

NATIONAL DOSE ASSESSMENT WORKING GROUP

SUMMARY OF AGREEMENTS AND ACTIONS FROM 13TH MEETING

13th Meeting held on 2nd April 2008, British Energy, Barnwood nr Gloucester.

1. Present

| | | |
|---------|-------------------|------------------------------------|
| Chair | John Cooper | HPA |
| Members | Rob Allott | EA |
| | Laurence Austin | British Energy |
| | Bob Beveridge | MOD |
| | Matthew Castle | Magnox |
| | Stuart Conney | FSA |
| | Andrew Craze | NDA |
| | Paul Dale | SEPA |
| | Michael Gaunt | Rolls-Royce |
| | Gerald Hudd | Somerset County Council |
| | Steve Jones | Westlakes Scientific Consulting |
| | Paul Kennedy | FSA |
| | Ray Kowe | HPA |
| | Barrie Lambert | Consultant |
| | Peter Marsden | University College London Hospital |
| | Wayne Oatway | HPA |
| | Catherine Retberg | Springfield Fuels |
| | Joe Roberts | British Energy |
| | Jane Simmonds | HPA |
| | Patrick Stephen | NII |
| | John Titley | EA |
| | David Webbe-Wood | FSA |
| | Stuart Woodings | British Energy |

Apologies:

| | |
|----------------|--|
| Steve Chandler | Defra |
| Andrew Corns | GE Healthcare |
| Katie Davis | NDA Radioactive Waste Management Directorate |
| Stuart Hudson | Scottish Executive |
| Philip Day | University of Manchester |
| Ian Fairlie | Consultant |
| John Hunt | Consultant |
| Robert Larmour | Dept Environment (NI) |
| Will Munro | FSA Scotland |
| Tim Parker | BNFL |
| Havard Prosser | National Assembly for Wales |
| Pete Roche | Consultant |
| Jill Sutcliffe | Consultant |
| Mike Thorne | Consultant |

The Chairman welcomed the new members: add names plus note thanked British Energy for hosting meeting.

2. Minutes of last meeting and matters arising (Paper 13-01)

Action 12.1 NDAWG members to send in their written comments on the guidance notes to the Secretary by January 10th. *Completed.*

Action 12.2 Patrick Stephen to consider how to distribute the NDAWG guidance notes to NORM industry people. *Completed.*

Action 12.3 the steering committee to consider the plans for future NDAWG guidance notes. *Completed. This will be discussed as an agenda item.*

Action 12.4 the steering committee to draw up draft terms of reference for a subgroup on radioactive particles and to consider membership of the subgroup. *Completed. This will be discussed as an agenda item.*

Action 12.5 John Titley to check if the EA authorisation consultation process is available on their website. *Completed. This is not on the website but John will find out if it can be sent to members.*

Action 12.6 Barrie Lambert to send a text version of the communications subgroup information leaflet to Ray for distribution for trial. *Completed.*

Action 12.7 Barrie Lambert to prepare a list of trial questions to be issued with the communications subgroup information leaflet. *Completed.*

Action 12.8 Ian Fairlie to send Barrie Lambert a note on the work US EPA has done on communicating probabilistic risk assessment. *Completed.*

Action 12.9 John Hunt to investigate Cefas information on seasonality in angling data. *Completed.*

Action 12.10 NDAWG members to comment on paper on short term release to rivers by 10th January, 2008. *Completed.*

Action 12.11 the secretary of the short term release subgroup to send supporting information on short term releases to reviewers of the subgroup paper. *Completed.*

Action 12.12 The NDAWG secretary to send John Titley a copy of John Cooper's presentation on the ICRP recommendations. *Completed.*

Matters arising from 12th meeting

Jane Simmonds has visited RPII who are being kept informed of NDAWG's work and who will consider possibilities for future collaboration.

