

Joint Fact-Finding on Radiation and Health

Richard Bramhall 17th November 2014

In October 2011 the nuclear NGOs involved in the DECC Nuclear NGO Forum compiled a list of concerns about radiation risk.¹ Following interventions by Charles Hendry, the Forum convened a panel discussion with members of COMARE and some critics of the present risk model on 18th October 2012.² At the 28th February 2013 Forum meeting Richard Bramhall said that most of the issues of concern did not appear to have been discussed and was asked to propose a way of going forward with the outstanding matters.

At the 3rd July 2013 Forum meeting the NGOs asked DECC to support and facilitate joint fact-finding involving bodies such as Public Health England and identified experts representing the NGOs. They asked for the programme to be independently facilitated, to examine divergent views of the health impacts of exposure to low levels of radiation, and to produce a consensus report identifying explainings any areas of disagreement. (The request is at Appendix B.)

On 19 September 2013 I met representatives of DECC, ONR and Public Health England's Centre for Radiation, Chemical and Environmental Hazards (PHE-CRCE). DECC's *Note* of the meeting is at Appendix C.

PHE later proposed an agenda for a one day meeting (Appendix D). At the Forum meeting, 1st October 2013 I said the PHE agenda proposal was unacceptable since it promised to repeat the shortcomings of the meeting with COMARE in 2012.³ The NGOs said there was a need for a further enquiry with independent facilitation and a consensus report as an outcome. They said it was crucial that someone in Government take ownership of this as it is an important scientific area where disagreements persist; DECC should take a lead. It was pointed out that Government have allocated millions of pounds for community benefits. Responding, DECC claimed not to have resources or appetite for such an involved proposal and expressed some doubt that consensus could be reached given two decades of discussions and formal processes which have not achieved consensus. DECC was however happy to continue to work up a phased process to evaluate whether progress had been made and whether resources were wisely spent. DECC saw the next step as joining up with ONR to see whether a joint process could be undertaken. DECC felt PHE would inevitably have to be involved as they are in the lead on low level radiation policy. It was agreed to hold a scoping meeting.

Two NGO reps and DECC met on Wednesday 4th December 2013. It was agreed that DECC would seek ONR involvement. DECC would also consult David MacKay (DECC Chief Scientific Adviser) to establish if it would be possible to involve him in

¹ *Key Issues and Controversies concerning the effects of radiation on health*. Appendix A

² https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/66718/7033-minutes-decc-ngo-forum-panel-disc-comare.pdf

³ PHE's proposal to invite Pr Wade Allison (see App D) is particularly unhelpful. Pr Allison's contribution to this topic is his book "Radiation and Reason"; it does not qualify him to offer useful information. Mike Thorne of Quintessa, who generally supports the ICRP view of radiation risks, reviewed "Radiation and Reason" at length in the *Journal of Radiological Protection* - http://iopscience.iop.org/0952-4746/30/2/B01/pdf/0952-4746_30_2_B01.pdf. PHE is surely aware of this.

the process and to establish whether he would liaise with scientific advisers at Dept of Health. Further meetings to set some limits on the process and to contact PHE would be considered later.

Subsequently David MacKay wrote to PHE to say he fully supported the call for a scoping meeting; he asked for it to be handled in an open and transparent way. His letter and updates from DECC showed that he was already in dialogue with PHE about radiation risk. In addition, PHE's reply ⁴ to David MacKay revealed that MacKay and John Harrison, Director of PHE-CRCE were both due to attend a meeting Sir John Beddington had organised *to initiate a review on this topic*. John Harrison wrote to MacKay *I would welcome the opportunity, if time permits, to meet you in advance to discuss views*. The NGO reps felt this suggested the NGOs' initiative was being hijacked and asked to be told what was happening. Nothing was heard. At the Forum on 9th October Rachel Solomon Williams suggested that nothing more could be done. Replying, I pointed out that while meetings between PHE and Professors MacKay and Beddington might have a bearing on the Joint Fact Finding they were not the main issue. Rachel Solomon Williams took an action to ask Beddington, PHE and MacKay what they are or have been doing on radiation and health (as at 17th Nov '14 there is nothing to report as far as I know). Later in the meeting I told Baroness Verma that there was a proposal for Joint Fact Finding on radiation and health and that Professor MacKay and ONR supported this. Baroness Verma agreed to take an interest. The present paper responds to DECC's request (App E) for written evidence to inform consideration of next steps.

