchester (Dalton Nuclear Institute)
Ciara	Walsh	Nirex
David	Webbe-Wood	Food Standards Agency
Chris	Wilson	DEFRA

NDAWG Secretariat 24 January 2007