The issue of confidentiality had been discussed in the first meetings of NDAWG and the Steering group wondered if it would be worth discussing this again given the change in membership over the years. The Steering group has proposed that the papers that are freely available should be put on the website before the meeting. If members are sent papers that are not on the web they should then be treated as for members use only. Members agreed to this suggestion. Andrew Craze raised the question whether members' names should be included in the minutes etc on the web but members felt that this was acceptable although care was needed if third party names were included.

Two of the guidance notes are on the web for comment but no comments have been received so far. The third note is waiting for Rob Allott to edit to take account of comments from members.

Action 13.1 Patrick Stephen to inform NDAWG of the Norm Working Group response to the guidance notes.

Action 13.2 John Titley to send the secretary the EA authorisation consultation process document for distribution amongst members.

3. Plan for future guidance documents (Paper 13-02)

Jane Simmonds presented the proposed list of guidance notes including the two published notes for consultation and future notes.

Barrie Lambert informed members that the communications subgroup hoped to produce a guidance note based on the Department of Health communication booklet. Rob Allott informed members that the short term release subgroup had drafted an outline for a guidance note which it hoped to prepare for the November 2008 main NDAWG meeting.

Action 13.3 Jane Simmonds to add the communications subgroup guidance note to the list of future guidance notes with a timescale for completion of 2009.

4. The inclusion of the fetus/breast fed infant in dose assessments (Paper 13-03)

Wayne Oatway (HPA) presented a summary of a report, published (on 31 March) by the Radiation Protection Division of the Health Protection Agency (HPA-RPD), that provides guidance on the use of published dose coefficients when assessing the doses to members of the public.

There were some queries from members. Steve Jones asked if the dose coefficients take into account intake before pregnancy not just during pregnancy. He also asked why ^{89}Sr was significant but not ^{90}Sr . John Cooper informed Steve that the ICRP dose coefficients consider acute and chronic intakes at various times before and during pregnancy as well as during the period of breastfeeding. Wayne informed Steve that the dose coefficient for the foetus compared to other age groups was higher for ^{89}Sr than for ^{90}Sr . Stuart Conney asked if the dose included irradiation of the embryo from the mother's body. Jane said no but the

study had looked at irradiation from the mothers to the breast fed infant but that this was not worth considering except for strong gamma emitters such as ^{60}Co . She informed members that the use of dose coefficients will be considered in the guidance note on detailed dose assessment. Steve said the guidance note needs a discussion section on the issues raised by members.

The chairman asked if NDAWG agreed with the approach taken by HPA and the conclusion that doses to the embryo/fetus are not important for most radionuclides. Members agreed with the HPA approach and findings.

5. Update on doses to biota (Paper 13-04)

Rob Allott gave an update of the Environment Agency progress with assessments for Natura 2000 habitats sites. This item is an update of progress of effects of radiation on biota which was discussed at the 6th and 9th NDAWG meeting. The assessment methodology is to be reviewed to include more realistic data from the ERICA assessment tool. In particular, the methodology for phytoplankton will be reviewed using monitoring data if practicable, and the assessments for those sites where the dose rates are significant will be kept under review.

Andrew Craze asked if there any lessons to be learned from the PROTECT programme, he was worried that this may diverge from the ICRP approach. Rob said he understood the PROTECT framework to be is a harmonized approach with other (non-radiological) pollutants and that the proposed protection system (reference organisms) is similar to the existing ICRP-system for the protection of humans (reference man). Paul Dale said that PROTECT takes ERICA outputs into regulatory context whilst ICRP gives guidance relevant of assessment of intakes of radionuclides. He believes the two approaches are complimentary. Rob asked the group if there was a difference in the two approaches can NDAWG do anything about it. The Chairman informed the group that there is an ICRP report on reference animals and plants for consultation on the ICRP website and that would give the group a good opportunity to comment on such matters. It is not clear whether protection of non-human biota is also considered by ICRP for emergency and existing exposure situations. John Cooper reported that there were two new ICRP reports being prepared on the emergency situation and remediation but he did not think either of them dealt with protection of the environment.