My starting point is DECC's suggestion that the JFF process could not reach a consensus. The Minutes of 10th DECC Nuclear NGO Forum meeting, 1st October 2013 describe DECC's position:

- DECC do not have the resources or the appetite for such an involved proposal and expressed some doubt that consensus could be reached given two decades of discussions and formal processes which have not achieved consensus.
- DECC happy to continue to work up a phased process where we evaluate whether progress has been made and resources allocated are wisely spent
- DECC see the next step as joining up with ONR to see whether some form of joint process could be undertaken – this would inevitably have to involve Public Health England as they are in the lead on low level radiation policy.

The second and third bullet points are uncontentious. As for the first point, it is certainly true that discussions and formal processes over the past two decades have not achieved consensus but in fact the proposed JFF has been designed to avoid this failure. It is instructive to look at past processes.

⁴ John Harrison to David MacKay 24 April 2014:

"Mary Morrey has passed on your letter of 23rd April regarding the ICRP system of protection and engagement with NGOs. The note from Richard Bramhall that you also sent refers to the SAFEGROUNDS process in which we engaged and produced a paper, which we also published in J Radiol. Prot (see attached). This provides a review in relatively accessible form of scientific evidence and assumptions underpinning the ICRP system. I attended a meeting at DECC on 19th September 2013 organised by Hergen Hays, also attended by Richard Bramhall, at which I agreed on behalf of PHE to participate in an NGO engagement event organised by ONR. The attached correspondence relates – this has not yet been taken forward. I note that we both will participate in the meeting organised by Sir John Beddington on 5th June to initiate a review on this topic. I would welcome the opportunity, if time permits, to meet you in advance to discuss views."

How and why past processes failed to achieve consensus

CERRIE - Committee Examining Radiation Risks of Internal Emitters; 2001 - 2004 set up by Rt. Hon. Michael Meacher, Environment Minister in the Blair government until 2003 and Rt. Hon. Yvette Cooper, then Parliamentary Under-Secretary of State at the Department of Health.

Meacher wrote (*Introduction to the CERRIE Minority Report, 2004*):

Science can be only trusted if it is pursued with the most rigorous procedures that guarantee freedom from bias. For this reason I deliberately set up the committee on a balanced basis with all opposing views fully represented - the first such science committee that I am aware of. I asked the Members to agree where they could and to delineate any areas of disagreement. Their remit was to explain the disagreements in accessible language and to propose research which might resolve them. Unfortunately, it seems that the procedures which prevailed in the Committee, while they have allowed discussion of a wide range of topics, have produced a Final Report which does not accommodate a full and fair representation of all views. More seriously, from the point of view of taking this debate forward, the Report fails to explain the reasons for the continuing disagreements. This applies, in some cases, to what look like quite basic issues like whether or not the Chernobyl disaster was followed by a significant increase in infant leukaemia.

The critics of ICRP on CERRIE were excluded from drafting the Majority Report and began to submit dissenting views. Two meetings voted by 10 to 1 to include that material. At this stage the Chair repeatedly suggested the dissenters were libelling people. He was asked in writing and in meetings to substantiate what he thought was libelous but failed to do so. At the last meeting the Chair tabled two opinions from departmental lawyers warning that committee members might be liable if the report contained libellous material. The lawyers failed to specify what might be libelous. Nevertheless the earlier votes were reversed. COMARE's 9th Report, which advised the Departments on CERRIE's findings, confirmed that the Majority Report failed to identify the reasons for the lack of consensus.

