

## NATIONAL DOSE ASSESSMENT WORKING GROUP

### SUB-GROUP ON SHORT TERM RELEASES

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6<sup>th</sup> meeting held on 23<sup>rd</sup> February 2009. This meeting was held by teleconference.

#### Present

Chair	Rob Allott	EA
Regulators/agencies	Wayne Oatway	HPA
	Justin Smith	HPA
Industry	Laurence Austin	British Energy
Consultants	Claire Johnson	Westlakes Scientific Consulting
Apologies	Paul Dale	SEPA

#### 1. Minutes of previous meeting 2 October 2008

**Action 4.6** Justin to speak to Jo Brown if there is any information available on drinking water seasonality from the removal of radionuclides from drinking water project for the Drinking Water Inspectorate. *completed. No information was available.*

**Action 5.1** Justin to check the source of the GDC kd value for americium. *Completed. Justin found a reference Coughtrey PJ, Jackson D and Thorne MC (1985). Radionuclide distribution and transport in terrestrial and aquatic ecosystems. A compendium of data. Balkema AA publishers, Rotterdam. A check of IAEA reports supported this reference.*

**Action 5.2** David to get a copy of the latest revised IAEA Tecdoc 364 from Stuart Conney. *Completed.*

**Action 5.3** Rob to check the americium kd value in RP72. *Completed.*

**Action 5.4** Rob to check that there is no kd for a cautious release scenario. *Completed.*

**Action 5.5** Justin to send a list of typographical errors on the short term release to rivers paper to Rob. *Completed.*

**Action 5.6** Rob to check that there is no kd for a cautious release scenario. *Completed.*

**Action 5.7** Rob to check the daily water consumption rate of 2.8 L for offspring in Table A1.1. *Completed.*

**Action 5.8** Justin to complete Section 4 on short term releases to air. *Ongoing.*

**Action 5.9** David to complete Section 9 on CFIL's. *Completed.*

**Action 5.10** Rob to check contaminated land regulations/models to see how probabilities of multiple are treated. *Completed.*

**Action 5.11** David to check on what HPA consultation document recommends about use of probabilities and to email his findings to members. *Completed.*

**Action 5.12** Members to send Rob any comments on multiple releases. *Completed.*

**Action 5.13** David to supply Justin with a reference for SPADE. *Ongoing. Claire said she had a suitable reference and will pass it on to Justin. Action moved to Claire.*

**Action 5.14** Justin to add all the assumptions and data required by a potential user into an appendix or at least include appropriate references to these data. *Completed.*

**Action 5.15** Rob to ask members at the main NDAWG meeting if they are aware of any short term release case studies involving actinides. *Ongoing. This was not raised. Will raise it at the April meeting.*

**Action 5.16** Ray to invite the NDAWG small user representative Peter Marsden to the next subgroup meeting in February. *Completed. Ray had asked Peter to attend and Peter provided Ray with a name of someone who knew more about cyclotrons so would make a better member. It was decided that, as this person lived in Ireland, they should be contacted on a case by case basis for information rather than asked to be a member as the future of this group is uncertain at this point. A draft report of the atmospheric discharge would be sent to the contact for comments as part of the wider consultation.*

## **2. Short term releases to atmosphere**

Justin gave an overview of the draft paper and members commented on it. Rob asked that anyone with comments should give them to Justin by the end of the month so that they could be incorporated in time for the next main NDAWG meeting in April.

Section 2 "Pattern of discharges to atmosphere". There was some discussion over the use of AGR blowdown data. It was noted by members that the aim of this section was to show that discharges are not flat but variable. It may require several years' worth of data to show this variation. Laurence suggested that it would be possible to find historical data on blowdowns and that this may prove useful within this report. He will send Justin any data he is able to find.

**Action 6.1** Laurence to send Justin any historical AGR blowdown data he has

Members were unsure of what information existed regarding cyclotrons. Justin thought that the HPA RPAs may have some information and will make enquiries.

**Action 6.2** Justin to ask HPA RPAs about the pattern of cyclotron discharges

**Action 6.3** All to provide comments on the atmospheric release report to Justin by the end of February 2009.

Laurence noted that the name of the Northern Ireland office of the Environment Agency had changed. This needs to be updated.

It was noted that the atmospheric report would differ from the liquid release report in that there are many situations where it might not be appropriate to scale the dose per unit discharge values by the actual discharges because of differences between the default and actual scenarios. This is due to the large number of parameters that would be site dependent for an atmospheric release, such as release height, distance to receptor etc.

Rob argued that if monthly limits are available then, given a uniform windrose with 12 sectors of 30 degrees, it was cautious enough to assume that just one short term release would be blown directly towards the critical group. If weekly limits were available then 4 short term discharges might be blown towards the critical group and if daily limits were available the number might be 30.