Steve Jones asked if the high dose rates from ^{234}Th estimated for the Ribble and Alt estuaries were an artefact of the default concentration factor and pointed out that in Section 3.1 of Paper 13-04 the statement ‘... ^{234}Th and other alpha emitters...’ that ^{234}Th is not an alpha emitter. Rob confirmed that they were and thanked Steve for spotting the error. Steve suggested the problem with elevated dose rates in phytoplankton may not be simply related to the concentration factor since he expected such one-celled organisms to receive little or no dose since the absorption time for radionuclides was much greater than their lifespan of a few days.

Jane Simmonds asked if Springfields were reducing their discharges because of the assessments. Catherine Retberg informed Jane that the site was in the process of reducing discharges irrespective of the EA assessment.

David Webbe-Wood asked Paul if there were analogous assessments being carried out in Scotland. Paul informed David that such the environmental assessments accompanied the variations for change in licence and have not revealed any issue in dose to biota.

Peter Marsden expressed the wish that if the topic is to be extended beyond the nuclear industry he hoped non-nuclear users could be considered as they would need guidance.

The chairman concluded that NDAWG will keep a watching brief on the subject of doses to biota and would look for a presentation to update the group on the PROTECT programme in about a years time. He added that the group should think about a guidance note on the topic that would include implications for non-nuclear users.

6. The IAEA EMRAS programme (Paper 13-05)

Stuart Conney informed members of the background, themes and findings of the IAEA EMRAS programme. The group will be producing a revision of the handbook TRS-364 in mid/late 2008 and several TECDOCs as CDs in June 2008. All documents will be published on the IAEA/EMRAS website.

Barrie Lambert commented that some of the EMRAS results for Perch lake in Canada were relevant to the observations of OBT in fish off Sellafield even though it was a closed lake rather than the sea. Rob commented that the dosimetry in the EMRAS approach was consistent with the ERICA project and the discrepancies in biota dose would also appear to be due to the discrepancies in transfer factor as is apparent in ERICA.

7. Report back from the subgroup on communications (Paper 12-05)

Barrie Lambert updated members on the seminar on risk communication that took place at HPA-RPD Chilton, 21 February 2008. The meeting was combination of academic and case studies.

Favourable comments have been received from attendees who said the meeting was useful in establishing old and new links. The workshop has given added incentive to reconvene the Agriculture and Food Countermeasures Working Group (ACFWG). Anne Nisbet is writing a summary of workshop which will go on the NDAWG website in June. Barrie raised the possibility of a second workshop on communication of uncertainties. Paul informed members that SEPA have experience of communicating probabilistic risk with the general public and the have good relations with the media. He hoped that SEPA could take part in the workshop. John Cooper said that HPA would be happy to host such a workshop but would not be able to do this until 2009 but it was open to others to run the event earlier if they wished.

Barrie has now addressed the comments received to date from the different groups that have looked at the information leaflet. The communications subgroup hope to finalise the leaflet soon so that the HPA can proceed with its publication.

The subgroup will produce a short guidance note based on the DoH risk communication booklet; this will address the best way to communicate risk.

Jane Simmonds informed members of a forthcoming Chilton seminar that may be of interest to the subgroup: Communicating risks to health: is the message lost in translation? Professor David Spiegelhalter, Cambridge University, 25 April 2008.

The chairman agreed that a second workshop would be beneficial and asked members if their organisations could offer resources or a venue.

8. Report back from the subgroup on short duration releases (Papers 13-07)

Rob Allott informed members of the revisions to the first paper from the subgroup on short term release to rivers. He thanked the reviewers Mike Harvey, Steve Jones and Mike Thorne for their incisive comments on the paper. Most reviewers had identified the discrepancies between the short term and continuous release models. One issue was that the transfer between the bed sediment and water column was ignored for the short term release model. This transfer was not included as it was assumed there was no time for equilibrium between the sediment and water column to be established. In addition a high partition coefficient (K_d) for americium was assumed which was based on data from a lake which may not be appropriate for short term release. This led to a large removal of activity from the water column. Rob is now reviewing the K_d values. Another key issue is the potential impact of seasonality of fish consumption, there would appear to be little data on this. Paul informed Rob that SEPA have some data on seasonality in fish consumption.