European Parliament's STOA (Science and Technology Options Assessment) workshop

In 1998 the European Parliament's STOA (Science and Technology Options Assessment) was asked to organise a one-day workshop on *criticisms of ICRP risk models*. Probably a hundred or more people attended. Scientists from Europe, UK, USA and Canada gave presentations stating or suggesting that the ICRP approach to radiation was inadequate. Abstracts were published. Reporting the proceedings was contracted to Professor Assimakopoulos, a physicist with a long professional involvement in radiation protection. His 54 page draft report drew 21 pages of detailed criticisms and amendments from the MEPs who sponsored the workshop. They amount to an accusation that, rather than report what the scientists had said about the validity of the ICRP, Pr. Assimakopoulos had written his own opinion, which was that ICRP was secure. I understand that they were ignored but I have never

seen the final report. European officials have told me they cannot find it. The STOA Unit's list of publications 1995-2000 includes only the abstracts.⁵

SAFEGROUNDS and *Perspectives on the health risks from low levels of ionising radiation*

One of the processes which DECC has referred to was the long-running Safegrounds dialogue and its *debate* papers on *Perspectives on the health risks from low levels of ionising radiation*.⁶ This debate could not be called Joint Fact Finding. It can't even be called a debate since there was no scope for dialogue on the scientific issues; the idea was to provide end-users of the Safegrounds Guidance with an outline of the radiation risk arguments that nuclear liability holders might hear from various stakeholders. Three protagonists - HPA (as PHE was then known), I myself for LLRC, and Paul Dorfman for the Nuclear Consultation Group - were invited to write position statements.⁷ Then a contractor, David Collier, delineated the different views.⁸ So it was only an attempt to reach consensus if agreeing to disagree is a consensus but, in the end, even that was too much for HPA and they rejected the Collier paper:

*In attempting to provide a balanced account of the views submitted [...], the summary document does not do justice to the substantial body of evidence on radiation risks, accrued over many decades, providing an international scientific consensus. The report does not present a detailed scientific review of the data and so it cannot be used to resolve the debate or provide recommendations.*⁹

I wrote in response that HPA was

applying cultural rather than scientific considerations; the weight of opinion is irrelevant – scientific method requires that a single credible piece of evidence that falsifies the predictions of a theory is enough to destroy the theory.

Long before SAFEGROUNDS published the outputs HPA posted its own paper on the HPA website, including some personalised and demeaning criticism of me and Dorfman whose

extreme minority views [...] rely on selective use of data to support the contention that radiation risks have been underestimated. In fact, the data do not support their beliefs

CIRIA, who ran SAFEGROUNDS, told HPA:

HPA were not contracted to formulate a critique of the other views to be presented in this position paper, and this certainly contradicts what SAFEGROUNDS is all about. The Position paper is an important piece of documentation and in order for us to move on, it is vital that the contentious statements are removed.

Two of the papers are still on the SAFEGROUNDS website. HPA's never was; it's now on a government website and all mention of SAFEGROUNDS has been cut. It is

⁵ I can supply the draft report, the MEPs' letter and the abstracts.

⁶ http://www.safegrounds.com/debate_papers.htm

⁷ http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1274090258191
http://www.safegrounds.com/pdfs/debate_papers/LLRC_RB.pdf
http://www.safegrounds.com/pdfs/debate_papers/WARWICK_PD.pdf

⁸ [http://www.safegrounds.com/pdfs/W39_safegrounds_Debate_paper_Final_\(hi\).pdf](http://www.safegrounds.com/pdfs/W39_safegrounds_Debate_paper_Final_(hi).pdf)

⁹ *ibid.* p6

also published in the Journal of Radiological Protection and in April 2014 HPA sent that version to David MacKay as part of their discussions of the Forum's Joint Fact-Finding proposal (see Footnote 4).

Setting aside HPA's abuse of process, their objection to David Collier's synthesis has some validity; Collier didn't present *a detailed scientific review of the data*. That's not a criticism of Collier - he wasn't asked to do that and he wasn't given the space or the resources to - but we do need some resolution and some recommendations. This is what Michael Meacher meant CERRIE to do.

A New Process

It would be possible to move forward on the issues raised in the Nuclear NGOs' resolution (Appendix B) using the SAFEGROUNDS papers as a framework. The remit would be to interrogate specific topics such as KiKK, infant leukaemia after Chernobyl, and the Secondary Photoelectron Effect all of which have been extensively discussed without resolution.