#### **Case studies:**

In paragraph 4.2 Laurence noted that quarterly notification levels (QNL) are not constraints and are not subject to regulatory control; this is different to the annual limits or weekly advisory levels. A discussion was then had about whether the report should contain this mix of levels and limits or whether only limits should be considered.

For the example involving the AGR it was decided that the report would consider weekly advisory levels (WALs) for those nuclides where such values are normally given and QNL for other nuclides. With regards to WALs it was decided that 2 releases (rather than 4) at this level would be considered to represent a cautious situation, with all parameters the same for both (that is, the dose can be doubled). It was considered that having more than 2 releases at this level per year would be very unlikely and would be overly cautious. Laurence noted that he did not recall any situation when the weekly limit was exceeded on more than 2 occasions in a single year.

It was noted that the report should include a phrase to indicate that, based on historical discharges, more than 2 high but short term discharges had not occurred to date.

#### **Discharges from a cyclotron:**

For the example considering a cyclotron it was decided that where possible examples of actual discharges would be used. Rob would send Justin a reference of a suitable discharge report for a hospital that Justin will compare against the reference he is using and will develop a source term based on these reports. This would be based on the daily and annual limits for Hammersmith used in the report. It was decided that 6 short duration discharges would be possible in a year in this case.

**Action 6.4** Rob to send Justin a reference/report detailing the discharge from a cyclotron

**Action 6.5** Justin to send round a redrafted report by 20<sup>th</sup> March for comment

#### **For unit releases:**

It was decided that the report would be aimed at providing evidence of the effect of discharging for a short time compared with a continuous discharge. To this end Justin would consider how the dose from a discrete discharge compares with a continuous discharge assuming only one age group at one distance. Variations for other age groups and distances

are thought to be similar so not worth considering in depth. In summary doses would be calculated assuming short term discharges, similar to those given in Table 2 of the rivers report, using realistic and cautious assessment assumptions for the following releases:

- Annual limit AL (represented by a unit release eg 1 Bq)
- Quarterly (1/4 of AL) + remainder (3/4 of AL) as continuous
- Monthly limit (1/12 of AL) + remainder (11/12 of AL) as continuous

The problem with using the WAL was that these levels could be a large fraction of the annual limit and could cause a problem with explaining the results. Therefore the WAL would not be considered.

It was noted that for short term releases the assessment did not use the specific activity model for H-3 and C-14 which is commonly used for atmospheric assessments of continuous releases. The reason was that this model was not considered appropriate for short duration releases.

Justin said that a comparison between the equilibrium transfer factors for sulphur for cow meat and cow liver between the SPADE model and FARMLAND showed that the values in SPADE are much lower. David Webbe-Wood was looking into this but it was not resolved before he left FSA. This issue will be highlighted in the report.

There was some discussion whether more detail should be presented on the tools available for doing a detailed assessment if one was required. It was felt that this would be useful and would be added if possible given the time constraints.

### **3. NDAWG guidance note**

Rob had redrafted the guidance note. The main change since the last meeting was to move a lot of the detail into the appendices and to add sections on multiple short term releases at the same time (section 5) and on CFILs (Section 6).

All agreed with the text of section 5, noting that it was important that the common mode of occurrence was the main factor that would dictate whether such an event was likely to occur.

All agreed with the text of section 6.

Justin noted that there was some contradiction between sections 4.2 and 4.3 regarding advice on when a detailed assessment would be required, with section 4.2 suggesting above 20 $\mu$ Sv whilst section 4.3 suggesting above 100 $\mu$ Sv. Rob suggested that the text could be reworded to make it clearer what was being suggested in that below 20 $\mu$ Sv no detailed assessment would be required and that over 100 $\mu$ Sv a detailed would be required in most situations and between these doses it would be judged whether a detailed assessment is required on a case by case basis.

### **4. Any other business**

It was noted that given David's departure the group has no representative from the FSA. A representative was considered important and if the group is to continue after the next main

NDAWG meeting then it was considered that a new member be appointed. Rob will ask at the next NDAWG meeting about this.

**Action 6.6** Rob to ask at the next NDAWG main meeting if another volunteer from FSA could be added to the subgroup if the subgroup was to continue.

## 5. Date of next meeting

It will be decided at the next main NDAWG meeting about whether another meeting of this subgroup will be held. If required, another meeting will be set up at that time.

## 6. Summary of Actions

- Action 5.8** Justin to complete Section 4 on short term releases to air. *Ongoing.*
- Action 5.13** David to supply Justin with a reference for SPADE. *Ongoing. Claire said she had a suitable reference and will pass it on to Justin. Action moved to Claire.*
- Action 5.15** Rob to ask members at the main NDAWG meeting if they are aware of any short term release case studies involving actinides. *Ongoing. This was not raised. Will raise it at the April meeting.*
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Wayne Oatway, 25 February 2009