Action 13.4 Paul Dale to send Rob Allott data on seasonality in fish consumption

The subgroup is planning a second paper on atmospheric short term releases which will include case studies on discharge patterns from a typical AGR site and from a cyclotron. There are potential problems using ADMS in that some required endpoints may not be available depending on the release scenarios being considered. The subgroup hope to produce a draft report of the short term release to atmosphere for the November 2008 main NDAWG meeting. In addition, the subgroup has produced an outline of a guidance note which it also hopes to produce as a draft report for the November NDAWG meeting.

Rob informed the group that the work of the subgroup to date indicates that monthly short term release to rivers may not be an issue. However, some releases to air may require an assessment if the dose exceed $20 \mu\text{Sv}$.

The chairman asked if short term releases were authorised and what the definition of a short term release is. Rob replied that they are planned releases with established criteria: if more than 2% of the annual discharge is released in a single event from an operational practice it is assumed to be a short term release. This is about once a week i.e. 1/52 of annual discharge released in single short term event each week.

9. Report back from the subgroup on habits data (Paper 13-08)

John Titley updated members on the current status of the habits sub-group and report. The subgroup is drafting a second paper on prospective dose assessments. There will be two meetings of the subgroup before the November NDAWG meeting to draft the report. Section

3 of the paper contains old habit data that need to be reviewed. Section 4 needs to be revised to say how habit data are actually used. Mike Thorne will remain as chair for the moment as his work commitments have been delayed. The sub-group had also tried to compare different options for using habit data for critical group dose assessments and had tried to score the different option.

Action 13.5 Matthew Castle to send John Titley information on how industry uses habit data which will be included in the paper on prospective dose assessments

Action 13.6 John Titley to ensure Habit subgroup have draft of paper on prospective doses for the November 2008 NDAWG meeting

Jane Simmonds wanted to stress the importance of the generic habit data; she asked if the FSA are going to review this data. David Webbe-Wood said that this is something the FSA need to do since the current generic data is based on the 1986 food data survey. Jane suggested the subgroup might want to consider whether it is appropriate for a different approach to be adopted for the use of habit data for the prospective paper than is used for the retrospective approach identified in the RIFE report. David replied that this should be apparent in the discussion of transparency in the critical review of approaches

Paul Dale suggested that for a prospective habit survey on a 25 year basis then the survey needs to be future proofed. If a more frequent survey, say every year, is carried out then you do not have to worry about future proofing. John Titley said that frequent habit survey are useful for looking at future trends but you have to consider how you are going to use the data in prospective assessments.

The chairman said the NDAWG would like to see the draft report of the second paper from the subgroup at the November 2008 meeting and that it was important that the sub-group continued to meet and make progress, so if there were difficulties in Mike attending a meeting then John Titley should take over as chair for the meeting.

10. Report back from members

The HPA response to AGIR tritium report - the AGIR has made the recommendation that an RBE value of 2 should be used for tritium in epidemiological studies and in individual retrospective risk assessments. The HPA consider that further increases in complexity in the calculation of equivalent and effective dose are undesirable and inconsistent with their intended use and so think that the RBE value of 1 should be retained for radiological assessments. The AGIR report and the HPA response should be on the HPA website. As a member of AGIR Barrie Lambert expressed his disappointment the HPA was not accepting the AGIR advice as even though there may be no areas in the UK, save perhaps Cardiff bay, where there may be a problem with doses from tritium, the best available data should be used. Rob Allott said there was some confusion as to what HPA guidance is regarding the use of dose coefficients for retrospective and prospective dose. The chairman informed him that for retrospective doses to an individual the best available data should be used, whilst for prospective doses where there is a dose limitation/constraint ICRP values should be used. Rob then asked are the dose coefficients for OBT for retrospective doses in RIFE, and other

areas where they may have been modified, now in doubt given the HPA response on tritium. The chairman said they were not, people were at liberty not to use the published ICRP dose coefficients, but they values they use should be based on the ICRP model including the RBE, weighting factors etc.