New factors are required if we are to avoid the old problem of positions being rehearsed without being resolved. These are

1. Structure. What we need is a small committee, half of it nominated by the NGOs, half by DECC and ONR. The committee members will need considerable ability and we need to keep the personalities and the people with theories out of it, except as consultees. The committee should ask the proponents to explain their positions in detail. The committee should take as many iterations as necessary to satisfy itself as to the credibility of the arguments. It should report non-credible arguments and explain any unreconciled differences of opinion.
2. Secretariat. As the NGOs have already requested, the secretariat should be provided by a reputable process manager.
3. Reporting should obey Meacher's standards for CERRIE: ... *The committee [...] aims to reach consensus where possible. On topics where differences of view remain after its deliberations, it will explain the reasons for these and recommend research to try to resolve them. [...] CERRIE will produce a report that is agreed by all its members. The report will not be subject to amendment [...].*¹⁰

¹⁰ Rt. Hon. Michael Meacher, Minister of State for the Environment at DEFRA announcing the formation of the Committee Examining Radiation Risk from Internal Emitters CERRIE, July 2001.

Appendix A Key Issues on Radiation and Health. 2012. (I think this is complete - I seem to have lost the original. RB)

1. The effects of radiation on health.

The relationships between radiation and health impacts. Epidemiological evidence of cancers, cardiovascular impacts, impacts on central nervous system. Causes and correlation.

Issue – What is the evidence that radiation is harmful to human health?

2. Levels of Risk –methodology and justification

Measurement of risk. The validity of dose/risk calculation as basis for discharge/emission levels. Methods of calculation. Risks to workers and to general public. Justification of maximum dose limits in terms of harm from internal/external exposure. Tolerability of Risk from nuclear power stations and how assessed.

Issue – What constitutes ‘acceptable risk’?

3. Low level radiation and health

Evidence of impacts of low-level radiation on human health. Threshold and linear relationships. Potential impact on risk assessment of non-targeted effects such as Bystander Effect and Genomic Instability.

Issue – Is any level of radiation safe enough?

4. Nuclear facilities and health effects

Relationship between routine emissions/discharges and human health. Evidence of cancer clusters near nuclear facilities. German KiKK report on childhood leukaemias and proximity to nuclear power plants and COMARE 14th Report response.

Issue – How can we judge if it is safe to live near nuclear facilities?

5. Risk and Regulation

Setting criteria and standards for environmental and safety regulation. Regulatory bodies, recruitment, roles and responsibilities. Pragmatic or standard based approaches to regulation. Provisions for regulatory review. Openness and transparency in regulatory procedures.

Issue - How is confidence and trust in regulation achieved and maintained?

6. Nuclear accidents – prevention and response

Health protection measures in event of major accident. Emergency planning procedures and evacuation. Public information, health advice and warning systems. Resources and capabilities for dealing with a major accident.

Issue – What can be done to limit the impacts on public health and environment in the event of a major accident?

Appendix B

Resolution agreed by NGOs 3rd July 2013

"NGOs at the DECC Forum request:

A) that DECC supports and facilitates a request that appropriate bodies such as Public Health England or one or more of its sub-groups and committees agree to enter into an independently facilitated programme of collaborative and constructive co-working or joint fact-finding with identified experts representing the participating NGOs in order to examine divergent views of the health impacts of exposure to low levels of radiation, with particular reference to resolving, as far as possible, the questions below and to produce a consensus report that identifies and explains any areas of disagreement:

1. What is the evidence that radiation is harmful to human health?
2. Is the evidence base adequate to inform reliably on all the types of exposure involved in a nuclear power programme?
3. Does radioactivity inside the body have characteristics that are significantly different from the characteristics of external irradiation? Is it valid for regulatory practice to understand risks from incorporated radioactivity in terms of an external irradiation paradigm?
4. Is there evidence that exposure to radioactivity results in greater harm than is predicted or explained by the ICRP risk model?
5. What can be learned from the 2007 Environment Agency's investigation of uncertainties in dose estimates for internal radionuclides following the CERRIE report?
6. Does evidence of the biochemical affinity between DNA and some radionuclides raise significant doubt about current methods of determining health risks? Likewise hot particles, sequential emitters, and low energy beta emitters? Likewise the "Secondary Photoelectron Effect" and the transmutation of some radioelements into other elements?
7. What contribution has been made or is being made to understanding radiation risk by any research arising from the UK Department of Health's 2006 Radiation Protection Research Strategy and any subsequent strategies? Likewise MELODI (Multidisciplinary European Low Dose Initiative; commenced 2010).
8. Is the 10^{-6} standard of 'acceptable risk' realistic and can achieving it be appropriately demonstrated?
9. How is confidence and trust in regulation achieved and maintained?
10. What should be done to afford maximum limitation on public and environmental impacts from the effects of radiation in the event of a major accident?

B) that this programme of work be considered by the Department of Health and DECC/OND at a preliminary meeting with all potential organising and participating parties and that funding be agreed to allow the programme to proceed.

Such a meeting should take place, ideally, within two months of the DECC NGO Forum on 3rd July 2013. Any programme which results from that meeting should be seen as a sub-group of the DECC NGO Forum. Progress reports should be made at least a week before each Forum meeting.

Before securing DoH acceptance of the programme and its funding needs the expert panel would receive resources to scope the tasks involved, determine the frequency of meetings and the duration of the programme required, and the further resources necessary in terms of expertise, funding and other resources.

NGO representatives would have observer status at the discretion of the members of the expert panel.

ENDS

Appendix C

DECC/ONR/PHE/NGO Meeting 19 September 2013

Attendees:

Hergen Haye (DECC - Director of Nuclear New Build)
Jane Cantwell (DECC – Nuclear New Build Communications Officer)
Charles Temple (ONR - HM Superintending Inspector, Radiological Protection and Emergency Prep. & Response)
Dr John Harrison (PHE - Centre for Radiation, Chemical and Environmental Hazards, Director)
Dr Simon Bouffler (PHE - Centre for Radiation, Chemical and Environmental Hazards, Deputy Director)
Richard Bramhall (NGO – Low Level Radiation Campaign)

Brief note of meeting:

Richard Bramhall introduced his paper on radiation risks and the proposed programme of actions; the reasons behind why this is important, the fact that many NGO's have a broad range of concerns regarding the perceived consensus view, the underlying science and the ideal outcome - a (consensus) report outlining the current research and disagreements.

The potential of an enquiry and paper, and the scope of whether one was needed were then discussed between Dr John Harrison, Dr Simon Bouffler, Hergen Haye and Richard Bramhall.

The existence of International and National Forums were then explained by Dr John Harrison and Dr Simon Bouffler and how these involved NGO engagement. Reference was also made to a number of past enquiries into this subject such as CERRIE and SAVEGROUNDS.

Richard Bramhall then concluded this part of the discussion by reiterating and stating the case for a process whereby the different positions would be outlined and where a panel of independent experts would seek to draw out an appropriate consensus view and identify those areas where no consensus can be reached for possible further enquiry.

Hergen Haye made it clear that he remained unconvinced that a full enquiry is justified and desirable, noting similar processes in the past and the fact that much of the differing position are well known and rehearsed. He was also concerned about the resource implications. Therefore, if DECC were to take this work forward it could only be done in an incremental way whereby all parties can evaluate the success or failure and where resources can be tightly controlled.

Charles Temple suggested ONR could, in the first instance, facilitate a Forum to discuss this topic further (as part of their existing ONR/NGO Forum). It was proposed that the meeting could include a number of presentations outlining the research and facts currently available and peer-reviews and setting out the most divergent views

followed by a structured debate by respective experts on a selected number of key issues. If this discussion is a success, ideas of the next steps could then be explored. The meeting would need to focus on a couple of key questions, from Richard Bramhall's proposals in his paper, to ensure a good outcome. It was suggested that NGO attendees would be in mainly listening mode for the majority of the meeting to avoid an unproductive debate.