The chairman informed members that there is an editorial by Bryn Bridges in the March edition of JRP which restates the AGIR view. In forthcoming editions there will be an editorial by the ICRP on tritium and a paper by John Harrison and Philip Day on radiation doses and risk from internal emitters. In addition, the HPA are currently formulating a response to ICRP recommendations which will go out for a three month public consultation period in July. The HPA will offer dates for meeting government departments before then. He informed members that the HPA will soon be issuing new advice on radon which may result in a possible change in actions levels. This will also go out for a three month public consultation period. In both cases the draft advice is scheduled for issue in December 2008.

New build - Patrick Stephen reported on the new reactor assessment. The nuclear regulators, the Health and Safety Executive (HSE) and the Environment Agency (EA), recently announced the findings from the first step of a Generic Design Assessment carried out on the four eligible designs submitted for new nuclear power stations. The GDA process is likely to take around three and a half years. They found no shortfalls at this stage - in terms of safety, security or the environment - that would prevent any of them from ultimately being constructed on licensed sites in the UK.

The next steps of GDA encompass the majority of the detailed assessment work on the designs and is expected to run until 2011. As all four designs - from AECL, Areva, GE-Hitachi and Toshiba Westinghouse - are eligible for next step of GDA, the Department for Business and Enterprise and Regulatory Reform has started a process to recommend to the regulators which three designs should proceed to the later stages of GDA. This process should be completed by the end of April. A stakeholder's consultation period is taking place in which people can make comments on site designs on the vendor's websites. Since this meeting AECL have withdrawn from the next stage of the GDA process

Details of the GDA are on the HSE website <http://www.hse.gov.uk/nuclear/reactors/>

Rob Allott informed members that the EA new build group had used their initial screening models and vendor's data to carry out dose assessments as part of the first stage of the GDA, there were no perceived problems with any of the 4 designs so far. The next stage is to carry out an assessment for a generic site. When a site is chosen a site specific assessment will be carried out.

Action 13.7 David Webbe-Wood to draft a note for the minutes about the local planning process

Since the meeting David Webbe-Wood has added the following note to the minutes:

Changes to Planning Law which will impact on new build

Planning law is currently being changed a Planning Bill has completed the Committee Stage in the House of Commons. Part of the proposed changes is that an Infrastructure Planning Commission will be responsible for determining planning applications for major projects. This commission will be responsible for organising any Planning Inquiries. The Bill will also

introduce National Policy Statements. These will be used to establish the case for major infrastructure projects. Such a statement is planned to be made for new nuclear power stations. This statement will cover siting criteria. Such a statement will be consulted on before it is finalised. If the National Policy Statement includes an indication of the locations that may be suitable for new build then BERR envisage that there will be a process of engagement and consultation with the local communities.

It is hoped that these, and other, changes will result in Planning Inquiries dealing with only local issues and as a consequence will be significantly shorter.

Westlakes – Steve informed members Westlakes Research Institute had recently published a non cancer occupational exposure study for British Nuclear Fuel sites. An AGIR subgroup will also be looking at this subject.

SEPA – Paul informed members that the Scottish Government will be issuing guidance on radioactively contaminated land shortly. He also said that SEPA are currently engaged in an appeal which was believed to be the first of its kind under RSA 1993 or its predecessor RSA 1960 which could have broad implications.

11. NDAWG review (Paper 13-09)

9.1 *TERMS OF REFERENCE*

Members agree that the seventh term of reference should be rephrased as: To facilitate the development of coherent transparent methods for the assessment of radiation dose to the public from all pathways which arise as a result of the operations at nuclear and non-nuclear sites. This includes consideration of the use of dose and risk coefficients in dose assessments but not their derivation, although NDAWG will keep informed of developments in this area.

9.2 *HETEROGENEOUS CONTAMINATION SUBGROUP*

Jane Simmonds outlined the proposed terms of reference for the new subgroup. Members agreed to change the third term of reference to: “what radiological criteria are relevant and appropriate”.

Membership of this subgroup is expected to include: Paul Dale (Chair), Philip Day and representatives from the FSA, EA, HPA with the NDA being a full member or corresponding member (to be decided).

As membership is not expected to overlap with other subgroups and as this is such an important issue it should go ahead as the 4th NDAWG subgroup.

Action 13.8 Relevant organisations to let Paul Dale and the NDAWG secretary know their representatives for the heterogeneous contamination subgroup

Action 13.9 Paul Dale to arrange a meeting of the heterogeneous contamination subgroup and for the subgroup to inform the main NDAWG group of what it going to be included in the subgroup guidance in the November main NDAWG meeting

9.2 FUTURE WORK

Jane Simmonds outlined the planned programme for the next few meetings as suggested by the Steering Group.

In meeting 14 the heterogeneous contamination subgroup will inform the group of the intended work programme of the subgroup. Patrick Stephen will also inform the group about delicensing in the context of the meeting topic of contaminated land.

In meeting 15 David Copplestone will be invited to update members about the PROTECT project.

Meeting 16 will consider solid waste issues including the HPA waste disposal consultation document, The EA GRA revision, submission for disposal of LLW at Drigg

Of the remaining topics: the response to the new ICRP recommendations will be dropped; the EC and IAEA basic safety standards will be considered, new build will become a standing agenda item.

Action 13.10 the secretary to circulate the HPA response document to the ICRP recommendations to NDAWG members when it is ready for the public consultation.

9.3 RESEARCH LIST

The research database has now been updated and added to the website. Contributions of work that is being/planned to be carried out by their organisation or third parties are still welcome from members. Barrie Lambert felt that the secretariat should review what was included in the research database to ensure that it was research and not just a statement of opinion.

Action 13.11 the secretariat to review material in the research database to ensure that it only includes research.

9.4 WEBSITE

Between April 2007 and March 2008 there were 9320 visits to the NDAWG website (over 500 visits on average a month) with people accessing over 35,000 files.

9.4 TERMS OF REFERENCE

Each of the terms of reference was reviewed to see the extent to which they were being achieved (see paper 13-09).

TOR 1: members agreed that NDAWG was continuing to do this.

TOR 2: the subgroup on habits data is evidence this is being carried out.

TOR 3: members agreed that NDAWG was continuing to do this.

TOR 4: the modelling subgroup had achieved this. Members agreed to keep this term of reference under consideration when looking at output from the subgroups.

TOR 5: this is in evidence with the recent links with the RPII, the email list, the guidance note consultation and the joint communications workshop. Members were informed that the report of the 2007 NDAWG open meeting had been accepted for publication in the JRP.

TOR 6: the work on fetal dose in paper 13-03 is evidence that the group is addressing this.

TOR 7: the NDAWG guidance notes fulfil this term of reference

12. Date of next meeting

The 14th NDAWG meeting will take place on Wednesday 26th November April at Defra, Ergon House, Horseferry road, London.

13. Summary of Actions.

Action 13.1 Patrick Stephen to inform NDAWG of the Norm Working Group response to the guidance notes.

Action 13.2 John Titley to send the secretary the EA authorisation consultation process document for distribution amongst members.

Action 13.3 Jane Simmonds to add the communications subgroup guidance note to the list of future guidance notes with a timescale for completion of 2009.

Action 13.4 Paul Dale to send Rob Allott data on seasonality in fish consumption

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NDAWG Secretariat 7 April, 2008