Charles Temple confirmed that ONR were happy to take this first step forward and organise the Forum which should be jointly involved by both the ONR and DECC NGO Forum's and Hergen Haye was happy to contribute to venue costs. Hergen Haye reiterated that there was no further commitment from DECC/ONR/PHE beyond agreement to facilitate and participate at this Forum. It was agreed the outcome of the first meeting would need to be reviewed before any further work is taken forward.

Actions:

- Hergen Haye to report back to Andy Blowers on the key points of this meeting.
- Dr John Harrison and Dr Simon Bouffler to send initial comments to Charles Temple (copying in Hergen Haye) on the structure and content of the forthcoming meeting.
- Charles Temple to check ONR's funding and whether this could be included in the next ONR/NGO Forum or whether it would require a separate meeting.
- Richard Bramhall, Hergen Haye and Andy Blowers to discuss how this work will be taken forward through email correspondence.
- Charles Temple to approach Hergen Haye if they require assistance in terms of logistics, funding or organisation of the proposed meeting.

Appendix D

Email To Jane Cantwell DECC from John Harrison, Director of PHE's Centre for Radiation, Chemical and Environmental Hazards (CRCE) 24 September 2013

Jane

Thanks for the minutes – fine except for the point about concentrating in the proposed meeting on a couple of key questions – I made the point that we should be able to cover much of the substance of the arguments raised in Richard's questions:

- 1) What is the evidence that radiation is harmful?
- 2) Is the evidence adequate for assessment of risks from exposures relating to a nuclear power programme?
- 3) Are risks from radionuclides within the body (internal emitters) significantly different from risks of external radiation?
- 4) Is there any evidence for greater risks than predicted by the "ICRP risk model".
- 5) What information has been derived from EA studies of uncertainties for internal emitters?
- 6) Do Busby's hypotheses stand up to critical examination?
- 7) What contributions have been / are being made by DH and EC funded research – strategies?

That is, we should be able to address 7 out of 10 of Richard's questions.

The format could be:

- 1) Introduction – ONR
- 2) Epidemiology (Richard Wakeford): to include A bomb survivor data – main source of risk estimates, supporting data from worker studies, external cf internal exposures. Childhood leukaemia, leukaemia clusters.
- 3) Biological mechanisms (Simon Bouffler): to include progression from initial DNA damage causing stable mutations, cellular proliferation and malignant tumours; non-targeted effects..
- 4) Internal cf. external (John Harrison): evidence for similarity from epidemiology + experimental studies; hypotheses suggesting that risks of internal emitters might be underestimated; use of scientific information in ICRP protection system
- 5) Chris Busby
- 6) Ian Fairlie
- 7) Threshold views (Wade Allison): Simon has suggested that someone from the French Academy of Sciences might be good (eg. Dietrich Averbeck).
- 8) Discussion / gaps in knowledge
- 9) Current research in relation to gaps in knowledge

None of the questions are new but we do, as you would expect, have a growing body of scientific evidence on which to base risk assessments and protection standards.

Regards

John

Appendix E

----- Original Message ----- From: "McLaren Margaret (Office for Nuclear Development)" <Margaret.Mclaren@decc.gsi.gov.uk>
To: <wilx@btinternet.com>; "Richard Bramhall" <lowradcampaign@gmail.com>
Cc: <Andrew.Blowers@open.ac.uk>
Sent: Wednesday, October 22, 2014 9:00 AM
Subject: FW: Action from the DECC NGO Forum

Dear Pete, Richard,

I am in the process of writing the minutes for the Forum and getting actions moving.

There is one action that I think that it would be good to get moving on Radiation and Health.

Pete, you will remember that you provided an update from the NGOs on their perspective of progress with this issue. Your main concern was that you felt that no progress is being made and that COMARE and Public Health England are not being helpful.

DECC agreed to take an action to reconsider what can be done to take this issue forward. Baroness Verma agreed to consider further evidence from NGOs with a view to lending her support to a new process to look at the issues.

Please can you provide written evidence for DECC so that we can consider what the next steps should be on this issue.

It would be good if you can respond to me by the middle of next month if possible.

I look forward to hearing from you.

Many thanks

Margaret Mary

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